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THEME
**THE POLITICAL ECONOMY OF REGIONAL INTEGRATION AND
INTERNATIONAL TRADE IN AFRICA**



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OF LESOTHO**



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And Virtually**

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PREFACE

The African Continental Free Trade Area (AfCFTA) is a flagship project of the African Union Agenda 2063. It promises to be the largest free trade area in the world, based on the number of prospective participating countries. According to the World Bank, the implementation of the AfCFTA will significantly facilitate international trade, lift 30 million Africans out of extreme poverty and boost the incomes of nearly 68 million others who currently live on less than US\$5.50 a day. Further, it may boost Africa's income by US\$450 billion by 2035 (this would be a gain of 7 percent); increase Africa's exports by \$560 billion, mostly in manufacturing; improve larger wage gains for women (10.5 percent) than for men (9.9 percent) and boost wages for both skilled and unskilled workers (10.3 percent for unskilled workers and 9.8 percent for skilled workers). Additionally, the AfCFTA connects 1.3 billion people across 55 countries with a combined gross domestic product (GDP) valued at US\$3.4 trillion. This forecast displays that the AfCFTA is arguably the most powerful instrument that has the potential to significantly alter the politico-economic status of Africa as a whole and place her on the power map of the world.

In spite of this laudable and promising opportunity for African growth, the implementation of the AfCFTA has been slow. As of the 5th of August 2021, the Initiative for African Trade and Prosperity reported that, out of 36 states that had deposited their instruments of ratification, only Ghana, South Africa, and Egypt had met the customs requirements on infrastructure for trading. This means that only three of the 54 African Union (AU) nations that had signed the pact could trade effectively under the liberalized AfCFTA terms. Since its pre-talks in the 19th Session of the African Union in 2012, its establishment in 2018, and its official trade commencement on January 1st, 2021, one would have expected to see more trade-readiness by African countries. This is particularly important as the current trade among African nations stands at a meagre 18%, while the continents of Europe and Asia enjoy rates of 70% and 51% respectively. It, therefore, becomes imperative to reassess the potential factors that may be stalling the realization of this opportunity.

Beyond the overarching goal of the AfCFTA to foster regional integration in Africa as a whole, there exist other strong regional integrations in Africa that have additional instruments which are key to improving trade and enhancing economic growth and welfare. Notably, the Southern African Development Community (SADC), as is the case with the other seven recognized regional economic communities (RECs) has faced stringent challenges, such as macroeconomic convergence, the COVID-19 pandemic, as well as other socio-political constraints. A glaring setback in the Economic Community of West African States (ECOWAS) has been the claws of the French on the Francophone member countries. Since its conception in 2003, leaders of the fifteen ECOWAS states have postponed the launch of a single currency at least four times: in 2005, 2010, 2014, and again in 2020.

The 2nd annual conference of the WTO Research Chair of the National University of Lesotho gave room for twenty high grade technical papers, selected from a pool of over seventy-five abstract submissions that interrogated issues in five main panels: Gender and Trade, Economic, Regional Integration, Digital trade and Blockchain Technology, the Socio Political panel, and the Dependable Ecosystem and Environmental Panel. The Conference attracted participants from countries across Africa, both online and physically. The proceedings rigorously addresses these issues and will serve as a good read to enthusiasts of the theme.



Associate Professor Motlamelle Kapa (Ph.D.)
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EXTRACT OF KEY NOTE PAPER

The Political Economy of Regional Integration and International Trade in Africa

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ESAMI – TRAPCA

1. Introduction

The Bretton Woods Conference, formally known as the United Nations Monetary and Financial Conference, brought of 730 delegates from all 44 allied nations. This set out the canvas of subsequent international economic system that persists to this day. Given that the conference took place in the early 40s, this meant that Africa was not represented. At this time majority of Africa countries were under draconian colonization by western countries. Not only were African countries locked out of decisions leading towards the global economic system, but they were also further locked out in the creation of the United Nations (UN) organization. Established in 1945, the UN had 26 signatories with apartheid Union of South Africa being the only African country. The foundation of the global governance system has since evolved with African countries later joining in the 1940s institutions. However, this not without some nuances worth considering, particularly on an economic front as considered below.

2. Political Economy of the Multilateral Trading System

The notion of multilateral trading system has been on the forefront of global evolution of trade integration. However, it is important to note that while it may appear as if financial, monetary and trade regimes created in the 40s are mutually exclusive, the reality is they are two sides of the same coin. Therefore, while it is important to trace the evolution of the multilateral trading system, it is equally important to establish how it relates to financial and monetary systems, all created in the 40s and without Africa's contribution.

According to VanGrasstek (2013, 5), centuries-long developments in theory and practice converged with the creation of GATT in 1947 and remains critical to the development of the WTO. In this context, starting with the evolution of the Multilateral Trading System (MTS), Table 1 below provides

¹ Makong is an international trade expert with expertise in international Trade Law and International Trade Negotiations. He has extensive experience on African economic affairs where for several years he was a chief negotiator of African countries at the WTO, chief negotiator of UNCTAD's G 77 and China and headed several WTO negotiations for the LDCs, Africa and OACP groups. He served as the AfCFTA Head of Technical Assistance and Capacity Building and currently serves as a lecturer in Lund University's MSc in International Trade policy and Trade Law hosted by trapca as well as ESAMI's MBA post graduate degrees where he lectures in Business law, policy analysis, and transport law. He is further a chair of AU, AfDB and AU Africa Land Policy Conference's Scientific Committee. He is trapca's WTO co-chair.

an overview of events that were key to shaping the current system. Up to 1948, it took slightly over 100 years of setting the foundation of the trading system. Conspicuously, Africa was not part of masons that set out this system. Given that creation of international economic law is a self-interested process, it cannot be expected that the in its design, the trading system took African economic interest into account. The legal and institutional foundations of the current international economic system was plainly set within economic interest of the architects of the system.

Table 1 Key events preceding the General Agreement on Tariffs and Trade (GATT)

1846	Parliament repeals the protectionist Corn Laws in England, committing the country to free trade.
1860	The Cobden–Chevalier Treaty between Great Britain and France is the first in a series of market-opening treaties among the powers of Europe that are linked through most-favoured-nation clauses.
1876	The limitations of the existing system of trade treaties are demonstrated when Austria-Hungary unilaterally raises its tariffs. France, Germany and Italy soon do the same.
1883	Adoption of the Paris Convention for the Protection of Industrial Property, which becomes the oldest part of WTO law via its incorporation into the Agreement on Trade-Related Aspects of Intellectual Property Rights.
1919	The Versailles Treaty establishes the League of Nations.
1927	The Geneva Convention on Import and Export Prohibition and Restriction is the most ambitious trade initiative of the League of Nations, but does not achieve the requisite 18 ratifications.
1930	The US Congress enacts the protectionist Hawley–Smoot Tariff Act, which is soon followed by similarly restrictive measures in many other countries.
1933	The London Economic Conference fails to develop a collective response to the Great Depression.
1934	The (US) Reciprocal Trade Agreements Act delegates tariff negotiating authority to the executive, leading to bilateral agreements that become the template for GATT.
1941	President Franklin D. Roosevelt and Prime Minister Winston Churchill sign the Atlantic Charter, pledging "to further the enjoyment by all States ... to the trade ... needed for their economic prosperity."
1944	Major conferences are held to develop plans for the United Nations (at Dumbarton Oaks) and the International Monetary Fund and World Bank (at Bretton Woods).
1945	Creation of the United Nations Organization at the San Francisco Conference.
1947	The 23 original contracting parties to GATT conclude their tariff negotiations.
1948	GATT provisionally enters into force on January 1; the Havana Charter for an International Trade Organization is signed in March but never enters into effect.

Graig VanGrasstek, 2013

Today's trade system was principally the creation of the United Kingdom and the United States where the latter US government pursued the former through a series of inter-agency, public–private and Anglo-American meetings to address problems and potential solutions in the post-war economic order.² Without passing judgement on the key elements and foundational principles of the system as espoused by these countries, it is worth noting the substantive provisions of GATT were drawn from the standard clauses of the Reciprocal Trade Agreement Act (RTAAs) between the US and mostly European Countries. The US in the negotiations leading to GATT 1947 specifically demanded for the new multilateral system to be based on the "most favoured nation" (MFN) principle.³ This makes a clear point of the extent to which trade agreements are interest based and a further fact that colonial Africa's interests in the sense of liberated Africa could not have been taken into account.

² See United States Department of State (1949) and Irwin et al. (2008).

³ Santana R (nd) Clash of the GATT negotiators

The mechanics of how GATT 1947 came about further confirms the notion that this agreement had nothing to do with Africa. To this end, following deadlock between the US and UK in 1947 the so called "Truman doctrine" emerged as a political countermeasure to the Soviet Union's growing influence and a tool to contain communism. On key part of this doctrine was European Recovery Program (a.k.a Marshall Plan) with an aim to shouldering the reconstruction of all European countries following the aftermath of the world war. This account testifies to the fact that GATT 1947 was created withing an exclusionary context that was interest based and to the total exclusion of Africa. Notably, its outcome represents the cornerstone on which the 21st century's MTS is premised.

Beyond 1948, African countries began securing political independence. Emphasis on political independence stresses the fact that economically, the vast majority of them we not economically independent. At the same time, close to half a century, the GATT's basic legal principles remained intact as crafted in 1948.⁴ Of the many rounds of negotiations from 1948, that is even after political independence of Africa from the 50s, African countries only registered their presence in the eighth, namely, the Uruguay Round of 1986-94. This is a round of trade negotiations that led to the WTO and a new set of agreements. African negotiators of the time describe the engagement of Africa as having been shrouded by colonial undertones and racism that is not always acknowledged. That said, they also describe the experience as being one where they had to align with developing countries that were mostly familiar with the substance of negotiations. Basically, most African countries engaged in Uruguay negotiations on attendance basis as opposed to participation basis.

The outcome of the Uruguay round has been deemed by African countries as having created an unfair MTS that take into account the economic needs of developed and advanced members to the neglect of developing countries. To give credence to this issue, in December 1991 Director General of GATT issued a Draft Final Act which the European Community (EC), Japan, Korea, and a few other countries rejected key provisions of the text on agriculture. To resolve this issue, The US and EC engaged in yearlong bilateral negotiations raising conditions under which the two entities would support the Uruguay round. These were as follows:

- Cutting the volume of subsidized exports by 21 percent and the annual expenditure for export subsidies by 36 percent;
- Reducing internal support by 20 percent as measured by a Total Aggregate Measure of Support(AMS) for the whole sector;
- Exempting direct payments to producers that meet production- limiting criteria from the commitments to reduce internal support, and;
- Exempt certain policies from challenges in the GATT.

Concerning export subsidies, the US and the EC agree on export subsidies cuts in the quantity of subsidized exports of 21percent over 6 years from a1986-90 base while under the Dunkel Text, the

⁴ WTO (2023) *The GATT years: from Havana to Marrakesh*.

quantity of subsidized exports would have been cut by 24 percent.⁵ From the Blair House Accord's outcome, the WTO's provisions in the area of agriculture were fashioned. In a nutshell these provide mostly developed members rights to distort international markets through subsidies, the level of which most African countries are prohibited from introducing. This represents the most direct evidence of the fact that African countries had no present power to influence negotiations leading to the creation of MTS. Consequently, the MTS rules though not entirely without merit, they largely do not favor African countries.

It is notable that the same rules have been projected to the regional trade agreements. Despite a raft of the RTAs the intra Africa Trade remains significantly low, thus indicating that it takes more than liberal rules to enhance economic integration and benefits from trade. This where the other institutions created in the 40s come into play hence the intersection of trade, monetary policy and finance. These are inseparable. African countries continue to call for change of the international finance and monetary architecture that is witted against the interest of African countries. In this regard, African nations pay more than governments in other regions to borrow money. Biased credit rating agencies add insult to injury. According to UNDP it remains challenging for risk assessments and credit ratings that are driven by varying levels of subjectivity to accurately reflect reality of African countries.⁶ In the final analysis the African debt is the most expensive debt relative to other regions of the world.

Between 2019 and 2021, 25 African countries spent more money on interest payments than on health, 7 on interest payments than on education and 5 on interest payments than on investment.⁷ All this further affirms lamentations of sub-Saharan Africa concerning mispricing of their sovereign debt originating from a perception risk by international investors leading to "unjustifiably" high borrowing costs. Sub-Saharan African countries pay risk premium relative to emerging countries, thus their sovereign bonds are undervalued.⁸

This simply goes to show how far reaching debt may be used as an instrument that negatively affects African countries. Therefore, it does not matter how liberal a country may be through the lens of international trade other policies have significant implications on the achievement of the assumptions underlying trade liberalization. Despite its discontents registered in various African countries statements and summit declarations, while the MTS under the auspices of the WTO is member driven, decisions by multilateral development banks (MDBs) are not driven by the same. Substantive decisions of MDBs are made by board of directors hailing from their respective shareholder countries.⁹ It is no brainer that such members have significant power in dictating terms of economic welfare of borrowing countries. So far, it does seem such decisions have not favoured African countries. This is certainly not a surprise given a well-documented history of the intentional structural adjustment programmes that destroyed African countries economies.

⁵ Michael T. Herlihy, Joseph W Glauber, and James G. Vertrees *U.S.-EC Blair House Agreement*.

⁶ UNDP (2023) *LOWERING THE COST OF BORROWING IN AFRICA The Role of Sovereign Credit Ratings*.

⁷ UNCTAD (2023) *A World of Debt: Africa*.

⁸ Gbohoui, W et al (2023) *Sub-Saharan Africa's Risk Perception Premium: In the Search of Missing Factors* IMF Washington DC at 14.

⁹ Puduserry J et al (2022) *Governance of multilateral development banks: Options for reform*.

If conditions that belie loans African countries take are not supportive of their economic growth, it cannot be taken for granted that such represent the ethos of policy ecosystem by the lenders towards Africa irrespective of the continent's drive towards trade liberalization. It is logical that it may not be in the interest of lenders, multilateral and otherwise to invest in Africa that will process its raw material into finished products, and Africa that grows economically, and Africa that reduces its external trade deficits etc. Consequently, it will be counter intuitive to expect board members of MBDs to grant Africa packages in this direction. Trade, finance, and monetary policies are three legs of the same pot. Africa is limping on only one leg of which it has some modicum of policy making sovereignty. However, concerning finance and monetary affairs only a handful of countries exercise sovereignty over Africa's policy making. Definitely they cannot do so to harm their interests listed above including ensuring that Africa becomes perennial supplier of raw material and a consumer market of finished products.

3. Conclusion and Recommendations

The above account represents the political economic of global economic system which clearly was not designed with Africa in mind. Eclectic approach may be called for to figure out how Africa can survive itself out of a system not designed for its economic breakout. The continent will still live through the system albeit exploitation of policy space remaining at its disposal should be pursued in earnest. The system as it stands cripples legislature of individual countries where parliaments have no sovereignty over national budgets which much be approves by lenders etc. However, through integration such as foreseen by Abuja Treaty, at least in as far as continental monetary union is concerned could amount to a decisive step to shape economic destiny of the continent. This will certainly not be a big bang initiative but a patient process that can built confidence through experiential learning and ultimately build a case for all African countries to join in.

This cannot go without a fight by countries that are beneficiaries of economically divided Africa. A thought of gnawing down Africa's balance of payment the deficit cannot make good news to multiple suppliers of countries across the world. Indeed, no country will stand idle when policy reforms in Africa threaten to create unemployment in their jurisdictions. It cannot be expected that shareholders of MDBs will put a blind fold and welcome such developments where such are likely to hurt the economic interests of their countries. This is high stakes interest based game and definitely not benevolently driven affair. It is important for Africa to fast recognize that individual countries are too small to change the fortunes of the continent. It takes collective action for such to happen. It is equally important to note that what is being suggested to address discontents of political economy of economic governance Africa is living through is not economic isolationism. On the contrary, collective the continent must engage other parties as it incrementally asserts its economic authority.

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I. GENDER AND TRADE PANEL

I.I Gender-Trade Issues: The Effect of AGOA on Female Participation in African Labour Markets

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Abstract

A handful of empirical work quantifying the effect of Free Trade Agreements (FTAs) has been done in Africa. Nonetheless, it is not clear whether despite their intended purposes, such as trade liberalization, there exist some labour market outcomes that are gender-specific. So, in an attempt to contribute to this scanty literature, this study was aimed at tracing the effect of the African Growth and Opportunity Act (AGOA) on female labour force participation rate within the Sub-Saharan region. The study meritoriously utilized a censorious annual data for 33 countries. The criterion for selecting the sample countries was primarily based on the year of AGOA membership to ensure homogenous treatment to sort out the before-and-after time periods from a wide span of 1990 to 2019. This study adopted a hybrid model lying in the amalgamation of the Difference-inDifferences (DID) technique and a non-iterative reweighting procedure: Entropy Balancing (EB). Despite improving the external validity by employing a censorious annual data set, the DID technique counters the selection bias since AGOA membership is not random. Furthermore, the EB takes care of the covariates balancing, thereby improving precision by constructing a "statistically" similar control group. The findings reveal that AGOA membership has significantly improved female labour force participation rate in Africa by 10%. Therefore, based on these results, this study suggests that policy makers should be inclined to policies that will enable AGOA beneficiary countries to continuously retain their eligibility status. First, improve the rule of law and governance, as a step to combat corruption. Lastly, ensuring that required quotas are met, or at least significant progress is made to reach thereof.

Keywords: Trade Liberalization, Labour Force Participation, Comparative Advantage, Difference-in-differences, Entropy Balancing
JEL Classification: C21, J22, F14

1. Introduction

Gender differences in most socioeconomic outcomes have been widely varied across different spheres of the global community. Specifically, Sub-Saharan Africa (SSA) has been continuously lagging in most, if not all the outcomes. The gender gap in employment and sluggish growth patterns can be attributed to the international trade regulations and rules that introduced additional costs on goods and services within the set that SSA countries have a comparative advantage (Moyo *et al.*, 2018). Furthermore, the severe dependence on foreign aid is also a significant cause of the poor economic performance of the region.

Among a handful of initiatives emanating as a remedial mechanism to the inherent gender gaps in employment rates, one of the free trade agreements (FTAs); the African Growth and Opportunity Act (AGOA) was created between African countries and the United States (US) around 2000. The establishment of this preferential bilateral agreement was meant to ease the accessibility of African goods into the US without being charged tariffs. These African exports range from agricultural products, chemicals, apparel & footwear to electronic products among others (Osabohien *et al.* 2021). Grogan (2022) posits that this agreement not only created a strong influx of foreign direct investments (FDI) into Africa, but also created alternative labour-intensive industries within the region. Despite this praiseworthy initiative, positive spill-over effects in the labour markets have been experienced. More so, it has created alternative labour-intensive industries in which female involvement is a critical component and vital economic agent.

Along similar lines, female participation in the labour force has some benefits both at the macro and micro levels. Arguably, female involvement is a vital determinant of growth and development. Female employment contributes to poverty reduction at the family level by upsizing family incomes (Verick, 2018). Globally, gender gaps in most economic outcomes such as educational attainments have been narrowed. Nonetheless, in terms of economic participation in Africa, women are still latent as opposed to men. Consequently, the aforementioned gender gap in employment decisions by firms is of paramount importance for the African Growth and Opportunity Act (AGOA) and should not be overlooked. Bustelo *et al.* (2019) back this up by defining this gap as a reserve of untapped resources.

As a result, several hazardous effects are likely to emerge if gender-based inequality in employment remains unaddressed within the scope of AGOA. Foremost, it may not only end up in the wrong policy formulation but may also increase the dependency ratios in families and fertility among other micro-level outcomes. This is also theoretically plausible since fertility is one of the core determinants of female labour supply. At the macro level, as amplified by Moyo *et al.* (2018), only a smaller portion of AGOA beneficiaries made impactful use of AGOA benefits; thereby resulting in doubts about preferential benefits. The deficiency of a homogenous trade policy for equitable growth in the region may then follow suit, emanating from nonconvergence in the policy trajectory.

Against the preceding background, this study aims to agitate on the impact of AGOA trade agreement on one of the gendered outcomes; female labour supply. Specifically, it aims to assess the causal effect of AGOA on female participation in SSA labour markets. The stated objective will be achieved by tentatively answering the following research question: what is the effect of AGOA on female labour force participation?

Emphatically, to the best of the researcher's knowledge, no study has tended to empirically ascertain women's supply of labour in SSA countries since AGOA was initiated. A study of this nature is vital because AGOA act was meant to bridge gender gaps in the African labour markets via export-led growth and economic development channels. A body of studies including those of (Moyo *et al.* 2018; Tadesse and Fayissa, 2008; Condon and Stern, 2011) tend to evaluate the effectiveness of AGOA. However, these studies place more focus on exports, growth, and other health outcomes among others, with limited emphasis on persisting gender gaps. In argument, Thompson (2004) fortifies that AGOA has not extensively impacted the macroeconomic variables of African economies

The primal contributions of this study to the literature are twofold. First, on the policy front, it expands the knowledge body on the effects of the AGOA trade policy, by demystifying whether and how it affects female labour force participation. It adds to the policy dialogue by analysing a larger scale of the SSA countries by employing data from 27 AGOA-eligible and 6 non-eligible countries. Therefore, the data coverage of an inclusive swath of SSA not only improves the external validity front but also helps understand the trade policy within the African context (Bertrand *et al.* 2004). In addition, the study insinuates the provision of new insights about policies tailored to gender inclusion, especially by utilising the pre-and postAGO dataset.

Lastly, by employing the Entropy Balancing (EB) procedure, the study improves the validity of the DID results in comparison with other several studies. This is done with the resulting weights that are fitted to respective control sample units to construct a statistically similar counterfactual for better comparison between the treatment and control groups. As suggested by Hynes *et al.* (2020), EB has proven not to yield inflated weights like other reweighting procedures such as the common Inverse Probability Weighting (IPW).

Hereafter, this study is structured with the succeeding sections as follows: Section 2 interrogates both theoretical and empirical literature that relates to female labour force participation and the impact of AGOA in the SSA region. Section 3 presents and describes the data used in this study and the associated methodological framework. Section 4 provides the results and their discussions, while Section 5 concludes the study and provides an ending note by recommending some policies.

2. Literature Review

Economics as a discipline is armed with various theories that explain labour force participation and trade. Despite the common neoclassical income-leisure theory by Mincer (1962), is the theory by Samuelson and Stolper (1941). In particular, this theory establishes that even though the traditional belief is that a rise in international trade contributes to the demand for low-skilled labour in developing countries to some extent. Heckscher-Ohlin (HO) model (1991) traces the causal arrow from trade openness through the correlative factor prices between developing and developed economies. Becker (1971)'s models are among the few that make it clear that mechanisms such as enhanced competition via trade and the likes of wage-discrimination models are some of the theoretical explanations of the effect of trade on women's involvement in the labour markets.

Economic concepts are intertwined, hence a curtain-raiser into a well-known theory that dwells in the betwixt of FLFP and economic development. This theory posits that there exists a quadratic (U-shaped) relationship between these two variables (Boserup, 1970; Goldin, 1995). Essentially, the

expectation according to this theory is that female labour force participation rates fall in the earlier stages of development and eventually starts to increase at the latter stages of development. For instance, Gaddis and Klasen (2014) found this functional form; although their argument is that it depends on the type of data used, such as the GDP estimates. I believe their argument is plausible because the error margins inherent within the data estimates used have a tendency to alter the results.

To evaluate the impact of AGOA, several authors used various models ranging from panel to impact evaluation and the prominent gravity variants. When it comes to the direction of the impact, some find a positive effect of AGOA. For starters, (Fayissa and Tadesse, 2007; Nogue, 2005) found a positive effect on SSA imports while using the gravity model and dynamic panel models respectively. Further, they explored the data from about 99 various products up until 2006. The general results reported are that AGOA has proved to significantly increase exports of 24 out of 99 categories, with the apparel exports dominating the lots. On the other hand, the study does not explicitly make it clear on which commodities and their countries of origin reaped the maximal benefits from AGOA and why that is the case.

Along similar veins, Van Grastek (2003) assessed the utility of AGOA, aimed at obtaining a quantifiable measure on the beneficiary countries. While analysing raw data set of US imports between 2001–2002, this study revealed the following; prior to AGOA inception, about 60% of the top exports from the SSA region, initially had 0% tariff rate in the US. Cooray *et al.* (2017) explored the impact while using trade openness as a dependent variable on labour force participation rate, with a special emphasis on the effect of political institutions like civil liberties, and democracy in low-income countries for the period 1985– 2012. To observe this impact, they used system-GMM and difference-GMM for robustness checks

Zheng-Zheng *et al.* (2019) assess the effect of trade openness on female labour force participation in Asian countries. They used the panel threshold regression models with data within the periods 1990–2016. Their results indicate a non-linear relationship between trade openness and FLFPR. However, Younes and Ameer (2023)’s study is among others who demystified how the disentanglement of gender in the Tunisian economy impacts international trade locally. To achieve this, they developed their own theoretical framework that encapsulates both trade and labour markets with disaggregated gender. Wamboye and Seguino (2014) used the three estimation techniques: fixed effects (FE), random effects (RE) and two-stage least squares (2SLS), with panel data for the years 1991–2010.

3. Data and Methodology

3.1 Data Sources

Guided by the literature from Section 2, the variables used in this study include female labour force participation rates, GDP per capita, education, fertility, inflation, trade openness and unemployment. Their full description is presented in Table 1. The criterion for inclusion of the countries into the sample was guided by the availability of the data and the continuous eligibility of AGOA. Furthermore, the treatment group comprises of countries that joined AGOA in 2000 only. Due to data unavailability, the final sample consists of 33 countries, with 27 being in the treatment and the remaining 6 in the control groups.

AGOA-eligible countries included are Benin, Botswana, Carbo Verde, Cameroon, Chad, Democratic Republic of Congo (DRC), Congo Republic, Eswatini, Ethiopia, Gabon, Gambia, Ghana, Kenya, Lesotho, Malawi, Mali, Mauritius, Mozambique, Namibia, Nigeria, Rwanda, Senegal, South Africa, Tanzania, Uganda, and Zambia. On the other hand, AGOA noneligible countries included Algeria, Egypt, Morocco, Somalia, Tunisia, and Zimbabwe.

Table 1: Variable Descriptions

<u>Variables</u>	<u>Definitions</u>	<u>Sources</u>
Female Labour Force Participation	Share of labour-active females to total working-age females (% fem pop aged 15-64)	ILOSTAT Database
GDP per Capita	Per Capita Gross Domestic Product (Constant 2010 US\$)	World Bank WDI ¹⁰ , (2013)
Fertility	This is the total number of children that a woman would bear as at the end of her reproductive age.	World Bank WDI, (2013)
Trade Openness	Given as the sum of both imports and exports, as a measure of GDP (%)	World Bank WDI, (2013)
Life Expectancy	The average maximal number of years that a woman is expected to live	World Bank Gender Statistics
Education	Total enrolment rate (gross % females)	World Bank Gender Statistics
Inflation	Average increase in prices, calculated using the GDP deflator approach	World Bank WDI (2013)
Rule of Law	Readily available index measuring the extend of law enforcement within [-2.5, 2.5] range, with -2.5 being worst and 2.5 being the best.	World Governance Indicators
Unemployment	The ratio of job seekers and total potential workers	World Bank (2013)
Year2000	Is the period post AGOA: A binary years dummy with 1 for 2000 to 2019 and 0 for the base years, 1990 to 1999.	

Note: The data period for the study spanned between 1990 and 2019 with an annual frequency.

¹⁰ Throughout this paper, the acronym WDI simply refers to the World Development Indicators.

3.2 Estimation Strategy

Traditionally, it is common in the Randomised Controlled Trials (RCTs) that researchers tend to manage closely the randomness of the assignment of units of analysis (such as patients) into the two categories, treatment and control groups as well as their comparison in outcomes.

As amplified by Leatherdale (2019), the virtue of randomly assigning the units of analysis into both treatment and control groups is of critical importance since it implicitly means that on average, these two groups possess similar attributes, either known or unknown in the preintervention period. This equality in the baseline is sensible because it guarantees that the existing confounding effects are only attributable to the treatment, thereby precisely isolating the causal impact of the program at hand.

Unfortunately, despite these imperative features, RCTs are rarely practical since they are mostly considered unethical. The resulting effect of this is the non-randomness nature of the program, which yields the problem of selection bias. To mimic this problem, the common techniques adopted within the scope of impact and causal evaluations are Difference-in-Difference (DID), Instrumental Variables (IV), Propensity Score Matching (PSM), and the Regression Discontinuity Design (RDD) as outlined by Khandker *et al.* (2009). This study utilised the DID approach owing to its merits and contextual underpinnings of AGOA eligibility.

The critical drawback of AGOA eligibility is the inherent endogeneity. Primarily, eligibility depends on several factors such as the rule of law, location (target is SSA), and the US market accessibility among others. Furthermore, endogeneity arises because eligibility is decided up by the US president. Therefore, AGOA eligibility is partly dependent and endogenous with the US politics (Moyo *et al.* 2018). This is a clear indication that AGOA eligibility is not random and estimating its effect will be distorted by selection bias. So, as a remedial measure, the DID technique that this study used, mocks out and estimates the pure impact of AGOA (the treatment) on female labour force participation while alternatively controlling for macroeconomic and other determinants of labour supply.

3.3 Difference in Differences

Historically, the difference in differences (DID) saw the light just in the middle of the nineteenth century, when John Snow's legendary study was published; this study highlights that cholera is mainly transmitted by water supply, and not air (Bedi *et al.* 2020; Dimick and Ryan, 2014). Kotarja (2022) argues that DID has remained a workhorse technique in the sphere of causal inference especially when pre- and post-intervention changes in outcome variable are compared with those of the contemporaneous outcome of the control. Moreover, Lehner *et al.* (2011) describes the difference between these outcomes as an actual estimate of the counterfactual. Therefore, based on the aforementioned properties; given both the treated and untreated groups trend similarly with time, then the effect of the treatment is efficient for removing the confounders.

Out of about 41 AGOA eligible countries, a sample of 27 countries was selected based on the availability of data from 1990-2019 as well as the other 6 non-eligible countries. To tentatively answer a research question of interest, this study employed the DID method as outlined earlier (Bertrand *et al.* 2004; Athey and Imbens, 2006; Imbens and Wooldridge, 2007). Primarily, DID identifies the changes in the outcomes of the two groups; the treatment group (AGOA-eligible) as well as the control

group (AGOA non-eligible). Specifically, the data needed for such analysis is the data prior to AGOA as well as the data after its inception.

In this study, letting country i be in a specific group, say group $A_i = [0,1]$, whereby $A_i = 1$ is the treatment (eligible) and $A_i = 0$ the control groups respectively, and the observations of these groups are in period T_i in $[0,1]$, whereby T_1 is the time period post the treatment or AGOA, and T_0 the baseline period. Most importantly, each sample unit i is observed for both periods T_0 and T_1 . Additionally, letting $Y_{it}(0)$ and $Y_{it}(1)$ denote the potential outcomes such as female labour force participation rate before and after the treatment at time t respectively, and the following average outcomes \bar{Y}_0 and \bar{Y}_1 before and after respectively. Hence, the outcome of country i at some time t can be represented as follows:

$$Y_{it} = \begin{cases} Y_{it}(0) & \text{if } T_0 \\ Y_{it}(1) & \text{if } T_1 \end{cases} \quad (1)$$

Where, T_0 represents the baseline period as before; T_1 the period after the enactment of AGOA. So, to tease out the causal effect of this policy, the DID procedure estimates the average treatment effect on the treated (ATT), which was denoted by δ_{DID} for the purpose of illustration and clarity. Moreover, the ATT can be expressed mathematically as follows:

$$\delta_{DID}(ATT) = E[Y_{it}(1) - Y_{it}(0)] \quad (2)$$

$$= \Delta_1 - \Delta_0 \quad (3)$$

$$= (E[Y_{it}|A_i = 1, T_1] - E[Y_{it}|A_i = 1, T_0]) - (E[Y_{it}|A_i = 0, T_1] - E[Y_{it}|A_i = 0, T_0]) \quad (4)$$

Therefore, the above set of equations estimate the average impact of the treatment, especially in the post treatment period. The ATT is estimated to be the difference between the average outcomes of both the treated and control groups, both before and after the intervention, hence the name “difference in differences.” This is shown by equation (3), whereby the first difference operator (delta) was used. As Khandker *et al.* (2009) outlined, the difference in differences procedure takes care of the selection bias by “differencing out” the existing disparities between the two groups, treated and control that are common in the baseline period, having no direct relationship with the treatment or programme.

Practically, the baseline DID regression model can be expressed in a two-way fixed effects (TWFE) framework as follows:

$$FLFP_{it} = \varphi + \delta_{DID}(T_1 \times A_i) + \beta_1 T_i + \gamma A_i + \pi \mathbf{X}'_{it} + \varepsilon_i \quad (5)$$

Where δ_{DID} is the coefficient of interest, and a coefficient of the product of AGOA treatment (A_i) and the post AGOA time period (T_1), spanning 2001–2019, and it captures the difference between AGOA eligible and non-eligible countries in changes in FLFP both before and after 2000; $FLFP_{it}$ is the outcome variable, the female labour force participation rates in country i at time t . Also, from above, A_i and T_i are included to depict any average effects that are both time and country specific, either treated or not treated. \mathbf{X}_{it} is a vector that contains other factors that are crucial determinants of FLFP (for instance, education, income, inflation, trade openness, fertility and life expectancy). Lastly, ε_i denotes an idiosyncratic error term. Although the potential thread to the DID estimator is that it is likely to be biased when the parallel trend assumption does not hold, Meyer (1995) suggests that

longer panel data series in both time periods (before and after) can resolve it. For further clarity, these underlying assumptions are discussed in detail in the estimation validations below

3.4 Entropy Balancing

There is a concern in the data utilised in this study. The African economies are not homogenous, some are male dominant, some massive oil and fuel exporters while others are more inclined to agricultural exportation. This heterogeneity may lead to inclusion of units with relatively lower number of firms, export volumes and so forth. So, to address this issue, this study used the entropy balancing (EB) procedure. Among a handful of the data preprocessing techniques such as the commonly used propensity score matching (PSM), EB has proved to possess imperative merits (Hainmueller, 2012).

Most importantly, EB reweights the outcomes of the control group so that it depicts the expected counterfactual of the treatment group. EB meritoriously incorporates the information of the known; the moments (m) of the control while alternatively adjusting the weights for balancing the covariates properties and moments accordingly (Hainmueller & Xu, 2013). Also, EB does not yield inflated weights, as opposed to other techniques such as the Inverse Probability Weighting (IPW) while maintaining efficiency unlike PSM (Hynes *et al.* 2020). According to Hynes *et al.* (2020) the EB procedure yields the weights (w_i) that stem from the entropy distance (H) minimisation problem presented below:

$$\min_{w_i} H(w) = \sum_{\{i|A_i=0\}} w_i \log \left(\frac{w_i}{b_i} \right) \quad (6)$$

Subject to the two constraints; the balance as well as the normalising constraints

$$\sum_{\{i|A_i=0\}} w_i c_{ri}(x_i) = m_r, \forall r \in \{1, \dots, R\} \quad (7)$$

and

$$\sum_{\{i|A_i=0\}} w_i = 1, \quad w_i \geq 0, \forall i \in A_i = 0 \quad (8)$$

Whereby $b_i = \frac{1}{k_0}$ is the initial (base) weight, and k_0 is the collection of the sampled units in

$A_i = 0$ (the control group); $c_{ri}(x_i) = m_r$ is a collection of R constraints that balance, applied on the control variables' moments of the control group that has been reweighted while A_i is a dichotomous treatment status, with 1 if country i is AGOA eligible or not (control condition).

4. Results and Discussions

4.1 Descriptive Statistics

This first subsection of the results provides the descriptive statistics of the variables used in this study. To that effect and for coherence, it first starts with the summary statistics and then the pairwise correlation matrix follow suit.

4.1.2 Summary Statistics

From the literature, a plethora of variables have been identified as significant determiners of female labour force participation rate. Although this study's focus was to find the impact of AGOA on this outcome, several other variables had to be well controlled for. So, depending on data availability, some of these controlled variables were selected from the sample units. To that effect, Table 2 shows

the summary statistics of the variables utilised in the analysis in perseverance to answering the research question. It is comprised of the mean, standard deviation minimum and the maximum.

Table 2: Summary Statistics - Before Reweighting

VARIABLES	Control Group (AGOA ineligible)					Treatment Group (AGOA eligible)				
	N	mean	sd	min	max	N	mean	sd	min	max
Female labour Force participation Rate (%)	150	33.45	22.79	12.31	80.34	810	62.87	14.22	34.07	89.63
education	149	100.0	13.21	51.94	116.3	744	94.41	25.50	17.84	156.4
Rule of Law	150	-0.529	0.593	-1.852	0.282	810	-0.464	0.674	-2.229	1.671
fertility	150	3.134	0.712	1.991	4.862	810	4.996	1.358	1.360	7.426
Trade openness	150	56.92	15.31	23.98	109.5	784	79.75	38.98	19.68	220.4
Unemployment Rate	150	15.59	7.217	2.981	30.74	810	11.35	10.28	0.111	47.18
Life Expectancy	150	69.16	8.976	44.85	78.72	810	57.94	7.946	27.57	77.89
Inflation	150	9.242	26.35	-27.05	225.4	810	58.79	959.5	-31.57	26,766
FDI	150	1.873	1.692	-0.324	9.425	810	3.823	8.799	-11.20	161.8
Log GDP	150	7.818	0.390	6.745	8.349	810	7.160	1.003	5.318	9.707

Source: Author's own using data from WDI and WGI

Primarily, Table 2 has been split into two main groups, the control as well as the treatment groups. It is also imperative to note that all these data presented are without any balancing procedure. The control group has about 150 observations (N×T) while the treatment group has mostly 810 observations. The data shows that female participation is higher in AGOA eligible countries than in the non-eligible countries. However, it is difficult to posit that these differences are due to AGOA because of the nature of the two sample-groups. Also, any outliers within the control group may have a relatively larger effect on the mean FLFP in that group.

Among the groups, AGOA ineligible countries (control) have the two mostly volatile variables; inflation and FLFP. This volatility is captured by high standard deviations. On the other hand, the eligible countries (treated) likewise have inflation as one of the highly volatile variables. This volatility is depicted by high standard deviations. Some of the variables tend to spread out because of the presence of the outliers. An explicit case is the case of Zimbabwe which had the persistent rate of inflation known as hyperinflation.

The average determinants of FLFPR differ statistically between the two groups, probably because of the different country specific features especially when it comes to the institutions within the different economies.

As formerly outlined, the EB reweighting procedure is imperative for reducing the bias by creating a statistically similar counterfactual, the summary of the covariates after this transformation is given in Table 3. Pertaining the moments, the highest moment included and presented for the control variables is the third, the skewness. Statistically, there are no differences in terms of distributions between the treatment group and the control after the weighting.

Table 3: Control Variables After Reweighting

VARIABLES	Without Weighting			After EB Weighting		
	Mean	Variance	Skewness	Mean	Variance	Skewness
Education	90,59	585,3	-0,5887	102,1	506,2	-0,5323
Rule of Law	-0,5372	0,488	-0,0459	-0,36	0,7027	0,2723
Fertility	4,665	2,466	-0,07625	4,622	2,284	-0,2723
Trade openness	71,28	12,52	1,316	80,26	16,98	1,371
Unemployment	13,04	98,82	1,001	11,3	69,59	1,123
Life Expectancy	60,17	114,7	-0,05107	49,49	124,4	-0,1171
Inflation	80,75	1746865	20,15	8,12	262,6	1,804
FDI	3,021	113,2	10,72	4,072	271,9	7,983
Log GDP	7,348	0,8925	-0,00285	7,223	0,8667	-0,1391

Source: Own Calculations with Stata 17.0

4.1.3 Correlation Analysis

Theorists state that correlation does not necessarily imply causation (Horton, 2023). For analytical purposes, the pairwise correlation is a basic indicator of multicollinearity. As argued by Brooks (2008), ignoring the issues of multicollinearity can pose several problems.

For starters, it may result in seemingly “good” regression results, with high Adjusted RSquared and insignificant individual variables with high standard errors. Lastly, the closer the variables are to perfect collinearity, the larger the confidence intervals for the estimates. Therefore, it increases the chances of committing Type II error; failing to reject the null hypothesis while it should be rejected. From the correlation analysis¹¹, the decision of female to participate in the labour market, life expectancy, rule of law, unemployment and GDP per capita have negative correlation while the rest have a positive one. There is no evidence of multicollinearity between the variables since the highest (absolute) correlation is between fertility and Log GDP per capita (-72%). Following the analysis of the correlation, the study does not drop any of the variables since there is no evidence of perfect collinearity.

4.2 DID Main Results

The analytical results of this study stem from two thematic categories of the baseline model. Firstly, the DID model without any weighting and the last one, the DID model with the EB procedure weights balancing the controls. The dependent variable in the four models presented below is the female labour force participation rate (FLFPR). Resultantly, the baseline models by extension may be referred to as the determinants of female labour supply models. For understanding, a negative coefficient implies that, a variable of interest decreases female labour force participation rates and the opposite is also true. Table 4 presents the results from the baseline model, i.e equation (5).

Table 4: DID Main Results

(Y = FLFPR)	DID Without Balancing		DID & Entropy balancing	
VARIABLES	(1)	(2)	(3)	(4)

¹¹ The pairwise correlation matrix is included in the Appendices, clearly labelled as **Figure 3**.

AGOA	-1.1395 (0.9173)	-0.7022 (1.0763)	14.5710*** (4.9710)	8.9511*** (2.4378)
year2000	1.8107*** (0.3821)	2.2397** (1.0298)	-12.7076*** (4.6443)	-9.5862*** (2.3309)
AGOA*year2000	8.5965*** (1.0376)	10.9364*** (2.3443)	9.3045** (4.0903)	10.8089*** (2.0061)
Education		-0.0684** (0.0283)		0.1188*** (0.0196)
Rule of Law		-1.277 (0.8678)		-3.6952*** (0.8324)
Fertility		-0.0239 (0.5853)		-5.1378*** (0.5492)
Trade openness		-0.0044 (0.0178)		-0.009 (0.0104)
unemployment		0.0858 (0.1242)		-0.7443*** (0.0602)
Life Expectancy		0.0732 (0.0679)		-1.0490*** (0.0736)
Inflation		0.0002*** (0.0000)		-0.0242 (0.0257)
Log GDP		-0.5419 (1.1322)		-5.6430*** (0.7931)
FDI		-0.0206 (0.0235)		
Constant	50.7458*** (3.3154)	53.3455*** (11.2381)	52.3558*** (3.7383)	-256.6702 (174.7677)
Observations	960	867	867	867
R-squared	0.2276	0.2767	0.1785	0.6870
Controls included	No	Yes	No	Yes
Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1				

Source: Own Calculations using Stata 17.0

Table 4 provides the main results from the DID regression as well as the entropy balanced DID regression estimates. Throughout this section, it is imperative to note that the first two models have not been adjusted for any of the weightings (not balanced). Contrary to this, the last two models are reweighted. The reweighting procedure by entropy balancing ensures that the first three moments; the mean, variance as well as skewness of the covariates are statistically similar between the control and treatment groups. On the same note, the model of interest and of paramount importance in this study is model (4). This model has been controlled for various macroeconomic variables to minimise

the chances of the problems associated with the omitted variable bias (OVB). Additionally, the models (1) and (3) have not been controlled for any other control variables.

When it comes to the interpretation of these results, it is interesting to note that the coefficient of interest from the baseline model; equation (5) is the DID estimator, denoted with δ_{DID} . This is the coefficient of the product of AGOA treatment and the post AGOA time period (year2000). This coefficient of interest as can be obtained from the preferred technique, DID with EB, suggests that on average and all else equal, AGOA has significantly increased, the female labour force participation rate in SSA. These results are in line with the theoretical underpinnings of the Stolper-Samuelson theorem, suggesting that trade liberalization has some spill-over effects that are inherent in the extensive margins of labour supply. It increases the FLFPR by approximately 10%. This is also significant at the 1% level of significance. Empirically, Cooray *et al.* (2017) also found the results in alignment with this conclusion.

Although not significant, trade openness has a negative effect on FLFPR, and this is not a new phenomenon in the case of a developing country. For instance, Mujahid (2013) found the negative relationship as well. More so, fertility and unemployment also tend to decrease the FLFPR and this effect is significant at the 1% level. This also is in line with theory, especially unemployment via the discouraged worker route Yasemin (2013). As can be expected, the more children a woman bears, the more time she needs to take care of such children. That is, more time will be devoted to children upbringing than the labour activities.

This study's fertility effect is in line with the results obtained by Ngoa and Song (2021). On the other hand, education as stipulated by the preferred model, amplifies that women in SSA tend to experience positive returns to education. In supplement, Borjas (2017) argues for the same reasons. The schooling effect is normally referred to in the economics literature as the returns to education, stemming from the human capital investment theory.

From the same specification, the coefficient of log GDP, a proxy for income as suggested by Idowu and Owoeye (2019), is negative and highly statistically significant. That is, all else being equal, an additional 10 Dollars per capita decreases female labour force participation by approximately 1%. As theory depicts, any increment in income (non-labour income) tend to make it easier to buy an additional hour of leisure. Despite the theoretical plausibility,

Zheng-Zheng *et al.* (2019) also find the coinciding results, although the coefficients' magnitudes differ. Lastly, the balancing procedure tend to increase the R-squared of the model of interest significantly. This pivotal difference in R-Squared values suggests that EB procedure improves the fitness of the model covariates, since it improves the comparability of the treatment and control variables.

Thus far, all the variables discussed from the results are economic. However, some of the variables that are noneconomic in nature affect FLFP. Contrary to expectations, the betterment of the rule of law tends to result in a decline in FLFP rate. This effect is also significant at the 1% level. Although these findings are not in support of the theoretical premise, they are consistent with Ngoa and Song (2021)'s findings. They found rule of law and control for corruption to have a negative and significant effect on female labour force participation in Africa.

4.3 Parallel trend Test Results

From the previous section, more emphasis was put on the importance of the validity of the parallel trend assumption. It is on this argument that Table 5 below shows the parallel trends test results.

Table 5: Parallel Trends Test

H_0 : Linear trends are parallel	
F (1, 31) = 0.18	
Prob > F = 0.6775	
Conclusion: Fail to reject H_0	

Source: Own Calculation using Stata 17.0

Having tested for the plausibility of the parallel trends assumption, a pivotal test for the validity of the DID estimation strategy, the results are reported in Table 5 above. Because the p-value ($p = 0.6775$) is greater than the level of significance (0.05), there is not enough evidence, leading to the failure to reject the null hypothesis, thereby confirming the validity of parallel trend and so the DID technique plausibility.

5. Conclusion and Policy Implications

Having utilised the macro-datasets, this study, sets out to assess the impact of AGOA on female labour supply. This objective was achieved with the help of the DID technique, well known for countering the problem of selection bias, especially in quasi-experiments where the treatment assignment is not random. To mitigate any potential violation of the parallel trends assumption and inequality between the number of countries in the sample and treatment groups, the entropy balancing (EB) procedure was used. This non-iterative balancing procedure assigns the weights that are imperative in constructing a ‘statistically similar’ counterfactual, thereby reducing any potential biases in the DID estimator (Cefalu *et al.* 2020).

From the summary of statistics, this study found that on average 63% and 33% of females partake in the labour force; for treated and control groups respectively. Further, despite fertility, life expectancy and foreign direct investment (FDI), other macroeconomic factors such as GDP per capita, inflation, unemployment, and trade openness determine female labour supply. Theoretically, these are plausible determinants and they affect female labour participation by means of different routes. This plausibility is also backed by a plethora of empirical evidence, ranging from micro, macroeconomic to political aspect of the economic discipline (Madanizadeh and Pilvar, 2019; Nordås, 2003).

Lastly, the empirical findings of this study show that AGOA had a positive effect on female labour force participation. These findings further suggest that the economies that are AGOA eligible experience a 10%-point increment in female labour force participation. This is robust under different specifications and not sensitive to inclusion of other determinants of FLFP.

5.1 Policy Implications

In line with theory, suggesting that trade is a critical determiner of female labour force participation, following the enactment of AGOA agreement, there has been relatively incremental trends in FLFPR

over time especially in AGOA eligible countries. Thereby suggesting that there is a significant increasing pattern of FLFPR or a sectoral change, that is, there are new entrants. The other possible channel is a shift from an informal sector such as the agricultural sector, to disseminate into the industrial sector.

In an effort to further attract more females into engagement in economic activities, more focus should be tailored to agricultural development and small-scale industry development as amplified by the NSDP II. In addition, AGOA's impact on FLFPR proves to be significant.

These findings infer that the initiatives by AGOA such as Trade Capacity Building (TCB) have proved to be pivotal. So, they should not cease but be improved because of their aggregated significant impact. Furthermore, the take-home that can be derived from the findings above is that there is a possible sectoral shift. Grounded on this possibility, the policymakers may capture this relatively well if the transition is well monitored, captured, and stored in different data formats, hence a need for improving the data collection tools and storage.

Lastly, the need for striving to remain AGOA eligible should be amplified because it helps economies utilise the potential workforce in an effort to grow such economies. To that effect, if they strengthen their institutions, improve rule of law and meet their AGOA-eligibility standards, they can thrive and experience growth via the well-known export-led hypothesis route. All these are vital channels to usher Africa into inclusive growth. It is highly anticipated that this would benefit the continent. Will it not be amicably amazing?

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Appendices

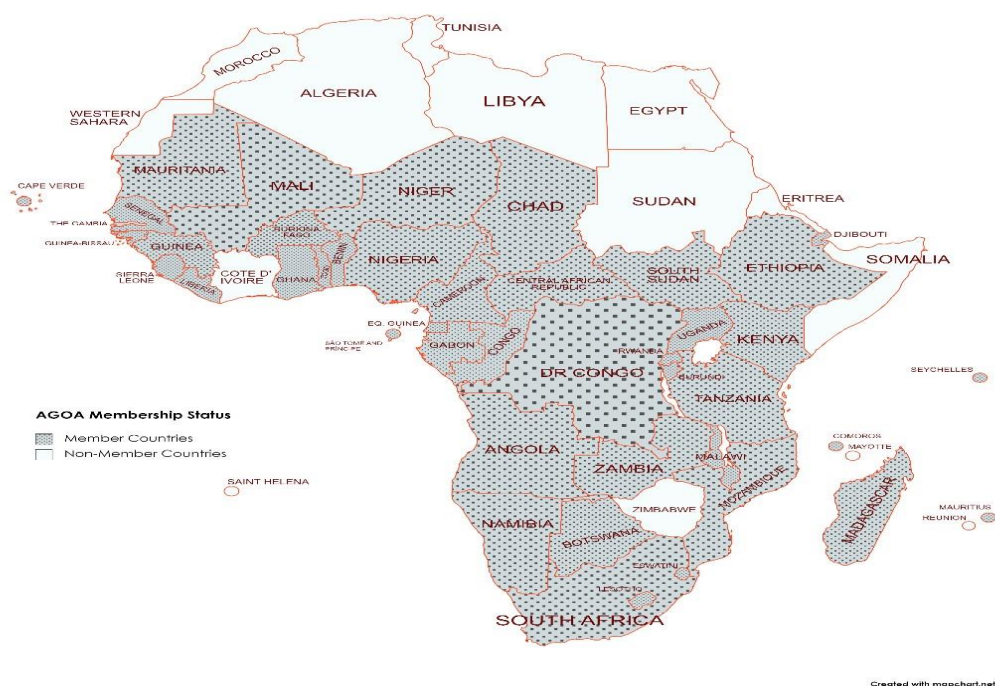


Figure 1: AGOA Membership Status of African Countries

Source: Author's design with [Mapchart.net](https://www.mapchart.net/)

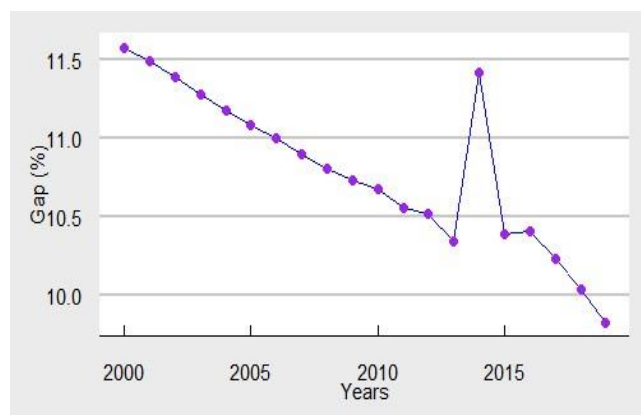


Figure 2a: The Gender Gap Chat USA

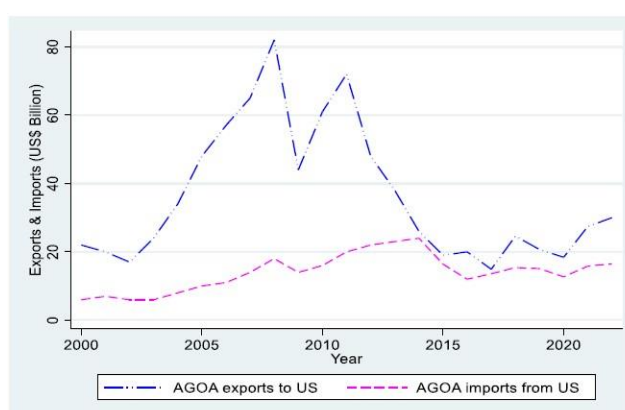


Figure 2b: AGOA Exports & Imports to the

Sources: Author's own with data sourced from a) WDI, b) <https://agoa.info/data/totaltrade.html>

	FLFPR	Educ	Rule of law	Fertility	Trade Openness	unemployment	life expectancy	inflation	FDI	Log GDP
FLFPR	1									
Education	-0,0453	1								
Rule of law	-0,3016*	0,2616*	1							
fertility	0,5231*	-0,5078*	-0,5312*	1						
Trade Openness	0,0513	0,3615*	0,1962*	-0,1469*	1					
Unemployment	-0,4847*	0,3134*	0,3552*	-0,5745*	0,3417*	1				
Life expectancy	-0,5937*	0,3404*	0,4782*	-0,7239*	-0,0772*	0,2588*	1			
Inflation	0,0351	-0,0553*	-0,0856*	0,0694*	-0,0349	-0,0369	-0,0495	1		
FDI	0,0296	0,0099	-0,0839*	0,0589*	0,1733*	-0,0162	-0,023	-0,021	1	
Log GDP	-0,5892*	0,3239*	0,3127*	-0,7153*	0,0848*	0,564*	0,5314*	-0,0526	0,0004	1

Figure 3: The Correlation Matrix

Source: Author's Own using Stata 17.0

I.II Trade and Gender Gap in Africa's Labour Market: Are Institutions a Friend or Foe?

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Abstract

Using data on 51 countries in Africa from 1995 to 2022, this study investigates the role of institutions in the trade-gender gap nexus. Panel data techniques, including the instrumental variables Generalised Method of Moments (IV-GMM), Fixed and Random Effect Models were used for analysis. The findings show that the effect of trade on gender gap is substantial when the influence of institutions is considered. On the basis of the level of development, it was found that the institutional environment moderates the role that trade plays in the gender-gap, and consequently that the role of trade on gender gap across countries differs based on the level of development. The study concludes that while some institutions are a foe, others are a friend in Africa. Based on the findings, it is recommended that African countries should strengthen their institutional environment in order to improve trade gains and reduce the gender gap in the continent.

Keywords: Africa, Gender gap, institutions, panel data analysis, trade.

JEL Classification Codes: F16; J16; J70; B52

1. Introduction

Trade affects gender equality in different ways, and could have a positive or negative impact on employment opportunities and labour participation, all of which can promote or reduce gender discrimination. Various channels have been found through which trade affects both men and women, including wages, real income, relative prices of commodities, consumption and employment. Essentially, it has been argued that women tend to be less able to benefit from the positive effects of trade. Consequently, until gender dimension of trade is taken into account, trade-led growth may be unable to address the disparity between male and female, especially in less developed economies, due to the disparity in accessing economic resources.

The centrality of institutions defined as “the humanly devised constraints that structure human interaction” (North, 1990, p. 3) has been emphasized in the literature. Institutions essentially provide a society’s incentive structures, and thus are critical to its economic performance, although its links to the gender gap has not received appreciable attention. However, the criticality of institutions as a vehicle for streamlining gender inequality has been emphasized. For example, the 2030 Agenda emphasizes the role of reforms that promote women’s equal access to economic resources. Similarly, the United Nations Development Program points out the importance of institutional quality in reducing the gender gap, in its Gender Equality Strategy (UNDP, 2014), towards meeting the Sustainable Development Goals by 2030. This way, countries are encouraged to initiate policies aimed at reducing women’s unpaid work, promote equal access to decent employment opportunities, including developing and implementing budget processes which are gender-sensitive (UNDP, 2018).

However, it is known that certain institutional aspects are related to the labour market characteristics. According to the World Bank (2015), women’s rights are limited to assets ownership especially in developing countries, with respect to land, basic necessities of life including food, water and shelter. Thus, property rights which promote women’s economic empowerment though enhancing their earnings capacity and livelihoods are critical in securing the place of women in the community and the world (Oduro & Van Staveren, 2015). In many countries, women face several discriminations in the political, cultural, and economic spheres, which are worsened under a poor institutional architecture. For instance, where corruption is endemic, women are severely constrained in accessing credit and markets (Hossain, Musembi, & Hughes, 2010), which make them prone to harm and abuse (Nyamu-Musembi, 2007). Similarly, where institutions are weak, public resources are often poorly allocated, a situation that adversely affects vulnerable groups especially women, all of which contribute to gender inequality (Fontanella, Sarra, & Di Zio, 2020). In addition, women are often at the receiving end in places where conflicts and terrorism are rife and where the state instruments are weak and often ineffective in dealing with them, conditions that have had an adverse effect on the way women are viewed and treated (Najimi, 2018).

This study is a major contribution to the trade-gender gap nexus from an institutional perspective. The empirical findings on the trade–gender gap nexus are inconclusive. While some investigations concluded that trade reduces the gender gap (e.g., Bussmann, 2009; Kis-Katos et al., 2017; Besedes et al., 2021), some have found that the gender-gap is increased by trade (e.g., Cooray et al., 2012; Meschi et al., 2016), while others have reported that the trade-gender gap nexus is complex (e.g., Meyer, 2006; Li, Su, Tao, & Hao, 2019). Existing investigation of gender issues hardly considered

the effect of the interaction between trade and institutions on the gender-gap. Importantly, most of the existing investigations on the impact of trade on the labour market are mainly on the overall effect on employment, while those on the gender gap in developing economies are scanty. Additionally, previous studies did not address the effect of the interaction between institutions and trade on gender gap. Importantly, results reported in studies examining the trade–gender gap nexus are inconclusive, necessitating further investigations.

From the foregoing, the study examines the role of institutions in the trade-gender gap nexus. Following the introduction, the methodology is presented in section two.

2. Methodology

2.1 Data Sources

The study used panel data from **51** countries in Africa for the period 1995–2022, based on availability of data. The list of countries is presented in Appendix 1. The variables used and how they were measured including data sources are presented in Table 1.

Table 1: Variables, measurement and sources of data

Variable (acronym)	Measurement	Source	
Genger-gap (ggap)	Difference between male and female labour force participation rates	Computed based on data from ILO (2023)	
<i>Trade indicators</i>			
Total trade (totr)	Trade (% of GDP)	World Bank (2023)	
Goods trade (gtr)	Merchandise trade (% of GDP)	World Bank (2023)	
Trade in services (tserv)	Trade in services (% of GDP)	World Bank (2023)	
<i>Institutions indicators</i>			
Property Rights (propr)		Heritage (2023)	Foundation
Business Freedom (bfree)		Heritage (2023)	Foundation
Investment (invfree)	Freedom	Heritage (2023)	Foundation
Financial (finfree)	Freedom	Heritage (2023)	Foundation
Trade Freedom (ltfree)		Heritage (2023)	Foundation
Government (govint)	Integrity	Heritage (2023)	Foundation
<i>Control variables</i>			
Fertility rate (frate)	The number of births per woman	World Bank (2023)	

GDP per capita (rgdp)	GDP per capita, PPP 2017=100WDI	World Bank (2023)
Urbanization rate (upop)	Urban population (% of total population)	World Bank (2023)

Source: Own compilation

2.2 Model Specifications and Technique of Data Analysis

Two models are estimated in the study. In Model 1, the effect of trade on gender gap is specified as follows:

$$\text{Model 1: } GCAP_{it} = \alpha_0 + \alpha_1 TRADE_{it} + \beta X_{it} + \varepsilon_{it} \quad (1)$$

where $GCAP_{it}$ symbolizes gender gap, $TRADE_{it}$ denotes the trade variables (total trade, goods trade, and service trade) and X_{it} is a vector of control variables which influence labour market outcomes (fertility rate, GDP per capita and urbanisation rate) and ε_{it} is the error term assumed to follow a white noise process. The subscript i represent the cross-sectional unit (the individual country) while t denotes the year.

To investigate the role of institutions in the trade-gender gap nexus, Model 2 is specified, by introducing both the institutions variable as well as the interaction variables as follows:

$$\text{Model 2: } GCAP_{it} = \alpha_0 + \alpha_1 TRADE_{it} + \alpha_2 INST_{it} + \alpha_3 TRADE * INST_{it} + \beta X_{it} + \varepsilon_{it} \quad (2)$$

where $INST_{it}$ denotes the institutions variables (Property Rights, Business Freedom, Investment Freedom, Financial Freedom, Trade Freedom, and Government Integrity), $TRADE * INST$ represents the interaction variables between each of the trade variables with that of the institutions variable. Other terms are as previously defined in equation 1.

Gender gap was measured by the difference between male female labour force participation rates, following the extant literature (see for example, Erten & Metzger 2019; Yina & Choi, 2023). Data on the male labour force participation rates are missing for most of the years for several countries. To overcome this problem, it was calculated by deducting the female labour force participation rates (which are available) from the total labour force participation rates. The independent variables used are the trade indicators (total trade, goods trade, and service trade) and the institutions indicators. The control variables (based on the extant literature) are fertility rate, education level, GDP per capita and urbanisation rate. Data on education (such as mean years of schooling) is not available for most of the countries in the sample and for very few years where available at all, and consequently, the education variable was not included in the regression. Additionally, the sample was classified into low-income economies (those with a GNI per capita of \$1,135 or less), lower middle-income economies (those with a GNI per capita between \$1,136 and \$4,465), upper middle-income economies (those with a GNI per capita between \$4,466 and \$13,845) and high-income economies (those with a GNI per capita of \$13,846 or more), based on World Bank country classification. The aim was to investigate whether the effect of institutions in the trade-gender gap nexus varies by income levels in Africa. According the countries in Africa were classified into Low-income, lower middle-income and Upper middle-income countries. The only country in the high-income countries (Seychelles) is not part of the study

as data is not available for most of the variables and for several years. The list of the classification is presented in Appendix 2.

The issue of endogeneity may exist between trade and gender gap because of possible reverse causality. This study used the instrumental variables Generalised Method of Moments (IV-GMM) estimator, in order to address the issue of endogeneity. In estimating the effect of trade on gender gap 1-2 lagged values were generally used as instruments for the trade variables, consistent with prior investigations (see, Li, Zeng, Ye & Guol; Yina & Choi, 2023).

In order to evaluate the robustness of the GMM results, fixed effect regression was deployed. Finally, the *J* statistic of Hansen (1982) was used to assess the validity of the chosen instruments. As the Hansen tests evaluate the entire set of overidentifying restriction and can suffer from low power especially in models containing a very large set of excluded instruments, including problems associated with the need to test the validity of a subset of instruments, this study employed the “distance difference” statistic (Ruud, 2000), or the *C* statistic (Eichenbaum et al., 1988; Hayashi, 2000). By performing the *C* test, one is able to examine the variables considered exogenous in the model and to ascertain whether or not they have been properly considered as exogenous. Additionally, each of the variables considered endogenous was tested for exogeneity in order to determine whether the hypothesis of their exogeneity is supported by the data employed. The *C* test in this case is aimed at examining whether the variable can be treated as exogenous rather than as an endogenous variable in the model. Consequently, such a test can be used to determine the appropriateness of the IV methods in the extant case and is thus equivalent to the Durbin–Wu–Hausman test. The study also tested for weak instruments, following the tests proposed by Stock and Yogo (2005), namely the *F*-statistic (reported under the Cragg–Donald Wald *F* statistic) and the Wald test statistic (reported under the KleibergenPaap *rk* Wald *F* statistic) respectively. However the use of the *rk* Wald statistic should be preferred, as it is superior to the Cragg–Donald *F* statistic in the presence of autocorrelation, heteroskedasticity, or clustering (Baum et al., 2007) and was thus used in the study.

3. Results and Discussion

The descriptive statistics are presented in Appendix 3 and are not discussed to conserve space. The results of the effect of trade on gender gap (Model 1) are presented in Table 2. A statistically significant negative relationship between trade and gender gap, implying that trade reduces gender gap. Whereas fertility rate (*lfrate*) and urbanization (*lupop*) significantly reduce gender gap, real income (*lrgdp*) tends to significantly widen it.

3.1 Role of Institutions in the Trade-Gender Gap Nexus

We next examine the role of institutions in the trade-gender gap nexus, and present the empirical estimates in Table 3. There exists a statistically significant negative relationship between trade (total trade, goods trade and services trade) and gender gap, implying that trade reduces gender gap, under the underlying institutional contexts. As shown in Table 3, the effect of trade on gender gap is substantial when the influence of institutions is considered. All the coefficients of trade indicators (total trade, goods trade and services trade) presented in Table 3 are much larger in comparison to those reported in Table 2. Fertility rate (*lfrate*) increases gender gap but not significant in the presence

of institutions (Table 3), indicating that institutions tend to alter the gender-gap reducing impact of fertility rate considering the results in Table 2.

Considering the role of institutions in the trade-gender gap nexus, real income (*lrgdp*) tends to significantly widen gender gap as shown by the results in Table 3, consistent with the conclusions reached in Table 2, an indication that real income tends to widen the gender gap.

Urbanization (*lupop*) is not a significant factor influencing gender gap when the influence of institutions comes into play (Table 3), in contrast to their absence, indicating that institutions tend to moderate the significant gender-gap reducing effect reported in Table 2. The direct effect of institutions reported in Table 3 indicates that property rights (*lpropr*) significantly increases gender gap for total and goods trade. However, when the interaction term between trade and property rights are examined, it can be seen that they significantly reduce gender gap for total trade and goods trade (Table 2). This means that property rights protection works with trade to reduce the gender gap. Business freedom (*lbfree*) significantly reduces gender gap for total and goods trade. This implies that business freedom benefits gender gap. However, the interaction term between trade and business freedom significantly widens gender gap for total trade and goods trade. Investment freedom (*linvfree*) significantly reduces gender gap for goods and services trade. The interaction term between trade and investment freedom (*ltotr*linvfree*) significantly widens gender gap for goods trade and services trade.

Financial freedom (*lfinfree*) is not a significant variable influencing gender gap. The interaction term between trade and financial freedom widens gender gap but not significant for total trade and goods trade while for services trade, the gender gap is significantly reduced. Trade freedom reduces gender gap but is not significant. The interaction term between trade and trade freedom widens gender gap but not significant. However, there is a substantial shift in the magnitude of the coefficients when we compare the coefficients of *ltfree* and the interaction terms between trade and trade freedom (*ltotr*ltfree*, *lgtr*ltfree* and *ltserv*ltfree* respectively). Government integrity (*lgovint*) significantly widens gender gap for total and goods trade. The interaction term between trade and government integrity significantly reduces gender gap for total trade and goods trade, which implies that government integrity is critical when considering the effect of trade on gender gap.

The diagnostic statistics across all the specifications are quite satisfactory. First, all the Fstatistics indicate joint significance of the explanatory variables across the specifications. Second, the null hypothesis of the Hansen *J* test is not rejected in all cases, which point to the appropriate choice of instruments and consequently on the validity of the estimates. Furthermore, the endogeneity test (Hansen's J-Statistic) indicates that the null hypothesis that each of the endogenous variables can be treated as exogenous is strongly rejected by the data, implying that the model cannot be consistently estimated with the OLS technique, thus suggesting the appropriateness of the use of IV-GMM for estimation. Consequently, the endogenous variables have been properly treated in the estimated models. Finally, the Kleibergen-Paap rk Wald F statistics exceed the tabulated critical values, indicating that the null that the size of the test is unacceptably large (versus 5%) is rejected in each case.

Table 2: Effect of Trade on Gender Gap

Dependent variable: lggap

Variable	IV-GMM			Fixed Effect		
	1	2	3	4	5	6
ltotr	-.4404854* (.0786378)			.2317762* (.0458449)		
lgtr		-.4115501* (.0682287)			.2176378* (.0346727)	
ltserv			-.2448361* (.0573606)			-.0609462*** (.033056)
lfrate	-.6459709* (.0958579)	-.649894* (.0829624)	-.8366094* (.1228352)	.1136405 (.1414765)	.005543 (.1248185)	-.2028162 (.1593517)
lrgdp	.3962809* (.0551186)	.3930153* (.0459299)	.3262277* (.0683965)	.226578* (.0716011)	.0971183*** (.054465)	.2215546** (.0881221)
lupop	-.3172885* (.0914073)	-.2482388* (.0781104)	-.2199105** (.0916755)	-.23061*** (.1321815)	-.2205859*** (.1232504)	-.4837367* (.1549993)
Constant term	2.581771* (.5199537)	2.141277* (.4045688)	1.8084* (.6164432)	-.2305012 (.8048821)	1.053776 (.6653124)	2.27446** (.9376017)
F-statistic	62.00 (0.0000)	85.50 (0.0000)	64.36 (0.0000)	10.65 (0.0000)	11.13 (0.0000)	4.13 (0.0025)
<i>Hansen's J:</i>						
Overidentification test	1.915 (0.1664)	2.205 (0.1376)	1.854 (0.6032)			
Endogeneity test	3.753 (0.0527)	4.072 (0.0436)	3.281 (0.0701)			
Kleibergen-Paap rk						
Wald F statistic	1763.246	2172.110	1590.819			
No of observations	1047	1155	852	1,135	1,245	1,043

Note: Robust standard errors are presented in parenthesis. *, ** and *** indicate significant at 1%, 5% and 10% respectively. S-Y denotes the Stock-Yogo weak ID test critical values: 10% maximal IV size 16.38; 15% maximal IV size 8.96; 20% maximal IV size 6.66; 25% maximal IV size 5.53 Source: Own computations.

Table 3: The Role of Institutions in the Trade-Gender Gap Nexus

Dependent variable: lggap

Variable	IV-GMM			Fixed Effect		
	1	2	3	4	5	6
ltotr	−47.19117*** (26.94397)			1.995081* (.6748076)		
lgtr		−77.38576*** (44.35847)			.6735777 (.5846323)	
ltserv			−26.0533 (18.85323)			.7651719 (.5564388)
lfrate	.1339364 (.4041253)	.1196455 (.4447132)	.5580081 (.6265727)	.083797 (.1525561)	.1336112 (.1397848)	−.3999928** (.167797)
lrgdp	.6876828* (.1812055)	.69785* (.2445049)	.2513627** (.1279358)	.1954997* (.0742147)	.1467861** (.0685345)	.1188742 (.0958164)
lupop	−.2215405 (.1478009)	−.1874504 (.1845651)	.3246322 (.379476)	−.2291457 (.145675)	−.1186929 (.1386914)	−.6000175* (.1682363)
lpropr	4.259505*** (2.375405)	6.043739** (2.805685)	1.763257 (1.251305)	.3420273 (.2909172)	.0955597 (.2235323)	−.1297508 (.1663254)
lbfree	−39.36505*** (21.5665)	−52.50104*** (28.46987)	−9.219612 (7.154356)	−.2448104 (.576944)	−.6946341 (.479218)	−.288421 (.3016062)
linvfree	−.7566693 (1.438969)	−4.770608*** (2.670264)	−2.154782* (.6900717)	−.1961343 (.2143607)	−.2092433 (.2317031)	.2215451 (.1864298)
lfinfree	−.9398065 (1.505129)	−2.334504 (2.276389)	.7981138 (.6094145)	−.4524318 (.378935)	−.2222563 (.2608495)	−.0107502 (.176487)
ltfree	−16.16811 (10.92303)	−27.73551 (17.91982)	−7.614824 (6.495648)	1.329919* (.3870985)	.4670016*** (.2844876)	1.043939* (.2201583)
lgovint	4.777199** (2.271743)	6.58039*** (3.627853)	.0252473 (1.56025)	1.08916* (.319591)	1.062545* (.236417)	−.2784652*** (.1602431)
ltotr*lpropr	−.990951*** (.5715825)			−.0798378 (.0696831)		

ltotr*lbfree	9.308577*** (5.13456)		.0482101 (.1373071)	
ltotr*linvfree	.2665975 (.3548098)		.0582131 (.0536239)	
ltotr*lfree	.1752039 (.3630645)		.0614579 (.0919305)	
ltotr*ltfree	3.801482 (2.632312)		-.3326957* (.0929246)	
ltotr*lgovint	-1.170696** (.5639192)		-.2545332* (.0802753)	
lgtr*lpropr		-1.476828** (.7038924)		-.0260876 (.0572071)
lgtr*lbfree		13.24891*** (7.188507)		.15801 (.1226326)
lgtr*linvfree		1.187002*** (.6452421)		.0614626 (.0595297)
lgtr*lfree		.604555 (.600236)		.021387 (.0678437)
lgtr*ltfree		7.03898 (4.598875)		-.1348529*** (.0730561)
lgtr*lgovint		-1.730538*** (.9755034)		-.2661607* (.0635744)
ltserv*lpropr		-.392969 (.3743216)		.0477253 (.0608335)
ltserv*lbfree		3.660659 (2.867997)		.1112802 (.111733)
ltserv*linvfree		.8257584* (.2438265)		-.0683021 (.0704869)
ltserv*lfree		-.4929698** (.2266094)		-.0642145 (.0614806)
ltserv*ltfree		2.658316 (2.369797)		-.3703337* (.0767181)
ltserv*lgovint		.1422352 (.5838622)		.1578297* (.0611964)

Constant term	196.3688 ***	302.7997***	64.97164	−6.455577**	−.8047067	1.387734
	(111.0514)	(172.83)	(47.05718)	(2.90488)	(2.449951)	(1.85647)
F-statistic	8.45	5.11	12.02	6.31	5.77	4.77
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
<i>Hansen's J:</i>						
Overidentification test	1.001	0.124	0.351			
	(0.3170)	(0.7243)				
Endogeneity test	5.284	9.444	3.026			
	(0.0215)	(0.0021)	(0.0819)			
Kleibergen-Paap rk	3.576	1.598	5.809			
Wald F statistic						
No of observations	967	1064	813	1,026	1,121	950

Notes: Robust standard errors are presented in parenthesis. *, ** and *** indicate significant at 1%, 5% and 10% respectively. Source: Own computations.

3.2 Effect of Trade on Gender gap (based on level of development)

We next analyze the effect of trade on gender gap, based on the level of development. Due to the number of countries and observations in each case, the Fixed and Random effects Models were estimated and the results are presented in Table 4. Using the Hausman test, the fixed effect models are analyzed for Low-income countries (columns 1, 2 and 3 of Panel A) and Lower middle-income countries (columns 1, 2 and 3 of Panel B), while for Upper middle-income countries, the random effects models are analyzed for goods trade and services trade (columns 4 and 6 of Panel C), while the fixed effect model is analyzed for goods trade (column 2 of Panel C).

Total trade significantly widens the gender-gap in low income and lower-middle income countries in Africa, while it reduces the gender-gap in upper-income countries. However, the magnitude of the effect is more in lower income than in lower middle income countries. Goods trade widens the gender-gap in low-income and lower middle countries and reduces the gendergap in upper middle-income countries. However, goods trade tends to have more effect in widening the gender-gap in low income than in lower middle income countries in Africa. Services trade reduces the gender-gap in the sub-group of countries irrespective of the level of development. It is however statistically significant in upper middle-income countries. Fertility rate significantly reduces the gender-gap in low-income countries while increasing it in lower middle-income and upper middle-income countries respectively. The increase in the gender-gap from the fertility rate effect is higher in upper middle-income than in the lower middle-income countries. Interestingly, real income has no significant effect on the gender-gap inn low-income countries compared to lower middle-income countries, where it tends to widen the gender-gap significantly, while in the case of upper middle-income countries, it significantly reduces the gender-gap. Urbanization rate significantly reduces the gender-gap in low income and upper middle-income countries in contrast to lower middle-income countries where it significantly widens it. The gender-gap reducing effect of urbanization rate is more in upper middle-income countries when the focus is on total trade and goods trade, compared to services trade where the effect is more in low-income countries.

In Table 5, we consider the role of institutions in the trade-gender gap nexus (based on level of development). The Hausman test indicates the choice of the fixed effect models for all the sub-groups of countries. Consequently, columns 1, 2 and 3 are analyzed for Low-income countries (Panel A), Lower middle-income countries (Panel B), and Upper middle-income countries (Panel C) respectively. For low-income countries, the effect of trade on the gender-gap is negative for total and goods trade (i.e. the gender-gap is reduced) and positive for services trade (i.e. the gender-gap is increased) although not statistically significant. As earlier reported (see panel A of Table 4), total trade and goods trade significantly reduces the gender-gap. For low-income countries in Africa therefore, the institutional environment alters the role that trade plays in the gender-gap. In the extant case, institutions change the relationship between trade and the gender-gap.

For the control variables, fertility rate, real income and urbanization reduce gender-gap in low-income countries and are statistically significant with the exemption of real income, in contrast to the estimated coefficients reported in Table 5 (where the role of institutions in the trade-gender gap nexus is considered), the magnitude of the coefficients reported in Table 5 are larger for the statistically significant variables (i.e. fertility rate and urbanization), suggesting that the effect of effects of fertility

rate and urbanization are higher, given the institutional environment. For the low-income countries (Panel B of Table 5), the effects of fertility rate, real income and urbanization are positive, indicating their gender-gap widening impacts. The effects are also statistically significant except for real income (when services trade is examined). It is noteworthy that the signs of the coefficients are not different from those observed in Panel B of Table 4 (where the institutions variables are absent). However, the coefficients in Table 5 are in most parts higher, suggesting possible biases in coefficients when institutions are not controlled for in the trade-gender gap nexus. Finally, considering the effect of the control variables in the upper middle-income countries presented in Panel C of Table 5, both real income and urbanization significantly reduce the gender-gap. The signs are unchanged if institutions are not a part of the regression (shown in Panel C of Table 4). Importantly, the gender-gap widening effects of fertility rate are higher without institutions when the results in Tables 4 and 5 are contrasted, suggesting that institutions reduce the widening effect of fertility rate on the gendergap. Similarly, the gender-gap reducing effects of real income and urbanization are higher when institutions are part of the estimation when we compare the coefficients in Panels C of Tables 4 and 5 respectively.

We next examine the institutions variables and their interaction term with the various trade indicators. First we consider the results from low-income countries presented in Panel A of Table 5, which indicate that property rights, business freedom, investment freedom and trade freedom widen the gender-gap, while financial freedom and government integrity widen it, when the focus is on total trade and goods trade (columns 1 and 2). In the case of services trade (column 3), property rights, business freedom, investment freedom and trade freedom widen the gender gap while financial freedom and government integrity reduce it. Various trade-institutions interaction terms significantly widen the gender-gap including the interactions terms between total trade and investment freedom, between total trade and trade freedom (column 1), between goods trade and property rights, between goods trade and trade freedom (column 2), and between services trade and government integrity (column 3). Gender-gap is significantly reduced by the interactions terms between total trade and investment freedom, between total trade and government integrity (column 1), between goods trade and financial freedom, between goods trade and government integrity (column 2), between services trade and property rights, and between services trade and investment freedom (column 3).

On the results in lower-middle countries shown in Panel B of Table 5, we find that property rights, trade freedom and government integrity are significant factors that increase the gender-gap when we consider total trade and goods trade (columns 1 and 2). For services trade, property rights, financial freedom significantly reduce the gender-gap, while trade freedom significantly increases it. Whereas the effect of the interaction terms on the gender-gap is positive (indicating that the gender-gap is increased) between total trade and financial freedom (column 1), between goods trade and financial freedom (column 2), and between services trade and property rights (column 3), the effect is negative (indicating that the gender-gap is reduced) for the interaction between total trade and property rights, between total trade and trade freedom and between trade and government integrity (column 1), between goods trade and government integrity (column 2), between services trade and trade freedom (column 3). What the results imply is that some institutions are a foe while some are a friend in the extant case. Overall, the results linking trade to a contraction of the gender gap supports previous findings including Bussmann (2009), Kis-Katos et al. (2017) and Besedes et al. (2021). However, it

needs to be noted that there may be several underlying factors which tend to make the trade-gender gap nexus complex. Given the institutional environment, the relationship may not be straightforward and thus may be complex in line with previously held views by Meyer (2006) and Li et al. (2019). The diagnostic statistics across all the specifications indicate that the F-statistics in the Fixed effect models and the Wald chi2 statistics in the Random effect models (where applicable) indicate joint significance of the regressors.

Table 4: Effect of Trade on Gender gap (based on level of development)

Dependent variable: lggap

Panel A: Low-income countries

	FEM			REM		Hausman
Variable	1	2	3	4	5	6
ltotr	.3581715*			.3310997+*		10.86
	(.090564)			(.089995)		(0.0282)
lgtr		.3883768*			.3705356*	24.24
		(.0699718)			(.0703442)	(0.0001)
ltserv			-.0879228			-.0944628***
			(.0568445)			(.0575696)
lfrate	-1.126668*	-.699429**	-2.31868*	-.9084423*	-.5630372**	-1.811856*
	(.3437317)		(.3448723)	(.3323757)	(.2722997)	(.3265365)
		(.2812211)				
lrgdp	.1403785	.047788	.245738	.2323637	.1297253	.3041295***
	(.158312)	(.1281911)	(.174244)	(.1550956)	(.1268427)	(.1721629)
lupop	-.958681*	-.760551*	-2.382961*	-.8801083*	-.7370321*	-1.88846*
	(.2562173)	(.2327699)	(.3297578)	(.2383401)	(.2145085)	(.290598)
Constant term	4.452364**	3.643852**	11.88673*	3.180526***	2.706034***	8.912037*
	(1.812099)	(1.538773)	(1.982734)	(1.766842)	(1.496887)	(1.894487)
F-statistic –FEM/	10.83	13.35	17.29	40.12	50.08	58.33
Wald chi2–REM	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
No of	404	463	359	404	463	359
observations						

Panel B: Lower middle-income countries						
	FEM			REM		Hausman
Variable	1	2	3	4	5	6
ltotr	.1396323** (.0580089)			.1342612** .0576781		19.94 (0.0005)
lgtr		.0725074*** (.0441967)			.0676351 (.0442227)	120.68 (0.0004)
ltserv			-.0039811 (.0429298)			-.0020538 (.0426857)
lfrate	.7067053* (.1661857)	.6983561* (.158701)	.8127753* (1879951)	.569491* (.1616358)	.5793407* (.154685)	.6260502* (.1811764)
lrgdp	.2686214* (.1016339)	.2637628* (.0984036)	.2185105*** (.1219187)	.2839278* (.1004759)	.2715034* (.0971592)	.2174308*** (.119009)
lupop	.5801689* (.20528)	.5399155* (.1859815)	.8403389* (.2181782)	.4634836** (.1968508)	.4599851* (.1786474)	.715095* (.2057866)
Constant term	-4.04763* (1.019968)	-3.526181* (.9240376)	-4.209225* (1.101483)	-3.507619* (1.005658)	-3.076549* (.9174819)	-3.405324* (1.074729)
F-statistic –FEM/ Wald chi2–REM	9.03 (0.0000)	9.32 (0.0000)	9.99 (0.0000)	33.24 (0.0000)	34.86 (0.0000)	36.59 (0.0000)
No of observations	558	597	532	558	597	532

Panel C: Upper middle-income countries

Variable	FEM			REM		Hausman
	1	2	3	4	5	6
ltotr	-.0022819 (.0352699)			-.0014845 (.0385713)		3.06 (0.5482)
lgtr		-.1424462* (.0253913)			-.1389342* (.0279825)	7.94 (0.0938)
ltserv			-.0586535** (.0251367)			-.0618765** (.0285025)
lfrate	.8372577* (.0756788)	1.072216* (.0767055)	.8873701* (.0890574)	.7944498* (.0803859)	.9941097* (.0818104)	.851265* (.0991881)
lrgdp	-.1553421* (.0332939)	-.0057188 (.0205817)	-.1523438* (.0426686)	-.1542906* (.0363033)	-.0058541 (.0227046)	-.125262* (.0481587)
lupop	-1.09895* (.064986)	-.8828728* (.0660432)	-1.147973* (.0690335)	-1.102333* (.0699806)	-.9069889* (.0713652)	-1.150344* (.0778166)
Constant term	.201537* (.431052)	5.176682* (.3225432)	7.517787* (.5407627)	7.243212* (.4810024)	5.368886* (.3684814)	7.179572* (.6210888)
F-statistic –FEM/ Wald chi2–REM	252.21 (0.0000)	243.80 (0.0000)	234.01 (0.0000)	813.57 (0.0000)	773.69 (0.0000)	685.91 (0.0000)
No of observations	173	185	152	173	185	152

Note: Standard errors are presented in parenthesis. *, ** and *** indicate significant at 1%, 5% and 10% respectively. Source: Own computations

Table 5: The Role of Institutions in the Trade-Gender Gap Nexus (based on level of development) Dependent variable: lggap
Panel A: Low-income countries

Variable	FEM			REM			Hausman
	1	2	3	4	5	6	
ltotr	-.71185 (1.768866)			4.409234 (3.041588)			323.74 (0.0000)
lgtr		-.1307244 (1.446367)			.3838636 (1.836549)		1881.45 (0.0000)
ltserv			1.15851 (1.487161)			1.135493 (3.153044)	484.83 (0.0000)
lfrate	-1.256132* (.3840214)	-.808629* (.3060046)	-2.607339* (.339271)	2.624303* (.3335618)	.758556** (.3022385)	2.96693* (.3435024)	
lrgdp	-.1075353 (.1689447)	-.1947845 (.14151)	-.1006113 (.1796327)	1.277064* (.1790913)	.6404035* (.1473204)	1.736078* (.1963591)	
lupop	-1.035463* (.2779761)	-.9003514* (.2500951)	-3.036544* (.3356492)	-.3890413* (.1382701)	-.6908433* (.1580385)	-.4774405* (.1507189)	
lpropr	-.7828594 (.7515192)	-1.458248** (.5712269)	.8423439* (.3211049)	-2.172171 (1.595723)	-2.782424* (.7500904)	-.3694088 (.7213204)	
lbfree	-.0198039 (1.291949)	-.1769356 (.9762442)	.2242831 (.6792105)	-.9543595 (2.527846)	-.8817932 (1.255643)	.9603748 (1.570274)	
linvfree	-.779403*** (.3793778)	-1.572166* (.4412017)	1.185369* (.4384891)	-.2289125 (.7663767)	-1.798359* (.5867736)	-.0773496 (.8504102)	
lfinfree	3.670858* (.893191)	3.167622* (.5826525)	-.4063413 (.4154212)	-.1916581 (1.71179)	4.071961* (.7533275)	.0673593 (.8770815)	
ltfree	-4.17419* (1.215677)	-1.812755** (.7672749)	.0366585 (.5334162)	5.038852** (2.201218)	-.7600372 (1.000633)	1.415558 (1.050186)	
lgovint	1.510851** (.6663409)	1.504432* (.477626)	-1.091174* (.3549016)	2.931842** (1.303653)	2.241865* (.6102275)	-1.715324** (.7440272)	
ltotr*lpropr	.1869669 (.1905621)			.6656699*** .4059728			
ltotr*lbfree	-.0431224 (.3236304)			-.0890119 (.6328977)			

ltotr*linvfree	.1820454*** (.1034715)			.0799459 (.2036817)		
ltotr*lfree	-1.052088* (.232727)			-.0059093 (.4402496)		
ltotr*ltfree	1.166014* (.3263801)			-1.260987** (.5937577)		
ltotr*lgovint	-.3809975** (.1724424)			-.6902208** (.3380163)		
lgtr*lpropr		.389638** (.1591244)			.7917762* (.2084923)	
lgtr*lbfree		-.0276823 (.2656412)			.1104978 (.3417219)	
lgtr*linvfree		.4259181* (.1212401)			.4910296* (.1613746)	
lgtr*lfree		-.9879186* (.1652042)			-1.236879* (.2122741)	
lgtr*ltfree		.5626565** (.2281566)			.2405347 (.2978941)	
lgtr*lgovint		-.3988303* (.13409)			-.6047639* (.1706814)	
ltserv*lpropr			-.362974* (.1276537)			.415606 (.2891684)
ltserv*lbfree			-.1931297 (.2620122)			-.7631806 (.5990603)
ltserv*linvfree			-.4683481* (.1717608)			-.0433625 (.3459207)
ltserv*lfree			.1120365 (.1756662)			-.2138698 (.3558555)
ltserv*ltfree			.071192 (.2035351)			-.3980367 (.4119835)
ltserv*lgovint			.5236763* (.1385961)			.8660625* (.2910186)
Constant term	11.92791*** (7.173703)	9.578129*** (5.2773)	13.94654* 4.427445	-25.28878** (11.91175)	-.977499 (6.445726)	-16.88687** (8.376117)

F-statistic –FEM/	6.78	8.56	9.69	280.56	111.50	224.79
Wald chi2–REM	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
No of observations	345	404	321	345	404	321

Panel B: Lower middle-income countries

Dependent variable: lggap

Variable	FEM			REM			Hausman
	1	2	3	4	5	6	
ltotr	2.389161** (.9674333)			2.251767** (.9722583)			351.83 (0.0000)
lgtr		1.529805*** (.78465)			1.163372 (.7966963)		23.54 (0.1001)
ltserv			-.0546248 (.7145908)			-.0488816 (.7141655)	21.76 (0.0097)
lfrate	.6949335* (.1778316)	.7709034* (.1718778)	.6547698* (.2096824)	.5386509* (.1718889)	.5438026* (.1654659)	.4925537** (.1999358)	
lrgdp	.285288* (.10485)	.3013637* (.103124)	.1830257 (.1335439)	.3029134* (.1034769)	.3101734* (.1018187)	.2003471 (.1295305)	
lupop	.8664915* (.2254429)	.8802534* (.2054939)	1.03773* (.2509524)	.7080407* (.2143666)	.7023323* (.1924331)	.885579* (.2334127)	
lpropr	.7939784** (.3608585)	.4469047 (.2912107)	-.3635416*** (.2082529)	.7595771** (.3633082)	.4309504 (.2976863)	-.3670124*** (.2084777)	
lbfree	.8327794 (.8049646)	.7448687 (.7325684)	-.1919392 (.4452951)	.8234461 (.8087369)	.6750149 (.7472643)	-.172229 (.4446286)	
linvfree	-.6053209 (.4564157)	.0253793 (.3270365)	.0846729 (.24375)	-.733442*** (.4576351)	-.0545707 (.334263)	.0125088 (.242935)	
lfinfree	-1.108405*** (.572316)	-1.087829* (.4104523)	-.5465383** (.2450076)	-1.057089*** (.5751086)	-1.112744* (.4195151)	-.4765488** (.2413596)	
ltfree	.8911344***	.3154652	.8131675*	.9289419***	.2490668	.8458225*	

	(.5437718)	(.3893582)	(.2727185)	(.5476688)	(.3980477)	(.2722993)	Note:
lgovint	1.848103*	1.158215*	.0372633	1.79772*	1.068085*	.0327205	
	(.4780291)	(.3883774)	(.1729307)	(.4811601)	(.3963446)	(.1732047)	
ltotr*lpropr	-.1753871**			-.1655875**			
	(.0837129)			(.0842651)			
ltotr*lbfree	-.1662648			-.1598352			
	(.1841792)			(.1850907)			
ltotr*linvfree	.1692029			.1989548***			
	(.1092146)			(.1095113)			
ltotr*lfree	.2208295***			.2067806			
	(.1365915)			(.1372384)			
ltotr*ltfree	-.236828***			-.2459272***			
	(.1309841)			(.1319277)			
ltotr*lgovint	-.4385549*			-.4234768*			
	(.1178481)			(.1185815)			
lgtr*lpropr		-.1052952			-.0986586		
		(.0710553)			(.0726171)		
lgtr*lbfree		-.1690032			-.1447907		
		(.1800342)			(.1836261)		
lgtr*linvfree		.0150785			.0332462		
		(.0821579)			(.0839803)		
lgtr*lfree		.2368438**			.24105**		
		(.1058956)			(.1082474)		
lgtr*ltfree		-.1034672			-.0866303		
		(.099431)			(.1016246)		
lgtr*lgovint		-.2856962*			-.2580507**		
		(.1003563)			(.1023756)		
ltserv*lpropr			.1412588**			.1455553**	
			(.0718617)			.0719142	
ltserv*lbfree			.1005379			.0994279	
			(.1496736)			(.1495591)	
ltserv*linvfree			.0004294			.0282247	
			(.0888281)			(.0885643)	

Standard errors are presented in parenthesis. *, ** and *** indicate significant at 1%, 5% and 10% respectively. Source: Own computations

ltserv *lfinfree			.0944406 (.079352)			.0684715 (.0783114)
ltserv *ltfree			-.3008678* (.0937023)			-.3131417* (.0937011)
ltserv *lgovint			.0048371 (.0655199)			.0113854 (.0656257)
Constant term	-14.72742* (4.218826)	-10.85675* (3.440257)	-4.078455*** (2.37511)	-13.6064* (4.227648)	-8.639333** (3.456514)	-3.571899 (2.338433)
F-statistic –FEM/	7.02	5.65	6.66	109.99	86.43	107.19
Wald chi2–REM	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
No of observations	520	550	492	520	550	492

Panel C: Upper middle-income countries

Variable	FEM			REM		Hausman
	1	2	3	4	5	6
ltotr	.1588807 (.6585082)			-9.358159* (2.158529)		4980.89 (0.000)
lgtr		.2894719 (.6336151)			-2.824085 (2.410909)	1625.17 (0.000)
ltserv			-.15957 (.295993)			-.2815086 (.8107001) 7818.35 (0.000)
lfrate	.5301614* (.1036414)	.6408828* (.1178363)	.5871529* (.1422465)	-1.197307* (.1022941)	-1.240831* (.1231618)	-.8201619* (.1200251)
lrgdp	-.1902434* (.040771)	-.1491057* (.0395816)	-.2678205* (.0615741)	-.0446811 (.1156143)	.0172167 (.1201463)	-.1861117 (.1547993)
lupop	-1.169246* (.0761666)	-1.099727* (.0911977)	-1.154594* (.0982076)	.2674675** (.1263539)	.0450813 (.1268662)	.4201791* (.1523251)
lpropr	-.7450826 (.5452979)	-1.118112* (.422629)	.1073742 (.2190984)	-5.20174* (1.69157)	-1.349881 (1.66622)	-1.178131** (.588578)
lbfree	.9836447 (.6230328)	.684182 (.6244379)	-.0076418 (.224015)	-1.639904 (2.04885)	-4.332742*** (2.317809)	1.625167* (.5996836)

linvfree	.918502** (.4102744)	1.324598* (.3485911)	.1891289 (.152677)	.4006887 (1.425334)	2.567552** (1.280653)	-.3361117 (.3900596)
lfinfree	-1.3159* (.4866016)	-1.125238* (.4314079)	-.4880888** (.2237579)	1.726181 (1.675359)	-3.057774*** (1.780963)	-.5250777 (.6197739)
ltfree	-.5758812 (.6067622)	-.305013 (.4730546)	-.2789597*** (.154346)	-10.71442* (1.970392)	-2.09345 (1.778915)	-2.490803* (.3687808)
lgovint	.6089628 (.5042396)	.5451222 (.343686)	.144608 (.2158109)	3.974608** (1.72116)	4.449987* (1.308311)	1.111066*** (.6077408)
ltotr*lpropr	.1486988 (.1215395)			1.175289* (.3767071)		
ltotr*lbfree	-.22732*** (.1399707)			.3342598 (.453322)		
ltotr*linvfree	-.2155398** (.0903209)			-.1723664 (.3172695)		
ltotr*lfinfree	.2870325* (.1079452)			-.3630828 (.3708839)		
ltotr*ltfree	.1067874 (.1307806)			2.169663* (.4298072)		
ltotr*lgovint	-.1231701 (.1107903)			-.8577003** (.3749505)		
lgtr*lpropr		.2462653** (.0985272)			.3326685 (.3906159)	
lgtr*lbfree		-.1727992 (.1470804)			1.008241*** (.5403801)	
lgtr*linvfree		-.3185525* (.0796648)			-.6525316** (.3000159)	
lgtr*lfinfree		.249396** (.0999797)			.6572022 (.4098017)	
lgtr*ltfree		.0485989 (.1085164)			.284469 (.4130701)	

lgtr *lgovint		-.1148131 (.0774006)			-1.005673* (.2909398)	
ltserv *lpropr			-.0851103 (.0869738)			.4394692*** (.2319189)
ltserv *lbfree			-.0141948 (.0954028)			-.7664873* (.2589968)
ltserv *linvfree			-.0712511 (.0616148)			.0210682 (.1542665)
ltserv *lfinfree			.1787923** (.0892141)			.2754892 (.2518062)
ltserv *ltfree			.0628328 (.0519586)			.6417124* (.1272158)
ltserv *lgovint			-.037808 (.0851719)			-.4439397*** (.2388369)
Constant term	8.328141* (2.936911)	7.091838** (2.855839)	10.19798* (1.185218)	49.76084* (9.860072)	19.94642** (10.1383)	9.405773* (2.745225)
F-statistic –FEM/	86.10	92.27	64.88	537.79	361.14	641.33
Wald chi2–REM	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)

Note: Standard errors are presented in parenthesis. *, ** and *** indicate significant at 1%, 5% and 10% respectively. Source: Own computations

4. Conclusions

This study investigated the role of institutions in the trade-gender gap nexus, using panel data on 51 countries in Africa from 1995 to 2022. Gender gap was proxied by the difference between male female labour force participation rates. Six institutions variables were used, including Property Rights, Business Freedom, Investment Freedom, Financial Freedom, Trade Freedom, and Government Integrity. Fertility rate, education level, GDP per capita and urbanisation rate were used as control variables. The sample was also classified into low-income, lower middle-income, and upper middle-income countries in order to determine whether the effect of institutions in the trade-gender gap nexus differs according to the level of development.

The study used the instrumental variables Generalised Method of Moments (IV-GMM) estimator, in order to address the issue of endogeneity. The findings indicate the effect of trade on gender gap is substantial when the influence of institutions is considered. When the countries were analyzed in terms of the level of development, it was found that total trade significantly widens the gender-gap in low income and lower-middle income countries in Africa, while it reduces the gender-gap in upper-income countries. However, the magnitude of the effect is more in lower income than in lower middle income countries. Goods trade widens the gender-gap in low-income and lower middle countries and reduces the gender-gap in upper middle-income countries. However, goods trade tends to have more effect in widening the gender-gap in low income than in lower middle income countries. Services trade reduces the gender-gap in the subgroup of countries irrespective of the level of development.

When the role of institutions in the trade-gender gap nexus was investigated on the basis of the level of development, it was found that the institutional environment alters the role that trade plays in the gender-gap. The study recommends a strengthening of institutions in Africa order to reduce the gender gap in the continent. Overall, some institutions are a foe while others are a friend in Africa.

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Appendix 1: Countries covered in the Study

Algeria, Angola, Benin, Botswana, Burkina Faso, Burundi, Cabo Verde, Cameroon, Central African Republic, Chad, Comoros, Congo, Dem. Rep., Congo, Rep., Cote d'Ivoire, Djibouti, Egypt, Arab Rep., Equatorial Guinea, Eritrea, Ethiopia, Gabon, Gambia, The, Ghana, Guinea, Guinea-Bissau, Kenya, Lesotho, Liberia, Libya, Madagascar, Malawi, Mali, Mauritania, Mauritius, Morocco, Mozambique, Namibia, Niger, Nigeria, Rwanda, Sao Tome and Principe, Senegal, Sierra Leone, Somalia, South Africa, Sudan, Tanzania, Togo, Tunisia, Uganda, Zambia, Zimbabwe

Appendix 2: Classification of African Countries Based on Level of Development

Low-Income Countries	Lower-Middle Income Countries	Upper-Middle-Income Countries
Burkina Faso, Liberia, Sudan, Burundi, Madagascar, Central African Republic, Malawi, Togo, Chad, Mali, Uganda, Congo, Dem. Rep, Mozambique, Eritrea, Niger, Ethiopia, Rwanda, Gambia, The, Sierra Leone, Guinea-Bissau, Somalia	Angola, Algeria, São Tomé and Príncipe, Benin, Kenya, Senegal, Cabo Verde, Tanzania, Cameroon, Lesotho, Comoros, Mauritania, Tunisia, Congo, Rep., Côte d'Ivoire, Djibouti, Morocco, Egypt, Zambia, Ghana, Zimbabwe, Guinea, Nigeria	Gabon, South Africa, Botswana, Libya, Mauritius, Equatorial Guinea, Namibia

Appendix 3: Descriptive Statistics

	Mean	Maximum	Minimum	Std. Dev.	Observations
<i>GGAP</i>	9.612830	29.36800	-1.53	7.528415	1 428
<i>LFPRM</i>	8.98514	33.287	-3.232	7.006429	1,428
<i>LFPRF</i>	53.46584	87.52	11.573	18.62081	1,428
<i>TOTR</i>	69.99430	347.9965	17.83139	39.00305	1238
<i>GTR</i>	52.30808	263.3339	10.20209	28.28684	1 389
<i>TSERV</i>	17.44207	70.49221	2.602187	11.35215	1118
<i>FRATE</i>	4.472020	7.762000	1.360000	1.557312	1 377
<i>RGDP</i>	5215.707	32040.95	740.4482	4987.471	1 349
<i>UPOP</i>	41.77132	78.10200	9.617000	16.05642	1 428
<i>PROPR</i>	40.36485	78.40000	10.00000	15.52347	1 268
<i>BFREE</i>	58.45635	85.00000	20.00000	12.23022	1 270
<i>INVFREE</i>	52.29293	90.00000	0.000000	15.21589	1 259
<i>FINFREE</i>	46.26263	70.00000	10.00000	13.70495	1 250
<i>TFREE</i>	63.28364	89.00000	15.00000	12.95792	1261
<i>GOVINT</i>	32.38020	70.00000	10.00000	12.47080	1 276

Note: the figures were extracted before taking their natural logs for estimation.

Source: Own computations

II. ECONOMIC PANEL

II.I TAX AND INTERNATIONAL TRADE IN THE SADC REGION: A PANEL GRAVITY MODEL APPROACH

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and

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Abstract

The study intends to investigate the effect of taxation on bilateral trade in the Southern African Development Community region. The study is motivated by the ongoing reviews of tax rates in the frame of the SADC regional integration. This paper contributes to literature by investigating the impact of different taxes (import tax, export tax and international trade tax) on bilateral trade in the SADC region, and employing the standard Poisson Pseudo Maximum Likelihood gravity model approach, which accommodates heteroskedasticity and zero trade flows. This paper employs the Poisson pseudo maximum likelihood with high dimensional fixed effects (PPMLHDFE) to ascertain the objective, which caters for multilateral resistance and ensures the accuracy and validity of the results for a time spanning from 2012 to 2018. The results show that during the period of the analysis, import tax for exporting countries significantly increases bilateral trade, while export tax for exporting countries increases bilateral trade, and significantly reduces bilateral trade for importing countries in the region. International trade tax for exporting countries significantly reduces bilateral trade. The study recommends that authorities should formulate a more effective and rational approach to taxation, such as increasing the tax net and downward revision of tax rates for struggling companies, so that taxes do not become a hindrance, but rather, a pivotal determinant of trade, growth, and development in the region.

Keywords: Import tax, export tax, international trade tax, gravity model, bilateral trade, SADC

1. Introduction

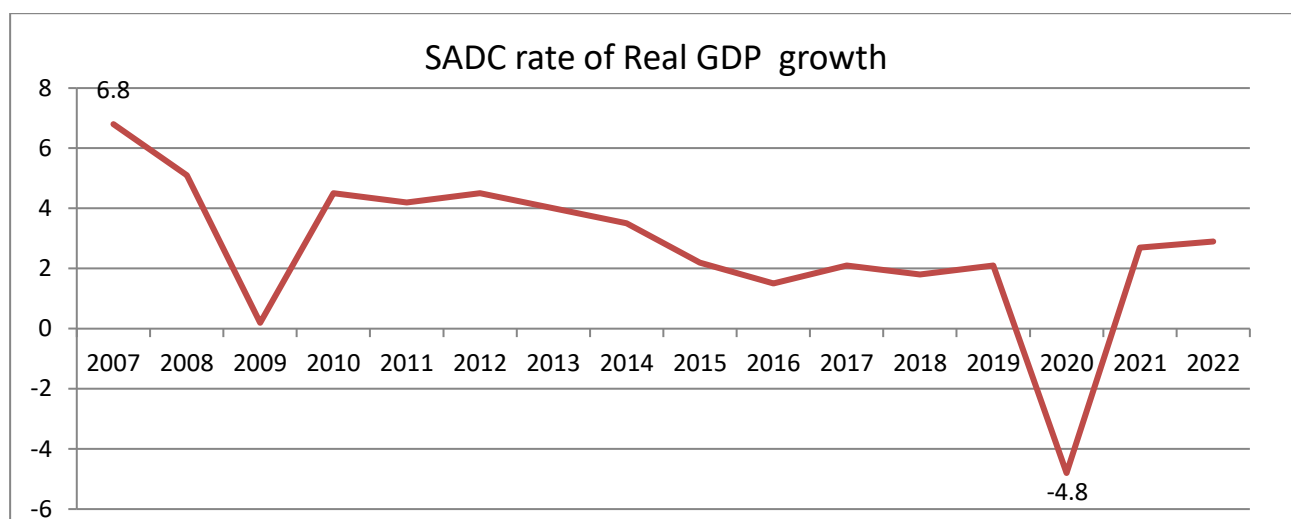
Global and domestic international trade prevail because of variations in the availability of resources and the existence of the comparative advantage principle. Given the growing level of innovation, technology, and globalization, international trade has become a prominent facilitator of economic growth (Sohail et al., 2021). In a fast-changing world, international trade ties between states are imminent and essential (Durguti & Malaj, 2022). International trade is rich in history and it is accompanied by greater benefits to trading economies as it is associated with a greater share of world production of goods and services, a boom in economic activity, a boost in the level of savings and foreign direct investment, enhancing economic growth as well as the development of nations. It also helps countries accomplish substantial developmental goals, such as poverty reduction, curbing high unemployment rates, food security, fair and equitable inclusive policies, health, and environmental sustainability (Sohail et al., 2021).

Furthermore, trade benefits are bound to vary from nation to nation based on their economic, political, regional, and strategic situation (Durguti & Malaj, 2022). Recently, many countries have enacted and negotiated trade initiatives towards commercial integration for their economic performance and national well-being. SADC (2020) further purports that countries that develop trade with others through liberalization trade policies boost economic growth while elevating their people's quality of life. Based on this, the analysis of this study is based on the Southern African Development Community (SADC) Free Trade Area member states, where member states consent to eliminating barriers against one another but are free to impose their non-member states external tariffs, to foster economic cooperation among member countries.

In similar light, several countries tried to develop new types of trade agreements with the assistance of international organizations such as the WTO, the IMF, and the World Bank. These new trade agreements aimed to create new business opportunities for emerging economies after a significant reduction in their trade restriction levels (Durguti & Malaj, 2022). However, developing and least-developed nations continue to face significant tariff and non-tariff restrictions on trade, despite the growth of trade and interference of these international organizations, giving rise to governments resorting to tax policies to shield their domestic products as well as enhance competitiveness and trade openness (Longoni et al., 2009). Taxation's impact on international trade has been uncertain. Corporate income taxes, as Holzner (2019) discovered, diminish exports and imports.

As evidenced by SADC indicators in Figure 1, SADC regions' average real GDP growth rate has been declining dramatically since 2007 from 6.8 percent to 2.1 percent in 2019, contracting to a further 4.8 percent in 2020. In 2009, the region's average growth was 0.2 percent due to the global financial crisis which put a strain on global fiscal activities in many economies globally, reducing household incomes, wealth, and consumption, hence economic growth. A contraction of 4.8 percent in the region, in 2020 was likely due to the COVID-19 protective alleviation measures such as the global restrictions which disrupted and held back economic activity, weakening prospects in the country's main trading partners, as well as low external demand which badly impacted the mining and manufacturing industries (UNESCO, 2021).

Figure 1.1: Annual average real GDP growth rate, SADC region



Source: SADC selected indicators

To proceed, markets are competitive and their prices are unstable, responding to variations and fluctuations in demand and supply. Hence, the need to improve performance in bilateral trade has informed the redesign of the recent trade policy. However, there exists no empirical study showing the extent to which the last tax reform was effective. It is on this premise that this research contributes to the existing stock of literature in 2 ways; first, the study investigates the effect of different taxes on bilateral trade in the SADC region. The different taxes stem from different policy interests and vary with countries. For its analysis empirically, the study investigates the effects of these taxes on bilateral trade with the aid of a gravity model which gives us more inside into the intra-trade system in SADC. Lastly, the study employs a relatively recent model – the gravity model using the Poisson Pseudo Maximum Likelihood approach that caters for heterogeneity and zero trade values which have been the major limitation of this model in the past.

According to the researcher's knowledge, the research analysis on the impact of taxation on bilateral trade in the SADC region is deficient in the literature as most studies are focused on trade policies and international trade in individual countries, while a few are focused on developed economies. This study, therefore, adds to the little research on underdeveloped countries by looking at the Southern African Development Community (SADC) region.

SADC member countries possess a substantial potential for economic growth and development, so, understanding taxation, as well as its impact on bilateral trade, in general, will help policymakers to implement robust policies that will help in achieving ambient objectives to fight high poverty in the region, to guarantee peace, stability, and sustainability.

The paper is structured logically, starting with the introduction, followed by a literature review, then methodology, and a discussion of the results, completed with the conclusions and implications for policymaking.

2. Empirical Evidence

There are numerous arguments from previous literature that a greater tax burden weakens productivity in the economy and trade performance, resulting in a decline in exports in the longer term. Beck &

Chaves (2013) examined the different macroeconomic impacts of various taxes on trade competitiveness in OECD countries by employing a gravity model using panel data from 25 OECD countries. He further examined the influence of average effective rates of taxation on expenditure, earnings from labour, and investment earnings on trade openness. Beck & Chaves's (2013) findings conceded previous debates that indeed; high tax burdens negatively impact exports.

Moreover, Khair-Uz-Zaman et al. (2011) explored the potential of bilateral trade between Pakistan and Turkey, employing a gravity model technique derived from Newton's Law of Gravitation. Both regression and correlation analyses were performed on secondary time series data from 1998 to 2008. Correlation analysis evidenced that trade between the two countries correlates strongly to GDP and income per capita, albeit uncorrelated to distance. Both of their methods promoted the concept of trade between Pakistan and Turkey, which can provide economic success to both countries.

Agbeyegbe et al. (2006) examined the linkage between free trade facilitation and income from taxation, as well as the interaction between fluctuations in exchange rates, the rate of inflation, and earnings from taxes, using a panel of 22 Sub-Saharan African nations, from 1980 to 1996. Trade liberalization has been proxied using two different indicators, international trade as a percentage of GDP and the ratio of import tariffs to imports value. The authors performed a Generalized Method of Moment regression. Evidence proved that the relation between trade opening and tax revenue is susceptible to the approach used to approximate trade liberalization, but that in general, trade liberalization is not closely interrelated with aggregate tax revenue, and however, it corresponds to higher income tax revenue by one measure.

(Alinaghi & Reed, 2021; Khumbuzile & Khobai, 2018; Macek, 2014) similarly studied the impact of individual types of levies on GDP growth. Alinaghi & Reed (2021) conducted a systematic review of the effect of taxes on economic development in OECD nations. Macek (2015) assessed the influence of specific forms of taxes on economic development using a model-based approach on OECD nations from 2000 to 2011, while Khumbuzile & Khobai (2018) for the time frame spanning 1981 to 2016, used the ARDL technique to evaluate the influence of revenue taxation on GDP growth in South Africa. The empirical results revealed that the vast majority of tax systems were extremely important and related to a country's economic growth.

In a 2013 study, Solleder determined the trade-related consequences of taxes on exports relying on the estimation of a log-linearized traditional gravity approach, employing a Panel Export Taxes (PET) dataset encompassing 20 exporting nations and 169 importing counterpart nations from 2000 to 2011. Solleder (2013)'s findings on the other hand suggested that the financial strain of export taxes is borne by both exporters and importers and that export taxes contribute to an increase in global prices.

The contribution made by this research will be to broaden the deficient empirical literature between taxation and bilateral trade using the most recent data available for the SADC nations included in the analysis, by employing another version of the gravity model - the standard Poisson Pseudo Maximum Likelihood gravity model approach, which accommodates heteroskedasticity and zero trade flows. This information may not be gotten from a time series or traditional panel studies but is essential in informing countries on the effect of their tax policies on international trade within SADC.

3. Data and Methodology

3.1 Data description

The study uses a stacked time series with a balanced panel of 13 SADC countries, and employs a gravity model of international trade, with a quantitative approach method relying on secondary data for the time frame spanning from 2012 to 2018. These countries are Angola, Botswana, Kingdom of Lesotho, Republic of Madagascar, Malawi, Mauritius, Republic of Mozambique, Namibia, Seychelles, South Africa, United Republic of Tanzania, Zambia, and Zimbabwe.

The dependent variables together with the independent variables included in the study are bilateral trade (dependent variable), import tax, export tax, international trade tax, GDP per capita, lending rates, investment, inflation, corruption control, political instability and voice and accountability.

Table 1 summarizes the statistics for all of the variables used in this investigation. The mean score for net exports for the SADC region is 121.26 million dollars.

Table 1: Summary statistics of variables in the analysis or research study

Variable	N	Mean	Std. D.	Min	Max
Bilateral Trade (Net exports)	546	121.26	515.78	0.00	4677.58
Import tax for exporting countries	546	11.512	9.748	1.388	47.718
Import tax for importing countries	546	19.844	86.604	1.388	2015
Export tax for exporting countries	546	0.085	0.229	0.00	1.123
Export tax for importing countries	546	0.031	0.125	0.00	1.123
International trade tax for exporting countries	546	9.963	8.852	1.10	36.311
International trade tax for importing countries	546	11.714	10.2	1.10	36.311
Log of GDP per capita for exporting countries	546	3.355	0.495	2.499	4.228
Log of GDP per capita for importing countries	546	3.344	0.534	2.499	4.228
Log of distance	546	3.286	0.244	2.599	3.701
Log of investment for exporting countries	546	9.146	2.032	2.653	10.892
Log of investment for importing countries	546	8.349	2.668	2.653	10.892
Lending rates for exporting countries	546	15.053	11.368	6.50	60
Lending rates for importing countries	546	20.409	16.608	6.50	60
Inflation for exporting countries	546	6.101	5.245	-2.41	28.28
Inflation for importing countries	546	8.448	7.395	-1.02	30.69
Corruption control for exporters	546	-0.339	0.66	-1.42	1.182
Corruption control for importers	546	-0.254	0.756	-1.468	1.182
Political stability for exporting countries	546	0.008	0.584	-1.094	1.104
Political stability for importing countries	546	0.123	0.622	-1.094	1.104
Voice & accountability for exporting countries	546	-0.114	0.624	-1.47	0.94
Voice & accountability for importing countries	546	-0.06	0.597	-1.177	0.94

Source: Author's calculations using WGI, WDI, DOTS, and CEPII data

Table 1, column 1 contains the names of the variables used in the empirical analysis. The mean value of the variables represents the central tendency. When the mean value is high, it shows that there is more power in central tendency (McHugh & Hudson-Barr, 2003; Sohail et al., 2021). The standard deviation, or SD, for each of the variables, indicates how far the estimates deviate from the average value of the variable. It is significant and reliable statistical data (Sohail et al., 2021). When the standard deviation value is smaller, it shows that the estimates are closer to their mean values and less

volatile, while a large value of the standard deviation shows that the estimates are far from their mean values and more volatile.

From the results, we see that investment spending averaged only 9 percent for exporting countries while it averaged 8 percent for importing countries in a year throughout the research period in the area. The minimum spending on investment is about 2.7 percent in Seychelles and the highest spending on investment of about 10.9 percent in South Africa. The inflation rate averaged approximately 6.1 percent for exporting countries and 8.4 percent for importing countries. Zimbabwe had a negative and the smallest inflation rate of -2.41 percent in 2015 while Angola had the highest inflation of almost 30.7 percent in 2016.

GDP per capita averaged 3.35% for exporting countries and 3.34% for importing countries with a minimum of 2.5% from Malawi and a maximum of 4.23% from Seychelles. Lending rates averaged approximately 15.1 percent and 20 percent for exporting and importing countries respectively, with a minimum rate of 6.5 percent charged in Botswana and a maximum rate of 60 percent charged in Madagascar.

There is a lack of control over corruption with a mean of -0.339 for exporting countries and -0.254 for importing countries on average. Zimbabwe has the lowest index of -1.42, while Seychelles has a maximum index value of 1.182. In the SADC region, Seychelles relative to the rest of the member nations over the research period performed far better concerning reducing corruption. On average, there is a lack of political stability, with a mean of 0.008 for exporting countries, and a mean of 0.123 for importing countries. Mozambique had the lowest index of -1.094, while Botswana had a maximum index of 1.104. Botswana's economy is more stable politically, than other countries in the SADC region. Voice and accountability has a mean of -0.114 for exporting countries, and a mean of -0.06 for importing countries, with a minimum index of -1.47 from Zimbabwe, and a maximum index of 0.94 from Mauritius.

On average, import taxes are quite higher than international trade taxes and export taxes for sample countries in the region, with 16.9 percent in 2012. GDP per capita is below average while lending rates are much higher on average, showing 18.6 percent in 2016. Investment is lower in the region, showing that high lending rates impede borrowers from accessing funds from their banks to engage in trade. This is presented in appendix 5 and 6.

Table 2: Correlation matrix

	BT (NE)	IT1	IT2	ET1	ET2	ITT1	ITT2	L- GDP1	L- GDP2	L- DIST	L- INV1	L- INV2	LR1	LR2	INF1	INF2	CORR 1	CORR 2	POL- STAB 1	POL- STAB 2	VA1	VA2
BT (NE)	1.00																					
IT1	0.03	1.00																				
IT2	0.04	-0.01	1.00																			
ET1	0.01	-0.12	-0.02	1.00																		
ET2	-0.04	-0.02	-0.03	-0.02	1.00																	
ITT1	0.05	0.97	-0.01	-0.12	-0.03	1.00																
ITT2	-0.07	-0.05	0.13	-0.01	-0.11	-0.06	1.00															
LGDP1	-0.02	0.05	-0.02	-0.26	-0.06	0.07	-0.00	1.00														
LGDP2	0.1	-0.00	-0.01	0.06	-0.1	-0.01	0.22	-0.08	1.00													
LDIST	-0.03	-0.09	-0.1	0.09	-0.04	-0.1	-0.23	0.30	0.26	1.00												
LINV1	0.07	-0.07	-0.01	0.2	0.03	-0.02	-0.07	0.11	-0.00	0.01	1.00											
LINV2	0.15	0.04	0.03	0.01	0.15	0.03	0.06	-0.04	0.38	0.15	-0.06	1.00										
LR1	-0.1	-0.04	-0.00	0.05	-0.03	-0.09	0.08	-0.55	0.03	0.08	-0.32	-0.01	1.00									
LR2	-0.10	-0.02	-0.05	-0.03	-0.06	-0.01	-0.2	0.07	-0.72	-0.09	-0.01	-0.15	-0.05	1.00								
INF1	-0.10	-0.05	-0.06	0.03	-0.02	-0.11	0.03	-0.42	0.01	-0.04	-0.34	0.00	0.48	0.01	1.00							
INF2	-0.06	0.05	-0.07	-0.04	0.03	0.03	-0.28	0.04	-0.41	-0.02	-0.01	-0.21	-0.00	0.32	-0.02	1.00						
CORR1	-0.15	0.14	-0.04	-0.13	-0.10	0.09	0.02	0.79	-0.07	0.34	-0.12	-0.02	-0.23	0.07	-0.10	0.07	1.00					
CORR2	0.03	-0.08	0.07	0.05	-0.11	-0.07	0.59	-0.05	-0.58	-0.09	0.03	-0.13	0.02	-0.52	0.01	-0.58	-0.08	1.00				
POLSTAB1	-0.15	0.24	-0.04	-0.25	-0.07	0.20	0.01	0.69	-0.09	0.25	-0.14	-0.04	-0.26	0.08	-0.04	0.07	0.83	-0.08	1.00			
POLSTAB2	-0.07	-0.01	0.04	0.02	-0.17	-0.02	0.54	-0.02	0.72	-0.02	0.01	0.04	0.01	-0.54	0.01	-0.39	-0.03	0.83	-0.04	1.00		
VA1	-0.15	-0.00	-0.06	-0.08	-0.12	-0.05	0.03	0.60	-0.07	0.29	0.03	-0.07	-0.13	0.09	0.09	0.07	0.79	-0.06	0.7	-0.03	1.00	
VA2	0.15	-0.09	0.04	0.07	-0.12	-0.06	0.4	-0.02	0.44	-0.07	0.1	-0.13	-0.06	-0.41	-0.04	-0.51	-0.08	0.84	-0.09	0.75	-0.08	1.00

From Table 2 above, there is no multicollinearity in the variables used for the empirical analysis. There exists a negative correlation between inflation and GDP per capita. Distance and bilateral trade show a negative relationship as expected from the literature.

3.2 Estimation Strategy/technique

The empirical technique is centred on the estimate of the PPML estimation approach in the log-linearized form of the control variables. The net exports enter the model in their level form, as portrayed by equation 4.

The data has a panel structure, and the convention that is consistent with the theory of estimation of this dataset requires control of fixed effects by country pair and fixed effects by country time for both importer and exporter countries. The dissimilarity between country pairs has been adjusted for by taking into account country-pair fixed effects, to mitigate bias generated by heterogeneity across countries and control for endogeneity issues which may be caused by omitted variable bias and reverse causality (Correia et al., 2020). Also, standard errors should be grouped at the country-pair level to allow for endogeneity in policy variables.

Further, country-time fixed effects will be incorporated in the regression to account for worldwide economic repercussions that may affect trade, and time-varying multilateral resistance, that is, the barriers to trade that each country faces with all its trading partners. The PPML estimation method is the only remarkably accurate pseudo maximum likelihood estimator for gravity equations that is ideal for models with high-dimensional fixed effects and under extremely minimal requirements (Santos Silva & Tenreyro, 2022). The likelihood-based goodness-of-fit measurements are similarly invalid because PPML is a non-linear model, so it is a reasonable theoretical justification for why OLS properties are not a problem with non-linear models (Santos Silva & Tenreyro, 2022).

3.3 Gravity model

This study's theoretical foundation is centred around Newton's gravity, and the Gravity model technique which is founded on Newton’s Law of Gravitation is employed (Anderson, 1979; Bergstrand, 1985; Khair-Uz-Zaman et al., 2011; Tinbergen, 1962). This model estimates adjust for spatial and other observable and unobservable country attributes and allows me to focus on bilateral trade in the SADC region while most studies have focused on international trade in different countries. The framework assumes that trade between two nations increases in proportion to the sum of their GDPs per capita GDPs (Vavrek, 2018). It also postulates that trade decreases with increasing distance. This is because proximity minimizes transportation as well as information fees (Khair-Uz-Zaman et al., 2011).

The gravity model has its foundation in physics and the Newtonian Law of Gravitational Attraction which asserts that a particle's gravitational pull draws in other particles in space with an attraction that is directly related to the products of their masses and inversely related to the square of the distance between their centres (Vavrek, 2018).

Newton proposed that the attraction force between the two elements is given by;

$$F_{ij} = \left(\frac{GM_iM_j}{D_{ij}^2} \right).....(1)$$

Where; **F_{ij}** is the force of attraction
G is the gravitational constant

M M is the product of the country's masses
D is the squared distance between the two countries
i and j are trading countries

This force of attraction (1) is used by economists to provide an overview of trade between two countries. They hypothesized trade in goods is identical in its attracting power between two big economies, that is, their GDP is non-zero.

Trade between two countries i and j is expressed as

$$T_{ij} = \left(\frac{\alpha Y_i^{\beta_1} Y_j^{\beta_2}}{D_{ij}^{\beta_3}} \right) \dots\dots\dots(2)$$

Where T_{ij} is trading between exporting and importing countries, i and j
 α is a constant
Y is GDP
D is the distance between countries i and j
 β 's are parameters

Equation 2 assumes that the larger the size of the economies, the more they are obligated to trade with one another. On the contrary, if the distance between the countries is short, those countries may engage in trade more easily with one another.

The gravity model of trade is multiplicative, so from equation 2, it means trade is equal to the products of other variables. It can be estimated by applying the natural logarithmic operators of the multiplicative form across both sides, by breaking the products into sums.

Equation 2 then becomes;

$$\ln T_{ij} = \beta_0 + \beta_1 \ln Y_i + \beta_2 \ln Y_j - \beta_3 \ln D_{ij} + \varepsilon_{ij} \dots\dots\dots(3)$$

ε_{ij} is the random disturbance term

Despite the gravity model's empirical success in accurately predicting trade flows, the ways considered to deal with heteroscedasticity issues and the existence of a large number of zeros trade observations represent one of the issues surrounding the accuracy of trade data (Solleder, 2013), and some estimation practices have been an area under discussion to criticism.

This paper further adopts the Poisson Pseudo Maximum Likelihood approach instigated by Gourieroux et al. (1984). The PPML has been suggested by Silva & Tenreyro (2006) and Yotov et al. (2016), who presented an easy panacea to this issue of concern after criticizing the procedures of the log-linearized gravity trade models. They argued that the equation for gravity in its additive structure can potentially be calculated by employing a Poisson Pseudo Maximum Likelihood (PPML) estimation technique, which naturally includes zero observations. The PPML structure is an improved version of the Generalized Nonlinear Linear Model (GNLM) structure that is resilient to multiple types of heteroscedasticity and surpasses the inefficiency problem, providing consistent estimates of the original nonlinear model (Mnasri & Nechi, 2019).

The estimation performed using PPML employs the command syntax invented by Correia et al. (2020) the statistical package, STATA (PPMLHDFE), which is more effective in the existence of sizable fixed effects because it allows one to incorporate as many countries as possible to encompass all multilateral resistance. The developments that the PPML approach has contributed to the estimation of gravity models have made it good and popular in the international trade literature, as it has become

frequently utilized to estimate gravity equations (Durguti & Malaj, 2022; Levin et al., 2002; Martin & Pham, 2020; Yotov, 2012) among others. See appendices for Variable description.

Model specifications;

To ascertain the papers' objectives, the model to be utilized to examine the implications of an import tax, export tax, and international trade tax on bilateral trade in the region is;

$$BT_{ijt} = \beta_0 + \beta_1 IT_{ijt} + \beta_2 ET_{ijt} + \beta_3 ITT_{ijt} + \beta_4 \ln GDP_{capita_{ijt}} + \beta_5 \ln Dist_{ijt} + \beta_6 LR_{ijt} + \beta_7 \ln INV_{ijt} + \beta_8 INF_{ijt} + \beta_9 CORR_{ijt} + \beta_{10} POLSTAB_{ijt} + \beta_{11} VA_{ijt} + \alpha_{it} + \delta_{jt} + \gamma_{ijt} + \varepsilon_{ijt} \dots \dots \dots (4)$$

$\beta_1, \beta_2, \beta_3, \beta_4, \beta_6, \beta_7, \beta_8, \beta_9$, and β_{10} are all > 0

$\beta_5 < 0$

Where

NE_{ijt} is bilateral net exports between countries i & j at time t.

α_{it} is exporter time fixed effects

δ_{jt} is importer time fixed effects

γ_{ijt} is country pair fixed effects

ε_{ijt} is an error term, covering the leftover effects. It is assumed as distributed independently and normally with zero (0) mean and constant variance.

Regression and correlation analyses are employed for the evaluation of data.

3.4 Robustness Tests/Checks

Two key criticisms in gravity model analysis have always been the inability to take care of zero trade values and the problem of heteroscedasticity. To address the issues of zero trade values, this study employed an inverse hyperbolic sine transformation to transform the negative values and zero trade values of the net exports, since in PPML, the dependent variable cannot be negative. To transform the negative values, the paper employed the formula below:

$$Y = \ln(X + \sqrt{X^2 + 1})$$

And for heteroscedasticity, the *ppmlhdfc* command used in the paper provides output with robust standard errors, which ensures that the standard errors of the regression output are valid. Also, the PPML caters for heteroskedasticity automatically (Correia et al., 2020).

4. Presentation and Discussion of Results

In this section, the paper demonstrates the results of the PPMLHDFE regression analysis and their discussions and interpretations, and further discusses the techniques for absorbing zero trade flows.

Table 3: PPML estimates

Dependent variable: Net exports	PPML 1	PPML 2	PPML 3
Import tax for exporting countries	0.1567*** (0.000)	0.1206* (0.054)	0.0872** (0.029)
Import tax for importing countries	0.0004 (0.146)	0.0004* (0.088)	0.0004 (0.129)

Export tax for exporting countries	2.2245*** (0.000)	1.4451*** (0.005)	0.5363 (0.265)
Export tax for importing countries	-4.8321** (0.015)	-5.6669*** (0.000)	-4.4489** (0.013)
International trade tax for exporting countries	-0.0749* (0.052)	-0.0506 (0.399)	-0.0043 (0.905)
International trade tax for importing countries	0.0101 (0.564)	-0.0040 (0.770)	0.0193 (0.163)
Log of GDP per capita for exporting countries	4.9730*** (0.000)	4.0512*** (0.000)	2.4110*** (0.000)
Log of GDP per capita for importing countries	1.9076*** (0.003)	-1.2197* (0.090)	1.9592*** (0.002)
Log of distance	- 3.9622*** (0.000)	-0.9470 (0.160)	- 3.8479*** (0.000)
Log of investment for exporting countries	-0.1313 (0.389)	-0.0348 (0.833)	0.1452 (0.433)
Log of investment for importing countries	0.5278*** (0.000)	1.3622*** (0.005)	0.4886*** (0.000)
Lending rates for exporting countries	0.0216 (0.477)	0.0017 (0.977)	-0.0208 (0.619)
Lending rates for importing countries	-0.0154 (0.255)	-0.0209* (0.093)	-0.0123 (0.386)
Inflation rates for exporting countries	0.0226 (0.321)	0.0054 (0.856)	-0.0142 (0.639)
Inflation rates for importing countries	0.0031 (0.929)	0.0524 (0.150)	-0.0087 (0.809)
Corruption control for exporting countries	- 4.3917*** (0.000)	-4.5161*** (0.000)	
Corruption control for importing countries	0.7187 (0.136)	-0.4883 (0.453)	
Political stability and absence of violence/ terrorism for exporting countries	-0.8116 (0.101)		- 2.3811*** (0.000)
Political stability and absence of violence/ terrorism for importing countries	- 4.0289*** (0.000)		- 3.7003*** (0.000)
Voice and accountability for exporting countries	2.4255*** (0.000)	1.6845*** (0.003)	1.1708*** (0.008)
Voice and accountability for importing countries	2.2483*** (0.000)	2.1552*** (0.000)	2.5468*** (0.000)
exp_time	YES	YES	YES
imp_time	YES	YES	YES
Paired	YES	YES	YES

Constant	-14.0913** * (0.001)	-23.1514** * (0.005)	-5.8126* (0.052)
Pseudo R2	0.7265	0.5885	0.7024
Observations	546	546	546

Source: Author's calculations using WGI, WDI, DOTS, and CEPII data

Probability values in parentheses

*** p<0.01, ** p<0.05, * p<0.1

The overall objective of the paper is to examine the effect of import taxes, export taxes, and international trade taxes on bilateral trade in the SADC region. The results have an R squared of 0.7265 implying that 72.65 percent of the variation in bilateral trade is explained by the independent variables incorporated in the analysis.

The fitted model is as follows.

$$\begin{aligned}
 BT = & -14.0913 + 0.1567IT_X + 2.2245ET_X - 4.8321ET_M - 0.0749ITT_X \\
 & + 4.9730 \ln GDPcapita_X + 1.9076 \ln GDPcapita_M - 3.9622 \ln Dist \\
 & + 0.5278 \ln INV_M - 4.3917CORR_X - 4.0289POLSTAB_M + 2.4255VA_X \\
 & + 2.2483VA_M
 \end{aligned}$$

On average, all other factors held constant, a unit increase in the share of import taxable earnings as a percentage of total tax revenue for exporting countries, increases bilateral trade by 0.1567. For exporting countries to stimulate growth, they tend to export more to importing counterparts because the burden of import taxes is borne by importers only, as a result, a share of import tax revenue to total tax revenue positively influences bilateral trade. As the share of import tax revenue to total tax revenue increases, it means the cost of importing is increasing and so reduces imports for the exporting countries and therefore increases net exports for the exporting countries. These results are surprisingly conflicting with the results by Suravonic (2010), who rather found a negative influence on trade, and argued that a rise in taxes on imports as a share of total tax revenue alters trade as exporting countries do not have a monopsony power in trade. Meanwhile, import tax shows a positive relationship with bilateral trade for importing countries but this association is not significant at a level of significance equivalent to 5% for all 3 models.

Further, a unit increment in the proportion of revenue from export taxes to revenue from the total tax for all the 3 models is significant and expectedly reduces bilateral trade for importing countries by 4.8321, and significantly increases bilateral trade for exporting countries by 2.2245 on average and ceteris paribus. When export taxes increase, it becomes expensive for importers to purchase from foreign markets because taxes imply an additional cost to the initial price. Imports will then reduce for exporting countries, as a result, increase net exports for exporting countries. Giordani et al. (2012) found that a price increase drives governments to enforce export barriers, resulting in a reduction in global supply and a subsequent rise in prices, advocating additional restrictions on exports.

On average, a unit rise in the ratio of international trade tax revenue to total tax revenue reduces bilateral trade for exporting countries, for both model 1, 2, and 3. When a share of revenue from

international trade taxes as a percentage of overall tax revenue increases, it implies a boost in international trade tax. Earnings from investments abroad will reduce from high international trade tax charges, reducing investment for exporting countries as a larger share of profits from an international investment will go back to their foreign economy, leaving only a small portion of the return on investments, reducing exports for exporting countries, hence, a reduction in net exports for exporting countries. Keen & Syed (2006) however emphasized that increases in international trade tax, whether measured by earnings or tax rates are connected with a temporary surge in net exports, a trend linked to drive investments internationally. Though insignificant at 5% for all models, international trade tax increases bilateral trade for importing countries and reduces bilateral trade for importing countries.

A percentage point increase in GDP per capita remarkably and substantially increases bilateral trade for both exporting and importing countries, on average all other factors held constant, by 2.41% and 1.96% consecutively. GDP per capita conveys a country's degree of development, and when it escalates, the standard of living increases, production in exporting countries and supply to importing countries increase, increasing exports and net exports significantly for exporting countries. Similarly, a spike in the level of development for importing countries implies a reduction in imports due to less dependency on foreign markets, hence an increase in net exports. The results are consistent for all the 3 models. Other research studies found similar conclusions. Schmitt et al. (2019) are an ideal example who found an upward correlation between the two variables, and concluded that nations with higher GDP growth rates are probable to experience higher trade growth rates as a share of output.

During this study, for countries in the SADC region, geographical distance is linked to a significant decrease of 3.85% in their bilateral trade volume on average. The results are consistent with the empirical literature and gravity theory, and they comply with the results of Disdier & Head (2008). Even after controlling for various significant different major variables in samples and techniques, they found a negative and substantial association between distance and trade.

Moreover, a percentage increase in investment for importing countries is significantly and positively associated with a 0.49% increase in bilateral trade on average, all other factors held constant. Investment is pertinent to a country's economic growth and development, so there is a greater circulation of goods and services domestically, reducing imports for importing countries, hence, an increase in net exports. The findings are the same in magnitude and significance for all the specified models. The results complement the results by Sohail et al. (2021). He established a strong and positive causal relationship between investment and trade. Investment in exporting countries reduces bilateral trade and is insignificant at 10%.

A unit increase in the lack of corruption control index for exporting countries reduces bilateral trade by 4.3917. The results are consistent for model 1 and model 2. When exporting countries suffer from a severe degree of corruption, it means there is mismanagement of resources and there is unequal fairness in the economy. Also, the exploitation of public office for private gain makes citizens lack trust in their government, threatening market reliability. This imperils economic development, increasing imports, hence reducing the net exports.

On average, a unit rise in the political instability index reduces the volume of bilateral trade by 4.0289. The results corroborate the outcomes by Qadri et al. (2020) who found that political instability badly weighs down trade in the long run. When there is high instability and terrorism in the economy, there is no harmony, and the country's resources are mismanaged, chasing away investors and a climate for business and reducing exports.

The coefficient on perspectives of a country's residents' ability to participate in the selection of its government, as well as the freedom to express themselves, is positive and significant in the region for both exporting and importing countries. When citizens can voice out their expressions, there is a sense of belonging and prosperity, enhancing economic activity, thus an improvement in bilateral trade rising from a rise in exports and a drop in imports.

In continuation, a unit increase in lending rates reduces bilateral trade for importing countries and increases bilateral trade for exporting countries. Similarly, a unit increase in inflation corresponds to a unit increase in bilateral trade in the region. However, both lending rate and inflation do not significantly determine bilateral trade in importing and exporting countries.

5. Conclusion and Recommendations

The study examined the effects of import tax, export tax, and international trade tax on bilateral trade in the SADC region. The relationship between taxation and international trade acquired attention from researchers and policymakers that have led to a plethora of literature on this relationship. This paper is unique because it is the first of its kind to examine the effects of import tax, export tax, and bilateral trade in the context of the SADC region. For its empirical analysis, the study utilized Poisson Pseudo Maximum Likelihood high dimensional fixed effects approach to the gravity type trade model, using secondary data for a panel of thirteen SADC member countries from 2012 to 2018.

The analysis of results divulged novel observations. During the period of the study, import tax for exporting countries significantly increases bilateral trade, while export tax for exporting countries increases bilateral trade, and export tax for importing countries significantly reduces bilateral trade in the region. International trade tax for exporting countries significantly reduces bilateral trade despite the inclusion of other control variables. The results on country size and distance corroborate the literature on the gravity model. As a result, the paper views GDP per capita as an essential factor influencing bilateral trade while it views increasing distance between countries involved in trade as a resistant factor for bilateral trade in the region.

Investment in importing countries significantly increases bilateral trade on average. Institutional variables, corruption control and political stability, and absence of violence reduce the volume of bilateral trade, whereas voice and accountability enhance bilateral trade volume in the region. However, the paper found a trivial relationship between inflation, lending rates, and bilateral trade.

The findings gave rise to the following recommendations:

Taxation, though crucial in generating revenue for economies and protecting domestic commodities against foreign competition, negatively impacts bilateral trade in the region. Authorities should formulate a more effective and rational approaches to taxation, that is, increase their tax net and reduce tax rates on struggling companies. Countries should lower export tax rates for their manufacturing enterprises and corporations to boost growth through lower prices. This will increase the level of

exports to importing economies. Countries can encourage the import of raw materials and the export of finished goods by establishing price standards for raw material imports, or by lowering import tax rates on raw materials and lowering export tax rates on processed products.

Further, distance is negatively correlated with bilateral trade. Because of high transportation costs, governments should invest in a more robust transportation infrastructure that links SADC member countries such as through railways and roads to curb high transportation costs and increase proximity and access to foreign markets.

Lending rates are insignificant in enhancing bilateral trade in the region. Stakeholders may not utilize fully the services provided by the banking sector in their economies, concerning trade with such high rates. Policymakers in the banking sector should reduce lending rates so that individual households and firms can access loans. The availability of money supply may boost economic activity, and enhance international trade.

Indexes for institutions are very low. This implies poor governance performance in the region; there is a high rate of corruption and political instability. To increase intra-region trade, public authorities should, therefore, devise and implement transparent policies that will mitigate high corruption.

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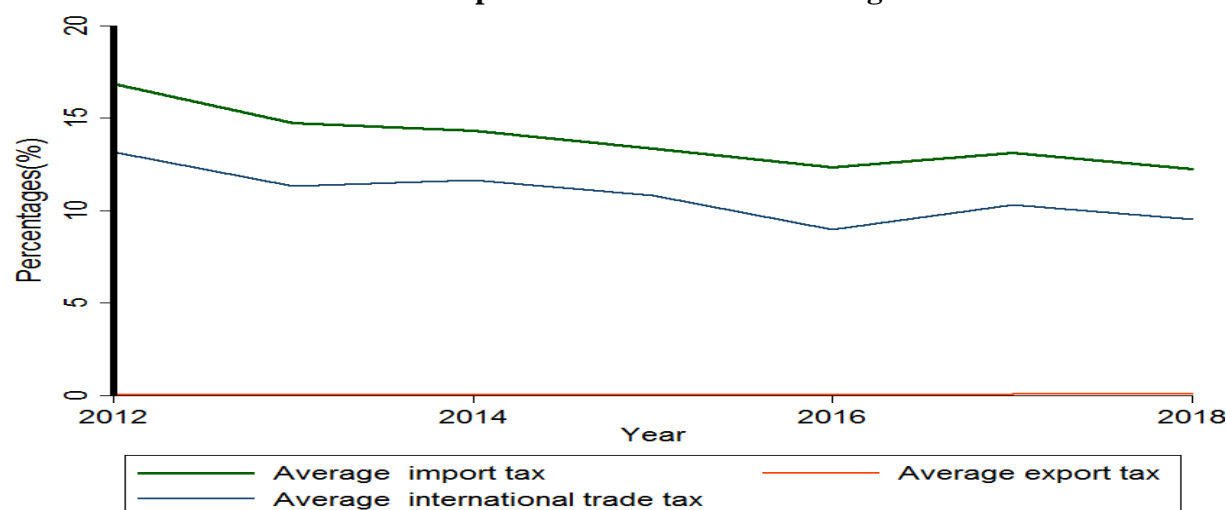
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APPENDICES

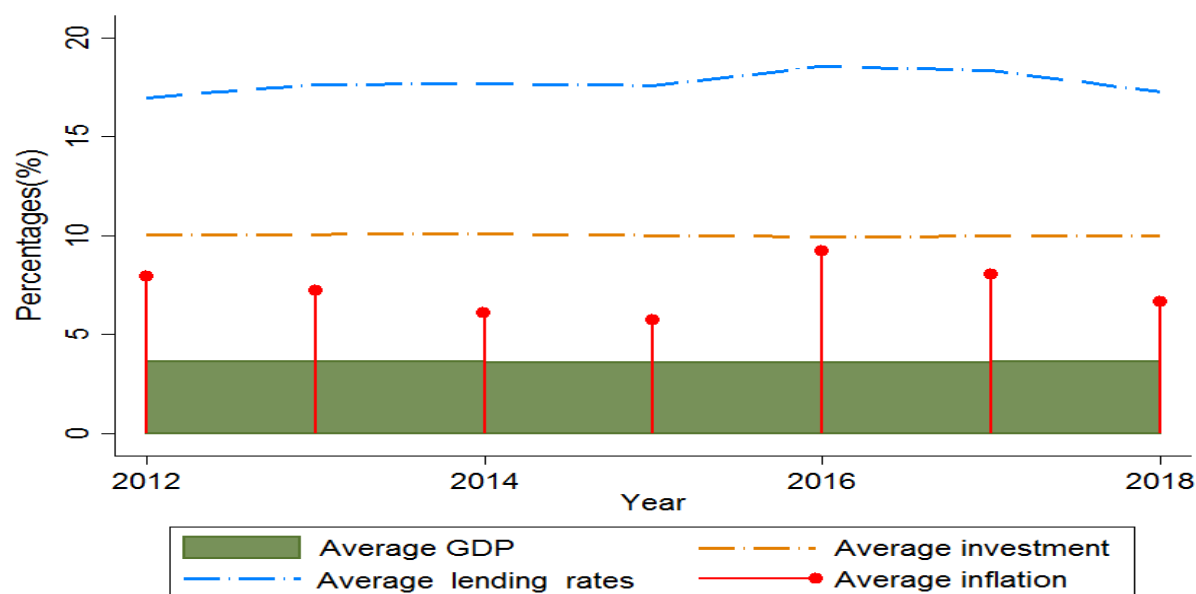
Appendix 1: List of SADC countries included in the analysis

Angola	Mauritius	United Republic of Tanzania
Botswana	Republic of Mozambique	Zambia
Kingdom of Lesotho	Namibia	Zimbabwe
Republic of Madagascar	Seychelles	
Malawi	South Africa	

Appendix 2: Yearly trends in mean import tax rates, mean export tax rates and mean international trade tax rates for sample countries in the SADC region between 2012 and 2018



Appendix 3: Yearly trends in GDP per capita, Investment, Lending rates and Inflation for sample countries in the SADC region between 2012 and 2018



APPENDIX 4

Variable	Description	Proxy used	Source	Expected sign
Bilateral trade (BT)	Bilateral trade flows between exporting and importing countries. Exports are goods and services sold abroad and recorded on FOB principle, while imports are products carried into a country for sale and expressed on CIF premise	Net exports less imports	IMF	
Import tax (IT)	A payment imposed by a country's customs and border protection authority on goods carried into a country	customs and import duty income as a proportion of total tax revenue for a country	WDI	-
Export tax (ET)	It is a levy on goods that are shipping out of the nation's borders to foreigners.	revenue from export taxes as a share of a country's total tax revenue	WDI	-
International trade tax (ITT)	It is a levy that includes import and export levies, earnings from export and import monopolies, exchange profits, and exchange taxes.	income from international trade taxes as a portion of a country's overall tax	WDI	-
Trade cost (DIST)	Cost of trade between trading countries	Distance	CEPII	-
GDP per capita	Reflects a country's state of development	GDP/Population	WDI	+
Inflation (INF)	An overall increase in the general price level.	CPI	WDI	-
Lending rate (LR)	The bank charge that regularly accommodates the private sector's short- and medium-term borrowing demands	Lending rate	WDI	+/-
Investment (INV)	It is an asset or item acquired to generate income	Gross fixed capital formation	WDI	+
Corruption control (CORR)	It indicates opinions of the extent to which government authority is abused for personal advantage, encompassing both small and large kinds of corruption, as well as control of the state by leaders (Kaufmann et al., 2010).	Corruption control index	WGI	-
Political stability & absence of violence (POLSTAB)	It determines opinions of possibilities of political unrest as well as politically driven violence, including terrorist attacks (Kaufmann et al., 2010)	Political stability index	WGI	-
Voice and accountability (VA)	Indicates opinions of a country's residents' ability to participate in the selection of its government, as well as the freedom to express themselves, and associate (Kaufmann, 2010).	Voice and accountability index	WGI	+

II.II Does Tax Revenue Stability Matter for Economic Growth in Lesotho? An Application of Autoregressive Distributed Lag Model (ARDL)

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Abstract

The study examined the relationship between Tax Revenue Stability and Economic Growth in Lesotho between the periods 1991-2021. The data was sourced from the IMF and WDI and applied ARDL Bounds test for Cointegration to analyse the results. The Coefficient of Variation was used to measure tax revenue stability. The results show that there was no short-run and long-run relationship between tax revenue stability and economic growth in Lesotho. Inflation also shows no significance in both time frames. However, gross domestic expenditure had a positive impact on economic growth in both the short run and long run. While population size had a significant effect in the short run, it was insignificant in the long run. The study also found that personal income tax had the greatest influence on tax revenue stability, followed by value-added tax, and corporate income tax had the least impact. Therefore, these findings indicate that tax stability remains an issue in Lesotho, and further consideration of tax policies, particularly CIT, is necessary to address this instability.

Keywords: Economic Growth; Tax Revenue Stability; Personal Income Tax; Corporate Income Tax; Value-Added Tax; ARDL.

JEL Code: E6; H2; H6; O4.

1. Introduction

Taxation plays a crucial role worldwide, as both developed and developing nations rely on tax collection to finance public services and manage their economies. The primary goal of taxes is to generate revenue to support national budgets and promote fairness while minimizing negative impacts on economic activity (Economic Outlook, 2010; Njoki, 2013; Omotoso, 2001). Tax revenue stability, defined as the ability of taxes to generate consistent revenue despite economic fluctuations, is essential for effective fiscal planning and the provision of public services (Haughton, 1998; Merriman et al., 2004; Seegert, 2016).

Lesotho, a country heavily dependent on tax revenue, faces challenges in maintaining tax revenue stability, which can lead to budget deficits and hinder economic development (UNICEF, 2017; World Bank, 2022). Recent studies have highlighted the relationship between tax revenue stability and economic growth, emphasising the importance of a stable tax system for predictable funding of government operations and development projects (Boyd, 2022; Ehiedu, 2022). Despite the importance of tax revenue stability and economic growth, Lesotho, like many other countries, struggles to maintain a stable tax revenue system (World Bank, 2022). The country's heavy reliance on tax revenue, coupled with limited economic diversification, creates a precarious situation that demands urgent analysis. Fluctuations in tax revenue can have detrimental effects on Lesotho's economic growth, impeding progress towards sustainable goals (World Bank, 2022). Efforts have been made to improve the tax system through reforms and increased revenue collection capacity, but challenges persist (LRA, 2012; IMF, 2001; Koatsa et al., 2017). The tax system has become unstable due to factors such as high tax rates, challenging tax laws and regulations, low compliance, and inadequate tax administration and enforcement (BTI Country Report, 2022). This instability disrupts resource allocation, impedes investment opportunities, and hinders economic growth.

The primary aim of this study is to examine the interrelationship between tax revenue stability and economic growth in Lesotho. The specific objective is to determine whether there is a relationship between tax revenue stability and economic growth in both the short-run and long-run. Reducing revenue dependency from SACU revenues is crucial for Lesotho's growth and stability (Scott, 2017). Taxation provides a sustainable source of revenue that can enhance the country's economic control and reduce the risk of instability. Understanding the relationship between tax revenue stability and economic growth is vital for effective government budgeting, attracting foreign investment, and maintaining investor confidence (Sobel et al., 1996).

This study contributes to the existing literature by analysing the relationship between tax revenue stability and economic growth in Lesotho using the Auto Regressive Distributed Lag (ARDL) approach and combined data on tax revenue stability. The findings will provide insights for policymakers, the Lesotho Revenue Service, and stakeholders on enhancing the tax system and promoting stable tax revenue and economic growth. Identifying the tax type that has a greater impact on tax revenue stability will aid in decision-making for tax policies.

The rest of the paper is structured as follows: Section 2 provides an overview of Lesotho's tax system. Section 3 reviews the theoretical and empirical literature on tax revenue stability and its effects on economic growth. Section 4 describes the data and methodology employed. Section 5 presents the

findings and their interpretation. Finally, Section 6 concludes the study, offering policy recommendations and suggesting areas for further research.

2. Overview of the Lesotho Tax System

Tax Collection and Administration System

Lesotho's tax revenue collection and administration have been managed by the government since the 1990s. In 2003, the Lesotho Revenue Authority, now known as Revenue Service Lesotho, was established to oversee tax collection and enforce tax laws. The LRA administers taxes such as the Customs and Excise Act (1982), Income Tax Act (1993), and Value-Added Tax Act (2001). Its main objective is to collect all taxes and duties for funding public goods and services, ensuring fair treatment of taxpayers and career advancement opportunities. Effective tax collection is crucial for government functions and public service delivery, as insufficient revenue leads to large budget deficits.

The Lesotho tax system includes direct and indirect taxes. Direct taxes, such as corporate income tax, personal income tax, fringe benefits tax, and withholding taxes, are levied on income. Indirect taxes, including value-added tax, excise taxes, and customs fees, are imposed on product and service purchases. The LRA is committed to corporate governance and financial integrity. From 2003 to 2015, the LRA experienced consistent revenue growth at an average rate of 13% per year, with the number of taxpayers on the register increasing significantly during that period.

3. Main Sources of Tax Revenue

Personal Income Tax: Lesotho imposes Personal Income Tax (PIT) on various income sources, such as wages, salaries, dividends, and interest. PIT is collected through the Employee Tax (PAYE) system, Fringe Benefits Tax, and Withholding Tax. The Income Tax Act 1993 follows a progressive two-rate structure of 20% and 30% for taxable income, with separate taxes for fringe benefits and passive income. Low-income earners with a monthly gross salary equal to or less than M4,200 are excluded from PIT and receive a non-refundable tax credit of M840 per month. Employers deduct taxes through the PAYE system and remit them to the Lesotho Revenue Authority monthly. The government, being the largest employer, contributes a significant portion of personal income tax PAYE revenues through public servants.

Value-Added Tax: Lesotho introduced Value-Added Tax (VAT) in 2003 alongside the establishment of the Lesotho Revenue Authority. VAT is a consumption tax imposed on the price at each stage of production, distribution, or sale to the end consumer. The objective of VAT implementation was to boost domestic tax revenue and reduce reliance on Southern African Customs Union (SACU) receipts. VAT rates in Lesotho vary, with 0% on exports and basic commodities, 9% on electricity, 12% on telecommunications, and 15% on other imported and local goods and services. Agricultural inputs and outputs are VAT-exempt and zero-rated.

Corporate Income Tax: It is a direct tax imposed on company profits. In Lesotho, CIT is governed by the Income Tax Act of 1993. Companies are required to make advance payments in three equal installments throughout the assessment year, with any remaining balance settled upon filing the annual income return. The CIT rate in Lesotho is 10% for manufacturing income from exports outside SACU,

development-promoting manufacturing activities, and income from farming operations, particularly in the textile industry. Foreign company branches face a 25% CIT rate on their profits.

Customs and Excise Duties: Lesotho is a member of the Southern African Customs Union (SACU), established in 1910 to remove trade barriers among its member countries. Non-SACU nations are subject to the same tariff imposed by all SACU members. Excise duties collected by SACU members are combined into a shared revenue pool, and distribution is determined by a formula. Lesotho has long depended on SACU receipts as a substantial revenue source.

Revenue Collection Performance

Revenue collection in Lesotho has shown steady improvement, with income tax and VAT being significant contributors. In the fiscal year 2003/04, revenue performance exceeded government fiscal budget targets by 19%, with personal income tax accounting for approximately 60% of the total, followed by corporate income tax and value-added tax. The growth in tax collections throughout the year reflects increased efficiency, largely due to remittances from sole traders.

However, revenue collection trends have not always met targeted revenue from fiscal years 2012/13 to 2019/2020. Lesotho faced macroeconomic challenges, including climate change, a weak regional environment, political instability due to frequent election sessions, and a reduction in revenue from SACU. The COVID-19 pandemic in 2020 and its continued impact in 2021 further adversely affected the economy, leading to increased expenses and decreased revenue.

Overview of Lesotho's Tax Reforms

In Lesotho, several tax reforms have been implemented from the 1960s to the present day. These reforms aimed to increase revenue, reduce economic imbalances, simplify the tax system, and promote equity. The following is an overview of some key tax reforms:

1960 Tax Reforms: In 1960, Lesotho implemented significant tax reforms to eliminate double taxation. All income earners, regardless of nationality, were required to pay income tax with a maximum rate of 35%. The previously Basotho-only basic tax became mandatory for all male residents, calculated based on grades and scales. Corporations were subject to a flat tax rate of 35%.

1982 General Sales Tax: In 1982, the Department of Sales Tax introduced a general sales tax (GST) at a rate of 5%, which later increased to 6% in 1984. In 1993, the sales tax rate was initially set at 15% but was later reduced to 10%.

Introduction of Value-Added Tax (VAT): In 2002, the Lesotho Revenue Authority replaced the General Sales Tax with the Value-Added Tax system. The standard VAT rate was set at 14% for goods and services. The introduction of VAT aimed to expand the tax net, improve fairness and effectiveness, and outperform the previous GST tax structure.

Corporate Income Tax (CIT) Reforms: In 1993, Corporate Income Tax was implemented at a rate of 40%, but later in the same year, the rate was reduced to 35%. In 2006, the Corporate Tax rate was further reduced to 25% to promote private sector development and enhance competitiveness with South Africa.

Sin Tax Reforms: Sin taxes on alcoholic beverages and cigarettes were reformed to address the revenue gap and societal costs caused by the alcohol industry, as well as to promote better health outcomes. The government increased levies on tobacco and alcohol sales by 30% and 15%, respectively, in the 2019/2020 financial year budget speech.

Harmonization of Vehicle Taxation: Vehicle taxation based on gas emissions was harmonized at the Southern African Customs Union (SACU) level, ensuring consistency among member countries.

These tax reforms aimed to generate more revenue, simplify the tax system, promote equity, address societal costs, and enhance competitiveness. They have contributed to the evolution of the tax system in Lesotho over the years.

The Stabilising Effect of Taxation

Taxation, particularly consumption tax (VAT) and income tax (PIT and CIT), has a stabilising effect on government revenue. VAT provides stability as it is collected throughout the value-added chain and is based on consumption. It is considered a more stable source of revenue compared to exports, imports, or investments. Income tax, both personal and corporate, fluctuates with the economy but provides a predictable revenue stream for effective budgeting and planning. Progressive income tax systems offer better automatic stabilisers during economic downturns.

4. Empirical Literature

This literature review explores the theoretical concepts and empirical studies related to taxation, tax revenue stability, and their relationship with economic growth. The theoretical literature discusses various theories of taxation. The Ability to Pay Theory advocates for the use of the progressive tax approach, implying that higher-income taxpayers should pay a higher percentage of taxes (Adams, 2001; Okafor, 2012; Aguolo, 2004). The Benefits-Received Theory suggests that those who benefit from government goods and services should pay for them (Olaoye and Olaniyan, 2022). Also, the Laffer Curve explains the relationship between tax revenue and tax rates, suggesting that there is an optimal point beyond which increasing tax rates becomes counterproductive (Laffer, 2004; Bonga, 2017). The Traditional Tax Handle Theory states that taxes are necessary to achieve a specific level of national income and per capita income growth (Swan, 1956; Solow, 1956; Mansfield, 1998; Karumba, 2016).

These theories aim to identify the optimal tax rate for maximising tax revenues and promoting economic development. Taxation serves as a means to fund government activities, regulate income redistribution, and contribute to economic growth. The decentralization theorem emphasizes the allocation of public sector functions and finances across different levels of government (Ozo-Eson, 2005). Previous literature on tax revenue stability and economic growth has approached the topic from various angles and methodologies. The theoretical literature offers established theories, concepts, and models that researchers can draw upon to develop their research question and design.

Most of the literature on this topic had focused on comparative studies focused on multiple countries or regions to identify patterns and differences in tax revenue stability and economic growth, exploring the impact of tax systems, institutional factors, and economic structures. Also, some case studies have

provided in-depth analyses of factors influencing tax revenue stability and consequences, often employing cross-sectional analysis. Fewer studies have employed time series data, including that of Musa et al. (2015) who used the GARCH model to analyse tax revenue stability in Nigeria, and Dye (2004) who examined the growth rate and deviation from the trend of tax components in state general sales and individual income tax base.

However, previous empirical research has neglected to explore the relationship between tax revenue stability and economic growth. Given Lesotho's unique characteristics, conducting a study in this context is important to understand how factors such as economic structure, tax system, governance practices, tax policies, and external dependencies can influence the dynamics of tax revenue stability and its impact on economic growth. While there may be existing studies on this topic in other countries or regions, conducting the study in Lesotho contributes to the academic literature by providing Lesotho-specific evidence and findings.

5. Data and Methodology

The study utilised annual time series data from the International Monetary Fund (IMF) and World Development Indicators (WDIs) covering the period 1990 to 2021. The selection of the period and variables was based on the availability of secondary data. IMF is used to source data on, Value-Added Tax, Corporate Income Tax, and Personal Income Tax. Then again, WDIs are used to source data on, Real Gross Domestic Product (real GDP), Gross Domestic Expenditure (GDE), Inflation (CPI), Working-Age Population, and Population Size. To assess the relative tax revenue stability; annual revenue data were obtained for the three types of taxes in Lesotho from 1990 to 2021.

5.1 Theoretical Framework

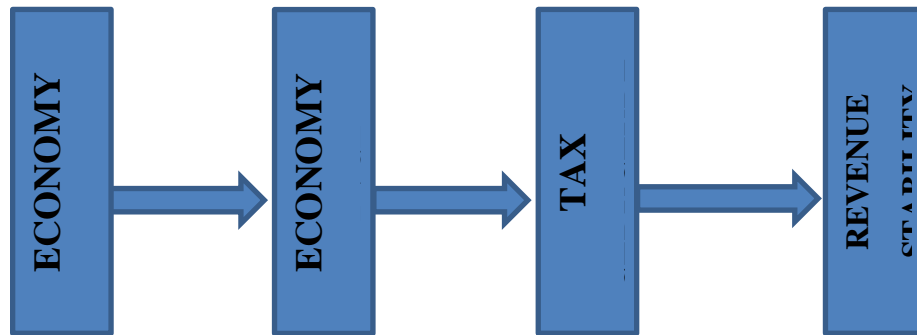
This paper is based on the specification proposed by Seegert (2016) and Yan (2008), which uses the portfolio theory from the corporate finance and regional science literature. The purpose of this section is to create a theoretical framework that explains how the interaction between different tax types and economic circumstances, as reflected in the diversity of economic bases, influences the stability of revenue in a region. The primary theory behind this study is to explore how revenue stability is influenced by the interaction between the economic base and the revenue generated from various types of taxes.

Figure 1 illustrates that a diverse economic base is crucial for a well-defined tax system, enabling the government to generate the necessary revenues for its operations. The tax structure of a government, along with the regional economy's outputs, generates revenues for government operations as depicted in the figure. Increased revenue instability can negatively affect the government's ability to provide consistent services and make it more vulnerable to economic and financial changes. Unstable revenue sources can also constrain the government's borrowing capacity, as noted by Yan (2008).

Previous studies have emphasised the positive impact of tax structure on revenue stability and fiscal performance Yan (2008). However, the relationship between revenue stability and different types of taxes remains unexplored. This study aims to establish this connection by examining how tax structure, operating under diverse economic conditions, influences revenue stability. Additionally, the stability of the economic base fluctuates over time, highlighting the importance of aligning the tax

structure with the appropriate economic base. By doing so, sub-national governments can enhance tax revenue stability.

Figure 1 Overview of the Theory



Source: Author's computations (2023).

Governments rely on a range of revenue sources with varying weights, just like the assets in an investor's portfolio. A tax bases j , such as personal income or sales, in country c and year t is a function of a vector of economic conditions x and a vector of tax rates τ , given by $B_{j,c,t}(\tau, x)$. The income tax base, for instance, expands as people's incomes increase and the economy expands. The tax base is influenced by taxation rates as well. As a result of individuals working fewer hours, the income tax base, for instance, drops with the income tax rate, and it probably rises with the corporation tax rate as a result of people converting more corporate income into personal income.

$$\text{Coefficient of Variation} = \text{Standard Deviation} / \text{Mean} \quad (1)$$

Total tax revenues are therefore weighted as a combination of tax bases, where the weights are the tax rates,

$$R_{c,t} = \sum_j \tau_{j,c,t} B_{j,c,t}(\tau, x) \quad (2)$$

A country's entire portfolio of revenue sources determines the revenues it receives. Seegert (2016) noted that certain countries heavily rely on specific types of tax revenue. For example, Washington does not tax personal income, while Oregon does not have a sales tax. Other countries opt for a more diverse range of income sources. The first term on the right side of these options directly affects both the tax base and the tax rate. For instance, the corporation tax rate can influence the amount of income tax collected. The vector of tax rates in the tax base function accounts for these spill over effects. The level of risk faced by each country depends on its tax portfolio.

5.2 Model Specification

Determining tax revenue stability

Various measures can be employed to assess the instability of a variable, with the standard deviation being a widely accepted approach. Ebeke et al. (2011) utilised the standard deviation to gauge tax stability by calculating the ratio of tax revenue to GDP. They also applied the first-difference operator to ensure stationarity before measuring the standard deviation, which is another measure of instability. Bleaney et al (1995) employed a similar method, measuring the standard deviation of the variable's change. Recent studies by Ebeke et al. (2012), Ebeke (2014), and Birhanu (2018) have adopted the coefficient of variation as an instability index to assess the stability or instability of taxes.

Additionally, Haughton (1998) suggested using the coefficient of variation, which is the ratio of the standard deviation of tax revenue to its mean, as a simple measure of tax revenue stability.

In estimating tax revenue stability, the study follows Ebeke et al. (2012); Ebeke (2014), and Wellington et al. (2015) to measure tax revenue stability. The study will employ the Coefficient of Variation as a measure of stability. The total tax revenue will come from only three main taxes (PIT, CIT & VAT) that are said to generate a large share of revenue than other taxes in the country. The tax revenue stability averages will be calculated from each year using three taxes, the standard deviation for each year, and finally coefficient of variation for each year.

$$\text{Total Tax Revenue Stability } (TTRS)_i = CIT_i + PIT_i + VAT_i \quad (2)$$

Where, $i=1990, 1991, \dots, 2021$

$$\text{Average Tax Revenue Stability } (ATRS) = TTRS_i / 3 \quad (3)$$

$$\text{Standard Deviation } (SD)_i = \sqrt{\frac{1}{n} \sum (x_i - ATRS)^2} \quad \text{Where, } x = \text{PIT, CIT, VAT} \quad (4)$$

$$\text{Coefficient of Variation}_i = \frac{SD_i}{ATRS_i} \quad (5)$$

This study calculates the Coefficient of Variation (CV) for both tax revenue as a whole and for each source of revenue. This approach will be beneficial in providing a comparative analysis of taxes.

The reason for using the CV is that it is recently used by most studies and provides a way to compare the variability of tax revenue across time, even when the mean tax revenue levels are different. Another reason is that CV does not affect by the scale of the variable, unlike other measures of variability such as standard deviation or the range (Taylor, 2023). This is mainly in the context of tax revenue stability, as the scale of tax revenue stability can vary greatly over time. Finally, trends and patterns can be identified in the revenue growth that may not be visible when looking at the raw data. Hence the estimation model to investigate the relationship between tax revenue stability and Lesotho's economic growth, is thus, specified as follows:

$$GDP_t = \beta_0 + \beta_1 TRS_t + \beta_2 inflation_t + \beta_3 GDE_t + \beta_4 W_Age\ Pop_t + \beta_5 PopSize_t + \mu_t \quad (6)$$

Where; Real Gross Domestic Product (RGDP) represents the dependent variable

Tax Revenue Stability (TRS) is an explanatory variable

Control variables are: Inflation (CPI is used as a proxy), Gross Domestic Expenditure (GDE), Working Age Population (W_Age Pop), and Population Size (Pop size)

β_0 = Constant term, $\beta_1 - \beta_5$ = Coefficient of explanatory variables, μ = Error term.

5.3 Estimation Strategy

ARDL Estimation Technique

This section includes various tests conducted to assess the time series properties of the variables, as well as the cointegration test and the error correction model. The diagnostic tests that were used in the model are also discussed here. The study utilises the ARDL model to examine the relationship between tax revenue stability and economic growth. The ARDL bounds testing method is employed to test for cointegration among the variables. Introduced by Pesaran, Shinn and Schmidt (2001), the

ARDL model accommodates both I (0) and I (1) variables in the estimation. This approach has advantages over other cointegration tests as it allows for the inclusion of endogenous and exogenous variables and is suitable for stationary or integrated variables (Pesaran et al., 2001). The ARDL model identifies cointegration vectors and uses a general-to-specific modelling framework with adequate lag selection. Furthermore, the ARDL model is well-suited for small sample sizes, making it useful when data availability is limited.

The ARDL estimation process consists of two main stages. Firstly, an unrestricted ARDL specification is used to test for a long-term relationship between the dependent and independent variables. If a significant level relationship is found, the second step involves determining the optimal lag orders of the independent variables in the ARDL equation using information criteria. Subsequently, the conditional error correction model is estimated to derive the co-integration vector and analyse the short-term dynamics.

The augmented form of equation (6) which determines the relationship between tax revenue stability and economic growth is specified as:

$$\begin{aligned} \Delta \ln RGDP_t = & \delta_0 + \sum_{i=1}^p \delta_{1i} \Delta \ln RGDP_{t-i} + \sum_{i=1}^q \delta_{2i} \Delta TRS_{t-i} + \\ & \sum_{i=1}^q \delta_{3i} \Delta \ln infl_{t-i} + \sum_{i=1}^q \delta_{4i} \Delta \ln GDE_{t-i} + \sum_{i=1}^q \delta_{5i} \Delta W_{AgePop}_{t-i} + \\ & \sum_{i=1}^q \delta_{6i} \Delta PopSize_{t-i} + \gamma_{1i} \ln RGDP_{t-i} + \gamma_{2i} TRS_{t-i} + \gamma_{3i} \ln infl_{t-i} + \gamma_{4i} \ln GDE_{t-i} + \\ & \gamma_{5i} W_{AgePop}_{t-i} + \gamma_{6i} PopSize_{t-i} + \varepsilon_t \end{aligned} \quad (7)$$

The initial section of equation (7) shown above, utilising delta (δ), depicts the short-run dynamics of the model. The latter part of the equation, utilising gamma (γ), represents a long-run relationship. In the equation, Δ denotes the first difference operator while p and q are the optimal lag length of the dependent and independent variables, correspondingly. The ECM used in determining the relationship between taxation and economic growth is expressed as follows:

$$\begin{aligned} \Delta \ln RGDP_t = & \delta_0 + \sum_{i=1}^p \delta_{1i} \Delta \ln RGDP_{t-i} + \sum_{i=1}^q \delta_{2i} \Delta TRS_{t-i} + \sum_{i=1}^q \delta_{4i} \Delta \ln inflation_{t-i} + \\ & \sum_{i=1}^q \delta_{5i} \Delta \ln GDE_{t-i} + \sum_{i=1}^q \delta_{6i} \Delta PopAge_{t-i} + \sum_{i=1}^q \delta_{6i} \Delta PopSize_{t-i} + \lambda ECM_{t-1} + e_t \end{aligned} \quad (8)$$

Where, ECM_{t-1} is the lagged error correction term, it is the extracted residuals from the regression of the long-run equation. λ is the speed of adjustment parameter and then δ 's are the short-run dynamics coefficients of the model's adjustment long-run equation.

ARDL Bounds Test for Cointegration

The ARDL bounds test for cointegration involves an F-test on the lagged levels of independent variables, as mentioned by Sam et al. (2019). Under the null hypothesis of no cointegration, the joint F-statistics have a non-standard asymptotic distribution. In the ARDL bounds approach, the first step is Ordinary Least Squares (OLS) estimation. The estimation of equations includes an F-test to determine the long-term relationship between variables, where the null hypothesis $H_0: \beta_{1i} = \beta_{2i} \dots \beta_{6i} = 0$ is tested against the alternative $H_1: \beta_{1i} \neq \beta_{2i} \dots \beta_{6i} \neq 0$. The upper critical bounds value is used to assess the null hypothesis, and if the computed test statistic exceeds this value, the

null hypothesis is rejected. If the F-statistic falls within the bounds of both equations, the cointegration test is inconclusive. Conversely, if the F-statistic is lower than the lower bounds value, the null hypothesis of no cointegration is not rejected.

6. Results and Discussion

6.1 Descriptive Statistics

Table 1 displays the descriptive statistics of the individual variables in this study. It specifically provides information on each variable's mean, minimum, maximum, and standard deviation values. The result is presented below:

Table 1 Descriptive Statistics

Variable	N	Mean	Std. Dev.	Min	Max
LnRGDP	31	23.49	0.26	22.98	23.84
TRS	31	0.52	0.11	0.31	0.69
INF	31	7.70	6.71	-9.62	33.81
LnGDE	31	9.87	0.61	8.56	10.47
POPsize	31	65.79	3.13	57.40	70.56
lnW agePop	31	13.96	0.11	13.70	14.12

Source: Author's computations using STATA16 (2023).

For all the variables being examined, there are 31 observations. According to statistical findings, the average performance of the stability of tax income for the period of 1991–2021 is 5.2%. This suggests that the performance has been good overall. The recorded greatest and minimum levels of overall tax revenue stability are 69% and 31%, respectively. Over time, there have been fluctuations in the increase of tax revenue stability.

On the other hand, Inflation is the most volatile among the variables, followed by Population Size. This is represented by the highest standard deviation of 6.71 and 3.13 respectively, indicating that the values are spread out. On the contrary, Gross Domestic Expenditure (0.613), Real GDP (0.26), Working Age Population (0.11), and Tax Revenue Stability (0.11) have low standard deviations. This shows that most of the data points are therefore quite near to the mean, as shown (Narkhede, 2018).

6.2 Correlation analysis

The study utilised two methods, namely pairwise correlation matrix and Variance Inflation Factor (VIF), to identify multicollinearity. Multicollinearity occurs when there is a high correlation among independent variables in a regression model. VIF measures the strength of correlation between explanatory variables, while the pairwise correlation matrix examines the relationship between dependent and independent variables, confirms variable signs, and detects multicollinearity (Pulagam, 2020). Multicollinearity can lead to challenges in interpreting independent variable coefficients and reduced statistical power. One approach to address multicollinearity is to remove one of the highly correlated independent variables (Zach, 2020).

Table 2 Matrix of Correlations

Variables	lnRGDP	TRS	INF	PopSize	lnGDE	lnW agePop
lnRGDP	1.000					
TRS	0.715	1.000				

INF	-0.415	-0.289	1.000			
PopSize	0.834	0.451	-0.419	1.000		
lnGDE	0.912	0.609	-0.321	0.625	1.000	
lnW_agePop	0.952	0.622	-0.430	0.956	0.786	1.000

Source: Author's computations (2023).

From Table 2 working age population is highly correlated with both real GDP and population size. As to mitigate the effect of the possibility of multicollinearity, the variable working-age population was dropped. After that, the regression analysis was conducted with only tax revenue stability, inflation, gross domestic product, and population size as explanatory variables, and the variance inflation factor (VIF) was used to test multicollinearity. The VIF values were all less than 5, indicating that there is no longer an issue of multicollinearity in the model

6.3 Stationarity and Cointegration Analysis

A unit root test is performed to ensure that the variables have orders of zero or one (excluding two). The tests used are Dickey and Fuller (1979) and Phillips and Perron (1988), applied to all variables. The optimal number of lags for the ADF test is determined using the Schwarz Information Criterion (SIC).

Table 3 Unit-Root Test

		ADF test					PP test				
		Level		First difference		Result	Level		First difference		Result
Variables	SIC lag	t-Stat	p-value	t-Stat	p-value		t-Stat	p-value	t-Stat	p-value	
LnGDP	1	-2.29	0.002*	-1.282	0.368*	I(0)	-2.93	0.042*	-4.61	0.000**	I(0)
TRS	1	-1.92	0.033*	-6.678	0.000**	I(0)	-2.74	0.221*	-7.01	0.000**	I(1)
INF	1	-4.51	0.000**	-6.742	0.000**	I(0)	-6.45	0.000**	-11.3	0.000**	I(0)
LnGDE	1	-3.25	0.0231*	-3.177	0.021*	I(1)	-4.79	0.790*	-3.12	0.025**	I(1)
PopSize	3	-2.39	0.013*	-1.432	0.851**	I(0)	-2.83	0.054*	-1.56	0.808**	I(0)

*with constant, ** with the trend, ***with constant and trend

Source: Author's computations using STATA16 (2023).

Table 3 presents the results of the stationarity tests, which indicate that all variables in the study are stationary at a level using the ADF test and Phillips-Perron test, except for the variable of the working-age population. Additionally, applying the Phillips-Perron test to the first difference of the data series rejects the null hypothesis of non-stationarity for all variables, except for the working-age population variable. Therefore, the study uses ARDL bound testing to check for cointegration and concludes that the variables are integrated in order 0 and 1. Given that the variable TRS gives different orders when using a different test, there may be changes in the volatility of the TRS variable over time, which could result in heteroscedasticity in the errors hence I(1) when PP is used. This is because Phillips-Perron can detect heteroscedasticity among errors (Phillips and Perron, 1988).

6.4 ARDL Bounds Tests for Cointegration

The study employed the ARDL bounds test to examine the long-run and short-run relationships among the variables. If the F-statistic is lower than the critical values for the lower bounds, the null hypothesis could not be rejected. The results are presented in Table 4, indicating the outcome of the analysis.

Table 4 Critical Value Bounds of F-Statistics

	Critical value bounds of the F statistic						
	10%		5%		1%		
Model	I(0)	I(1)	I(0)	I(1)	I(0)	I(1)	F-statistic
$\ln RGDP_t$	2.24	3.52	2.86	4.01	3.74	5.06	5.09

Source: Author's computations using STATA16 (2023).

The F-statistic computed for the ARDL bounds test was 5.09, which was found to be greater than all the critical bounds at all levels of significance. This indicates that there is a long-run relationship between the variables in the selected ARDL model (1, 1, 0, 0, 1).

Short-Run and Long-Run Results

The long-run equation (8) shown below generates the results of the relationship between Lesotho's economic growth and tax revenue stability. Table 5 below lists the short-run and long-run results that were used to determine the relationship.

$$\ln RGDP = (4.663 + 0.507 * TRS - 0.004 * INF + 0.337 * \ln(GDE) - 0.006 * PopSize \quad)) \quad (9)$$

The long-run estimates are displayed in Panel A of Table 5 below, while the short-run estimates are displayed in Panel B. In the long run, Lesotho's economic growth is significantly affected by past values of gross domestic expenditures. However, in the short run, the past values of the population size and gross domestic expenditure significantly affect economic growth.

The coefficient of determination or R-squared is 0.5412, indicating that approximately 54% of the variability in Lesotho's economic growth can be explained by the independent variables in the ARDL (1, 1, 0, 0, 1) model. The overall significance of the regression model is determined using the F-test, which reveals that the model is statistically significant at a 1% level.

Table 5 Short-run and Long-run Results

Panel A: Long run results Dependent Variable- $\ln RGDP$				
Variables	Coefficient	Std Error	t-statistic	p-value
TRS(-1)	0.507	0.312	1.63	0.118
INF(-1)	-0.004	0.004	-1.00	0.327
$\ln GDE(-1)$	0.337	0.079	4.26	0.000
PopSize (-1)	-0.006	0.025	-0.24	0.815
Constant	4.663	1.781	2.17	0.041
Panel B: Short run results Dependent Variable- $\ln RGDP$				
Variables	Coefficient	Std Error	t- statistic	p-value
TRS(-1)	0.023	0.073	0.30	0.759
INF	-0.001	0.001	-1.17	0.255
$\ln GDE$	0.077	0.044	1.75	0.094
PopSize	-0.028	0.013	-2.10	0.048
ECT(-1)	-0.228	0.122	-1.87	0.074

R-squared= 0.5412; Adjusted R-squared= 0.3952; F-Statistic= 463.21

Source: Author's computations using STATA16 (2023).

Beginning with the results for the coefficient on the lagged error-correction term, the ECT is used to capture the tendency of variables to return to the long-run equilibrium relationship after experiencing short-run dynamics. ECT value is estimated to be -0.23 and found to be negative which is the expected sign and significant at 10% level.

The coefficient of the Error Correction Term (ECT) indicates how fast the system returns to equilibrium after a shock. The negative sign of the ECT coefficient suggests that any deviations from the equilibrium are being corrected over time. The results indicate that around 23% of the disequilibrium from the previous year's shock returns to the long-run equilibrium in the current year, as anticipated.

The variables of tax revenue stability, inflation, and population size appear not to have a significant impact in determining Lesotho's economic growth in the long run for the period under investigation. Tax revenue stability is found not to significantly determine economic growth. This was not expected because tax revenue stability implies a stable source of funding for the government, which can then be used to invest in the country's infrastructure and other projects that can promote economic growth.

This insignificant result of TRS is somehow surprising for Lesotho because, in the early 1990s, Lesotho implemented a Structural Adjustment Program (SAP) in response to a fiscal crisis (Maruping, 2021). The SAP aimed to improve fiscal management and reduce government spending, which could have contributed to tax revenue stability. Moreover, Lesotho experienced relatively strong economic growth during the 1990s and 2000s, driven in part by the textile and garment industry (Jeppesen et al., 2019). This growth has provided a relative source of tax revenue and created incentives for the government to maintain tax revenue stability.

The findings by Baldacci et al. (2014) support the above argument whereby they find that tax revenue stability has a positive effect on economic growth, however, this effect is stronger in countries with well-developed financial markets. This finding explains why tax revenue stability is found to be insignificant in Table 5 above. Lesotho still faces some structural issues in the financial markets. Over the years, Lesotho's formal financial institutions have faced issues related to fraud, mismanagement, and insolvency, which could be one of the reasons for the low level of trust in the country's financial sector, according to UNCDF (2018).

On the other hand, a significant portion of Lesotho's economy is informal, meaning that businesses operate outside the formal regulatory and tax system. This makes it difficult for the government to collect taxes and enforce tax policies effectively. As a result, stable tax revenue may not translate into higher government revenue or increased economic growth. Also, despite the efforts to promote financial inclusion, many people in Lesotho still do not have access to formal financial services. In relation to UNCDF (2018), a mere 38% of adults in Lesotho possess a bank account, while an additional 23% rely on other formal financial services. The remaining 20% solely depend on informal financial services. This could limit the impact of tax revenue stability measures on the broader

population, as they may not have the means to participate in the formal economy to improve stable tax revenue.

In the long run, the estimated coefficient for inflation is found to be insignificant. These results show that inflation has a negative impact on real GDP however; the evidence is insufficient to conclude that inflation has a significant impact on the real GDP of the country. The reason behind this is that the association between inflation and economic growth in Lesotho has been complex with various factors contributing to both variables over time. In the early 1990s, Lesotho experienced high inflation rates partly due to the devaluation of the South African rand, which led to a decline in economic growth (Khamali, 2020). Economic reforms in the mid-1990s helped to stabilise inflation and promote economic growth. Lesotho's economy experienced significant growth in the early 2000s, driven by the textile and clothing industry, while inflation remained moderate.

In contrast, Gross domestic expenditure has a positive impact on Lesotho's economic growth in the long run, at a significance level of 5%. Its coefficient is 0.337, which means that a percentage point increase in the value of the first lag of gross domestic expenditure is associated with the percentage increase in real GDP, holding all else constant. Similarly, this result is expected since gross domestic expenditures, which represent the total amount of money spent by households, businesses, and the government in the economy, can stimulate economic activity and contribute to economic growth (Sobel et al., 1996). These results are not shocking since empirical evidence indicated that gross domestic expenditures may have a positive influence on economic growth since they can support the development of human capital, which is a main driver of economic growth (AFDB, 2013). For example, investment in education and training can improve the skills and productivity of the workforce, which can increase the output and competitiveness of the economy.

In the short- run the estimated coefficients are significant for population size at a 5% level and gross domestic expenditures at a 10% level but not significant at all levels for tax revenue stability and inflation. This means the first lag of population size is associated with a -0.028 percentage points decrease in real GDP on average and *ceteris paribus*. Again, the first lag of gross domestic expenditures is associated with a 0.08 percentage points increase in real GDP on average and *ceteris paribus*.

The negative coefficient of the population size variable suggests that as the population size increases, economic growth tends to slow down. Normally, an increase in population size implies growth in labour which may lead to an increase in economic growth Lesotho's population has been growing rapidly in recent years, putting pressure on the country's limited resources and infrastructure (World Data, 2020). The agricultural sector, which serves as the primary income source for over half of the rural population, struggles to meet the increasing food demands problem (IFAD, 2019). This sector contributes approximately 17% to the GDP, while the availability of arable land, accounting for only 10% of the total land area, exacerbates the issue. With a growing population, there is heightened pressure on the labour market to provide jobs for a larger number of people, resulting in the negative coefficient of population size.

Gross domestic expenditure positively influences economic growth in both the long run and short run. This aligns with previous empirical studies highlighting Lesotho's high consumption compared to

production levels. The country heavily relies on imports from South Africa, with approximately 85% of consumed products being sourced externally, including agricultural inputs. As a result, Lesotho struggles to meet its food requirements, producing less than 20% domestically (AGOA, 2022). Imposing taxes on imports becomes challenging for the government, limiting its revenue generation through taxation, which is typically a significant income source. Additionally, Lesotho's industrial sector is relatively undeveloped, focusing mainly on small-scale and low-technology industries such as textile manufacturing. This underscores the country's limited production capacity and dependence on imports.

6.5 Models diagnostic tests

Table 6 shows the results of the diagnostic tests conducted on the model to detect any potential issues of serial correlation, heteroscedasticity, normality, and stability.

Table 6 Models Diagnostic Tests

Tests	χ^2 statistics	Probability	Decision Criteria	Conclusion
Breusch-Godfrey Serial Correlation test	1.089	0.2966	H0: no serial correlation H1: the presence of serial correlation	No serial correlation
White Heteroskedasticity test	30.00	0.4140	H0: homoscedasticity H1: heteroscedasticity	No heteroscedasticity
Jarque-Bera normality test	0.123		H0: normality	Normality

Source: Author's computations (2023).

The p-value is higher than the 5% significance level implying that there is no serial correlation as shown in Table 5.8 that is, we fail to reject H0. The null hypothesis of constant variance was not rejected since the p-value was higher than the 5% level of significance. The conclusion suggests that the error term in Table 5.8 has a constant variance and hence homoscedastic. Furthermore, the Jarque-Bera normality test was conducted and the results are given in Table 5.8 above. The chi-square value is greater than the p-value which implies that we fail to reject H0 and conclude that there is normality.

6.6 Tax Revenue Stability Computations for Main Taxes in Lesotho

One way to measure tax revenue stability is by using the Coefficient of Variation (CV), which calculates the standard deviation of tax revenue divided by its mean. By applying this measure to each tax separately, policymakers can assess the stability or instability of tax revenue associated with each tax type. This information helps identify which taxes are more stable and which ones are more volatile, enabling policymakers to make adjustments to their policies accordingly. Figure 2 illustrates the revenue stability of the three taxes over time, with data collected every five years.

According to Boyd (2009), it is important to know about the volatility of individual taxes and what causes them to be more or less volatile to understand how volatility has evolved. There is no specific benchmark/threshold for determining the tax's stability, the stability will be apparent when comparing which is larger or smaller than the other. The decision criterion for the coefficient of variation is that a lower CV indicates greater stability because the spread of data values is low relative to the mean

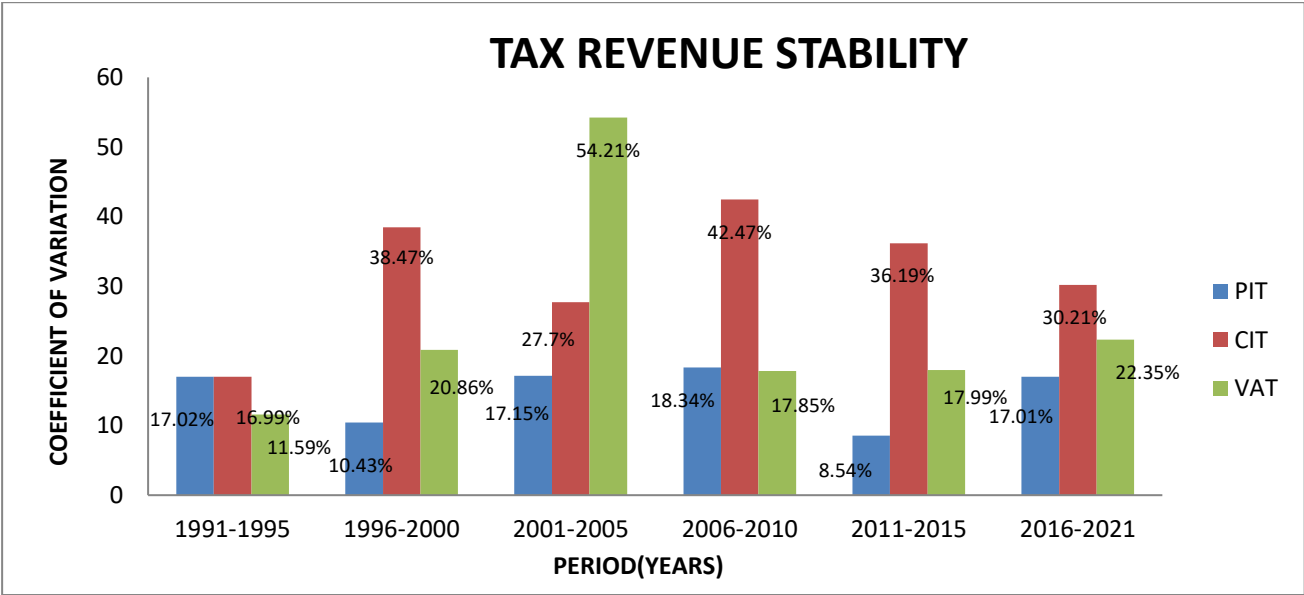
(Zach, 2021). Therefore, the tax with the lower CV will be considered greater than the tax with the higher CV in terms of revenue stability.

From Figure 2 below personal income tax has been the more stable tax throughout the 6 periods as compared to other taxes. Value-added tax is the second-best stable tax while corporate income tax is the least stable. This can be attributed to several factors, such as changes in tax policies that favoured stability, efficient tax administration, as well as consistent enforcement of tax collection. In Lesotho, PIT is the most stable source of tax revenue, which makes up roughly 42% of the total tax revenue collected by the country. This stability is due to the government's emphasis on PIT administration and enforcement. The country has implemented several reforms aimed at improving the PIT collection and its administration. In recent years, the government has introduced an online tax portal, which has simplified tax-related tasks such as filing tax returns and making tax payments (Njoki, 2013). This has increased compliance and reduced the need for physical visits to tax offices.

In addition, Lesotho has implemented policies aimed at promoting economic growth and job creation. These policies have led to increased incomes for many individuals, resulting in higher tax revenue from personal income tax (Jeppesen et al., 2019). Another key reform was the introduction of the Voluntary Disclosure Program (VDP), which allowed individuals who had not been paying taxes to come forward and regularise their tax status without penalties (LRA, 2016). This program led to increased compliance and boosted revenue for the government. Besides, the government has expanded the tax base by introducing new tax brackets and adjusting tax rates in 2020, ensuring that more individuals are included in the tax system. For instance, the new tax bracket was for high-income earners, raising the top marginal tax rate from 25% to 30% (LRA, 2004). This change has helped to increase PIT revenue, which has been critical in funding public services such as health and education.

The government also increased efforts to enforce tax laws and regulations, including increasing the number of tax auditors and improving collaboration between the tax authorities and other government agencies. This helped to reduce tax evasion and improve compliance. This was successfully done by introducing electronic tax filing systems and increased tax education and awareness campaigns. Despite these efforts, Lesotho still faces significant challenges in its tax administration. One of the biggest challenges is the large informal sector in the country, which creates a challenge to track and collect taxes from individuals and businesses operating outside the formal economy. Additionally, the country still relies heavily on external aid to fund many of its programs and initiatives.

Figure 2 CIT, PIT and VAT Revenue Stability



Source: Author's computations (2023).

From the above graph, VAT is found to be the second-best tax at promoting tax revenue stability in Lesotho contributing around 39% of total tax revenue. The VAT revenue stability was due to the government's efforts to improve VAT administration and enforcement whereby several reforms were implemented that have improved the efficiency and performance of the value-added tax (VAT) system. Unique reason why VAT is the second-best tax for promoting tax revenue stability in Lesotho is that it is all-encompassing, covering a vast array of goods and services (LRA, 2022). This means that even though the tax rate may be relatively low, the government can still generate significant revenue from VAT due to its broad base. Additionally, VAT is a relatively efficient tax, as it is self-assessed and can be easily monitored and audited by tax authorities.

Lesotho has implemented several reforms intending to enhance the administration of VAT. For instance, LRA has implemented an electronic tax system, which has made it easier for businesses to comply with VAT regulations and for tax authorities to monitor and enforce compliance. One of the key reforms was increasing the VAT registration threshold from M200, 000 to M1 million in 2020 (LRA, 2021). This move helped to reduce the compliance burden on small businesses while also refining the efficiency of the tax administration by focusing on larger businesses. The Lesotho Revenue Authority (LRA) has also introduced electronic filing for VAT, making it easier for businesses to comply with VAT regulations (LRA, 2004). This has improved the effectiveness of the tax administration, enabling it to process VAT returns with greater speed and accuracy.

Furthermore, reform was the introduction of a VAT refund system that allows businesses to claim refunds of VAT paid on inputs that are utilised to produce goods and services. This reform has led to a decrease in the expenses associated with conducting business in Lesotho and has encouraged investment in the country. To further improve compliance, the government of Lesotho has implemented a program to educate businesses and the public about VAT regulations. This has included workshops, seminars, and other outreach activities designed to inform businesses about their VAT obligations and to encourage voluntary compliance.

The LRA also conducts regular audits of businesses to ensure compliance with VAT regulations. These audits help to identify instances of non-compliance and to enforce penalties and other measures against businesses that do not comply with VAT regulations. This has helped to enhance the efficiency of the tax administration and to ensure that VAT revenue is collected in a timely and accurate manner. Overall, these reforms have helped provide the government of Lesotho with a stable source of tax revenue and benefited in boosting the nation's economic growth and development.

Apart from that, the highly unstable result of VAT was noticed in the period 2001-2005 in Figure 1. This is because, during that time in 2003, VAT was introduced and substituted General Sales Tax which was operating by then. VAT becomes an abroad-based tax that was imposed on an extensive range of goods and services and generated a lot of revenue from a large number of taxpayers and economic sectors than expected. A lot of revenue from VAT was collected than in all other periods' causing a huge variation in tax revenue stability during that period.

Despite these efforts, there are still some challenges associated with VAT administration in Lesotho. One of the biggest challenges is the high rate of informality in the economy, which makes it difficult to collect VAT from businesses that are not registered for tax purposes. Additionally, there are concerns that the tax burden associated with VAT may fall disproportionately on low-income individuals because they frequently spend a bigger percentage of their income on items and services that are taxed.

Furthermore, multiple economic factors have influenced consumer spending fluctuations in Lesotho from 1990 to 2021, impacting value-added tax revenue stability. The Great Recession, followed by the COVID-19 recession, significantly affected consumption, with a sharper decline observed during the latter. Lesotho's economy experienced sluggish growth during this period, averaging around 2.5% annually (IMF, 2005). This slow growth resulted in high unemployment rates and low wages, leading to reduced consumer spending. Moreover, Lesotho faced high inflation, with an average rate of approximately 5.2% (CBL, 2017), further diminishing consumer purchasing power and contributing to decreased spending. Additionally, external factors, including changes in global commodity prices, have had an impact on Lesotho's economy, further reducing consumer spending.

As indicated by the graph above, CIT is found to be the least stable source of tax revenue, contributing around 23% of total tax revenue in Lesotho. This instability is due to a small number of large corporations operating in Lesotho, limited capacity within the tax administration, and challenges in attracting foreign investment. Consequently, fewer large corporations are operating in the country compared to other countries. As a result, the government is heavily reliant on a small number of large corporations for corporate income tax revenue. This makes the revenue stream from corporate income tax vulnerable to fluctuations in the performance of these few corporations, which can cause a substantial influence on the overall tax revenue stability.

In addition, the government's ability to enforce corporate income tax laws and regulations is limited due to capacity constraints within the tax administration. These capacity constraints include insufficient technology and data management systems to efficiently manage the large amounts of data required to effectively enforce corporate tax laws and regulations. Moreover, inadequate legal frameworks limit the LRA's ability to successfully enforce the law and impose penalties for non-

compliance because many corporations have complex ownership structures and can take advantage of tax loopholes and offshore tax havens to cut their tax burdens. Lesotho has struggled to attract foreign investment, which has limited the number of large corporations operating in the country. This has led to an undesirable impact on the stability of corporate income tax revenue, as the government is heavily reliant on a small number of domestic corporations for revenue.

Furthermore, political instability and corruption have also contributed to corporate income tax revenue instability. In the period 2020-2021, Lesotho's economy was heavily impacted by external factors, including the global COVID-19 pandemic and the resulting economic slowdown (World Bank, 2022). The pandemic had a significant impact on Lesotho's textile industry, which is a major source of revenue for the nation, leading to a decline in corporate profits and potential instability in CIT revenue. To address these challenges, the government has introduced tax incentives for foreign investors and has worked to improve the ability of tax management to enforce corporate income tax laws and regulations. However, more work needs to be done to promote sustainable economic growth and development in the country. Individual taxes vary in their overall stability throughout time, although most trends have remained very steady. Personal income tax has contributed more to tax revenue stability in Lesotho over the years, while corporate income tax has contributed more to instability. As for the value-added tax, the contribution was moderate towards the stability of tax revenue.

5. Conclusion and Recommendations

This study examines the relationship between tax revenue stability and economic growth in Lesotho. It focuses on the main taxes contributing to tax revenue: Personal Income Tax (PIT), Corporate Income Tax (CIT), and Value-Added Tax (VAT). The coefficient of variation (CV) is used to measure tax revenue stability. The analysis shows that tax revenue stability and inflation are not significant factors in the short and long run. However, gross domestic expenditure has a positive and significant impact on economic growth. In terms of tax performance, Personal Income Tax demonstrates the highest stability, followed by Value-Added Tax and then Corporate Income Tax. The study finds no significant relationship between tax revenue stability and economic growth in Lesotho. These findings provide valuable insights for policymakers and tax administrators in Lesotho.

7. Policy Recommendations

The study provides important implications in the following ways: Lesotho should implement policies that incentivize domestic production and reduce reliance on imports. This can be done through import substitution policies such as increasing tariffs on certain imported goods or introducing quotas on imports (Promote domestic production); the government should implement policies to address the issue of negative population growth (Address negative population growth); The Lesotho government should focus on improving corporate income tax compliance and revenue stability (Improve tax compliance and revenue stability). Initiatives should include improving the tax administration system, increasing public awareness about taxes, and reducing the tax burden on small and medium-sized enterprises.

8. Limitations and Areas for further studies

Future research should consider a longer time series to provide a more comprehensive analysis of the relationship between tax revenue stability and economic growth in Lesotho. Additional control variables such as bribery, political stability, and corruption index to better understand their impact on the relationship between tax revenue stability and economic growth. It germane to analyse disaggregated taxes to assess the impact of each tax on economic growth in Lesotho, providing more specific insights into the performance of different tax types.

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II.III The Political Economy of International Trade, Colonial Heritage and Economic Development in Africa

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Abstract

Motivated by increasing agitations from top government officials, academic elites, pan-African promoters and various interest groups on the continuous influence/interests of western powers in general and former colonial powers in particular on Africa, this study investigates the relationship between colonial heritage, international trade and economic development in Africa. The literature projects international trade as a viable development tool as it increases economic gains, but it depends largely on the nature of trade agreements and trading partners that determine the proportion of such gains for each partner. This study, therefore, employs a system generalized method of moments (S-GMM) methodology for a sample of 40 countries to ascertain its objective. The results show that, though international trade is important and ultimately leads to growth in Africa, the influence of former colonialists masters that are reflected in prevailing trade and allied agreements vary significantly. The study finds that former French colonies had significantly lower economic development than other countries when analysed independently and when interacting with international trade as opposed to former British colonies and the others who have significantly higher economic development. The goal of this study is not necessarily to celebrate any former colonial power or new intending powers like China, Russia and the USA among others, but to highlight the fact that the choice of trading partners and the nature of international trade is critical to determining its effect on economic development. It is therefore, imperative for African leaders to re-examine their existing trade partners in order to ensure that their interests are primarily met for a more sustainable economic development.

Keywords: Colonial Heritage, International Trade, Economic Development, Africa

1. Introduction

The origin of the conceptualisation of international trade dates back to the mercantilist era of the 16th century when it was perceived as a zero-sum game –winners (economies with exports > imports) and losers (imports > exports). This history is particularly important because it defined international trade and in part led to the colonisation of new territories in Africa and other parts of the world, in search for cheap labour to boost local production and new markets to boost exports according to the mercantilist theory. Cranny (1998) posits that mercantilists promoted the interest and benefits of empires and not colonies as it encouraged the purchase of raw materials at very cheap rates and sale of finished products at very high rates for the colonisers while discouraging manufacturing and export for the colonies. The Council of Castile, which represented the Royal class of the ruling body in Spain at the time explored new colonies with “the hope of finding gold there” (Pincus, 2010). Rees (1929) argued that the deeply mercantilist orientation of the *terms of Utrecht* influenced colonial history for the next generation.

Post the independence of many African countries, international trade flows have continued to reflect some of the ideals of the mercantilist understanding of international trade. International trade flows still largely show that western economies purchase raw materials from Africa and sell semi-finished and finished products to the same African countries. These ties are deeper with colonial alliances as most African countries have established legal agreements or belong to trade-related associations that put their colonial masters in favourite positions for raw materials and a market for their finished products. Moir (2021) posits that former colonial powers of African countries have sustained the *extractivist economic model* from the colonial era, which limited economic growth and perpetuated poverty in Africa. Proponents of free trade advocate for international trade based on comparative cost advantage and identify positive-sum gains in trade, transfer of technology, efficient products and lower prices among others as the benefits of international trade.

Opponents on the other hand argue that international trade should be managed to protect local industries and promote exports over imports. The comparative cost advantage seems to suggest that Africa’s comparative advantage is in agriculture and has for a long time defined the relatively higher production and exports of raw materials (Yuni, 2022). Osita Oparaugo, the chairman of Footprint to Africa Limited and Sinachi Farms Limited argued that Cote d’Ivoire, Nigeria, and Ghana, are the three highest producers of cocoa in the world but together make less than \$5 billion yearly from cocoa while the United States of America makes between \$20 to \$30 billion and Europe about \$50 billion a year from chocolate (Jeremiah, 2018). According to Hausman (2014), poor countries, such as most African countries, should follow the lead of South Africa and Botswana and use their natural resources to advance industrialization and consequently, restrict raw mineral exports.

Trade remains a viable and essential tool for economic development in Africa, but it depends largely on the nature of trade agreements and trading partners (Anam 2021; Yuni, 2022). Africa is estimated to house about 30% of the earth’s mineral resources and is therefore, considered the most endowed continent with natural resources (World Atlas, 2022). The 2021 World Bank statistics state that Sub-Saharan Africa (SSA) recorded only about \$US468, 912 million in exports, which represent a nominal 1.67% of global exports (World Bank, 2022). Florie Liser, the Assistant U.S. Trade Representative for African Affairs projected that “SSA increased its share of world trade from 2 to 3 per cent, that 1

percentage increase had the capacity to generate about \$70 billion of additional income annually for Africa,” which represents about 3 folds of aggregate foreign aid to Africa (Office of the United States Trade Representative, 2022). This potential has however, been constrained in part by the spillover colonial influence or colonial heritage of African countries.

It is on this premise that this study seeks to contribute to the existing literature by examining the relationships between colonial influence/heritage, international trade and economic development in Africa. There exists a plethora of studies that have examined the relationship between international trade and economic growth globally and in Africa. Nevertheless, there seldom exists any that empirically interrogates the role of colonial heritage. In the interest of the influence of colonial heritage, this study aligns African countries into three main groups; those colonised by France, those colonised by Britain and the rest, since France and Britain had the lion’s share of colonies. The introduction will be followed by an analysis of the role of colonial heritage in international trade of African countries, a brief literature review on the subject, methodology, empirical findings and the conclusion.

The role of Colonial Heritage in International Trade of African Countries

At the beginning of the 19th century, SSA was isolated from the rest of the world due to natural boundaries such as the Sahara Desert and the Oceans; in the interest of colonisation, however, ports were created in Tunis, Algiers, and Casablanca amongst others as well as the Suez Canal (Yattioui, 2020). Beyond the ports, railways and roads were constructed to facilitate the movement of raw materials to the colonialists. The ports and road infrastructure established trade routes that were structured to ferry raw materials to the countries of the colonisers and in return provide a market for their semi-finished and fished goods. At independence, the control of external routes at the other end still dictated operations to a large extent given that the existing infrastructure already favoured the former colonial powers. Post-independence, international trade in Africa is still based on some level of colonial heritage, which seems to vary with former colonialists.

For example, prior to the independence of most French colonies, France signed an agreement with her colonies that pegged the CFA to the then French Franc; obliged them to deposit 50% of their respective foreign exchange reserves in the French treasury, compelled them to send annual balance and reserve report to France and gave France the right to the first refusal of natural resources, public procurements and strategic military operations of their previous colonies etc (Yattioui, 2020; Mwema 2021). This has enabled a lucrative trade environment for France in Africa especially, for her colonies, given the common language, French-managed currency and unlimited access to raw materials. According to Martin (1995, p.9), France retained huge importation of raw materials and her energy dependence on Africa rose from 30% in 1950 to 80% in 1988/89, as well as 100% uranium imports from Gabon and Niger for nuclear empowerment. “Between 1970 and 2006, French exports to Africa went up from 13-28 billion dollars and the African market quadrupled in size. This explains why France desires to keep a firm grip on the currency (franc)” (Yattioui, 2020).

Today, there are still heavyweight companies such as the Total oil giant, Orange telecommunication company, Bouygues construction company, Alstom and Sneider Electric in energy and Bolloré port company amongst others in most former French colonies and beyond. The personal ties created

between French and African political, economic and security elites have sustained Franco-African ties since the colonial period, but some African elites, politicians, academia and protest groups have begun to resist France's influence and demand for more beneficial trade interactions (Benneyworth, 2011; Mwema 2021). Prior to the assumption of office, French President Emmanuel Macron promised a better relationship between France and Africa. Yattoui, (2020) however, states that he has so far shown no interest "to end the unequal and unfair relationship, as his country continues to control the trade and currency of these former colonies". Rather, he has pushed to be equally associated with the yet-to-be-established 'eco' currency of the Economic Community of West African States (ECOWAS).

Britain on the other hand granted private companies such as the United African Company, United Trading Company, Imperial British East Africa Company, and the British South Africa Company the rights to administer in Africa at the start of colonisation; most of whom were formed by businesspersons interested only in exploiting the huge resources discovered in Africa (Encyclopedia of Race and Racism, 2022). In exchange for the raw materials from Africa, Britain traded cloth, guns, shipbuilding materials and other manufactured goods (Leemanor, 2022). The indirect rule system of governance as indicated by Lord Lugard, allowed Africans to see and follow their African chiefs or leaders but was largely influenced by strings from Britain; something that could be said of British relations with Africa today.

"The British colonial policies planted the seeds of the racial and ethnic rivalries... Unfortunately, the custodians of political power have not yet divorced themselves from British colonial policies... It is interesting that most of the ethnic conflicts are in the African countries with the most natural resources. It is in these countries that British and other foreign interests engineer civil wars so that they can continue to loot the resources of Africa. Finally, the constant interventions of the British in the affairs of their former colonies have not helped matters. They continue to covertly and overtly support their preferred ethnic groups and thereby continue to dominate and marginalize all the other groups" (Encyclopedia of Race and Racism, 2022).

Today, the United Kingdom (UK) has fully ratified trade agreements with most of its former colonies, some of which include Cameroon, Egypt, Ghana, and Morocco as well as the Eastern and Southern Africa¹² trade bloc and the Southern Africa Customs Union and Mozambique trade bloc¹³ constituting trade worth £393; £3,398; £1,396; £2,075, £954, £12,048 million respectively with the UK (GOV.UK 2022). It is however important to note that the UK enjoys more trade with other parts of the globe with similar block trade agreements. Welle (2021) posits that Britain isn't that important for many African nations as African exports accounted only for 2.5% of the total goods imported into Britain and only eight countries from SSA (mostly former colonies) identify the UK in their top 10 export destinations.

Besides France and the UK, Africa has recently and rapidly begun to diversify trade routes with new trade agreements and interests. The European Union is more actively involved with export and import

¹² ESA - made up of Mauritius, Seychelles, Zimbabwe

¹³ SACUM – made up of South Africa, Botswana, Lesotho, Eswatini, Namibia and Mozambique

trade with North Africa than SSA. In 2019, the European Union and Africa reached a total trade of \$282 billion (Leemanor, 2022). Leemanor further opines that the Europeans enjoyed a tax-free haven from Africa relative to the Arabs and Ottomans and thus, made it an important trading partner. The United States of America has established its trade relations with SSA via the African Growth and Opportunity Act. China's penetration into African trade has been very loud, while India, South Asia and other foreign countries have also been trooping in to take advantage of the sensitive raw materials needed for competitive production and for markets. This study however, focuses on those world powers that had colonies and how trade is related to the development of these former colonies, given that they have pulled more weight in international trade of former colonies for the 30 years (the scope of this study) as already established.

A Review of the Literature

International trade theory dates back to the mercantilist theory of the 16th – 18th century. It was chronicled to consider a stable status of wealth – largely gold at the time. It therefore, considered trade gains as a zero-sum game and advocated largely for exports over imports. The classical trade theories that preceded opposed the mercantilist theory and argued that trade could be a positive sum game if countries specialise in products that they have an absolute cost advantage in (Smith, 1976), comparative advantage (Ricardo, 1817) and relative factor endowments of labour and capital (Heckscher, 1935 & Ohlin, 1933). Modern trade theories such as the country similarity index, product life cycle, Global Strategic rivalry and Porter's national competitive advantage explain current trends of international trade flows. Ultimately, the old and new trade theories advocate for trade based on mutual trade gains and infer its positive contribution to economic growth and development.

Empirical evidence largely supports the assertion that international trade (proxied with exports) impacts on economic growth and development. The empirical literature on the subject could be classified into two groups, those who found a positive and significant relationship and those who found a positive but non-significant relationship. Employing methodologies such as the Vector Error Correction Model (VECM); panel stochastic frontier, and multiple regression analysis. Sulaiman and Ramli, (2018); Ahamad (2018); Sun and Heshmati (2010); Vadivel & Nirmala, (2020), Elias et al., (2018) and Musinguzi and Rapha (2019) found a positive and significant relationship in Malaysia, Bangladesh, China, India, Nigeria, Uganda respectively while, Mogoe and Mongale (2014) found a positive but non-significant effect of international trade on economic growth in South Africa. Other researchers like Gwaindepi, et al. (2014) and Nyabyenda, and Rao (2020) and Bakir (2019) employed co-integration techniques to establish a long-run relationship between international trade and economic growth in Zimbabwe, Rwanda and Kenya respectively. However, none of these studies investigated this relationship in line with colonial heritage.

4. Methodology and Data

4.1 Methodology

This study employs the endogenous growth theory for its theoretical framework as specified by Rebelo (1991). In line with existing theoretical and empirical literature of the determinants of human development index, the study specifies the following dynamic panel model:

$$Y_{it} = \alpha_i Y_{it-n} + \rho_{it} K_{it} + \phi_{it} Trade_{it} + \delta_{it} X_{it} + \theta_i + u_t + \varepsilon_{it}$$

where i indicates the country ($i = 1.., N$), Y_{it} is the outcome variable – economic development, proxied with human development index; Y_{it-n} is the n^{th} one-period lag of the outcome variable in country i , Trade represents the key explanatory variable, which is proxied with exports as a % of GDP in country i , K represents capital accumulation proxied with capital formation (% GDP), while X_{it} represents a vector of control variables. α, ρ, \emptyset , and δ are the parameters and vectors of parameters to be estimated, θ_i represents country-specific effects, u_t represents period-specific effects and, ε_{it} is the error term. The control variables include: Private Sector credit (% GDP), inflation (CPI), government debt, FDI (% GDP), real interest rate, government effectiveness and political stability.

The model was estimated using the System Generalised Method of Moments (S-GMM) developed by Blundell and Bond. The S-GMM is a two-step estimator in which an initial positive semidefinite weight matrix is used to obtain consistent parameter estimates, and then in the second stage, a weight matrix that is consistent for the efficient weight matrix can be built (Windmeijer, 2000). The S-GMM estimator combines a system with the regression in first differences with the regression in levels, so that variables in differences are instrumented with the lags of their levels and variables in levels with the lags of their differences (Bond et al., 2009; Uddin et al., 2017).

According to Roodman (2009), S-GMM is more advantageous than difference in GMM because the latter tends to magnify gaps in unbalanced panel data, such as the panel data being estimated. Because of its ability to resolve endogeneity issues and account for omitted variables, the system GMM is regarded as a better estimator than the other panel data techniques (Blundell & Bond, 1998; Soto, 2009). Soto (2009) uses Monte Carlo simulations to demonstrate that the system GMM estimator has lower bias and higher efficiency than all other estimators tested, including the standard first-differences GMM estimator in smaller sample sizes (less than 100), which is common in cross-country studies.

4.2 Data

The study employed a panel of 40 countries with data from 2007 to 2020. Following Osei and Kin (2020), the study averages the data over 2-year non-overlapping periods, in an attempt to filter out cyclical fluctuations and to focus on the long-term. The number of time series and cross-sectional observations employed offers enough degrees of freedom for the methodology employed to deliver robust and reliable results. The 40 countries covered are Angola, Benin, Botswana, Burkina Faso, Burundi, Cabo Verde, Cameroon, Central African Republic, Chad, Comoros, Congo, Democratic Republic of Congo, Côte d'Ivoire, Equatorial Guinea, Gabon, The Gambia, Ghana, Guinea, Guinea-Bissau, Kenya, Lesotho, Madagascar, Malawi, Mali, Mauritania, Mauritius, Mozambique, Namibia, Niger, Nigeria, Rwanda, Senegal, Sierra Leone, South Africa, Sudan, Tanzania, Togo, Uganda, Zambia, Zimbabwe. The summary statistics of the variables employed are shown below.

Table 1: Summary Statistics of the Variables

Description	Obs.	Mean	Std. Dev.	Min	Max
HDI	420	0.505	0.0927	0.306	0.794
Exports (% GDP)	415	30.99	18.83	0.67	107.99
Private Sector Credit (% GDP)	400	21.363	23.384	2.17	142.4
Capital formation (% GDP)	402	24.698	10.169	5.128	79.401
Inflation (CPI)	414	6.684	6.467	-8.97	36.96

Government Debt	400	44.97	34.85	5.88	259.67
FDI (% GDP)	425	4.85	6.43	-5.337	57.88
Real Interest Rate	323	8.147	10.057	-34.74	50.76
Government Effectiveness	430	0.31	7.03	-1.85	52.61
Political Stability	430	24.37	24.55	-2.699	93.75

Source: Authors' computation of data collected.

According to the available data, HDI ranges from 0.306 to 0.8, with an average of 0.51. Total exports as a percentage of GDP averaged 30.99 with a high standard deviation of 18.83. Table 2's pairwise correlation matrix shows a low average relationship amongst the independent variables but a relatively higher relationship between the independent variables and the dependent variable, HDI except for CPI, RI and FDI that records coefficients of less than 10%.

Table 2: Pairwise correlations matrix of the variables.

	HDI	EX	PSC	CF	CPI	GD	RI	FDI	GE	PS
HDI	1.00									
EX	0.45	1.00								
PSC	0.63	0.17	1.00							
CF	0.12	0.35	0.01	1.00						
CPI	0.02	-0.04	-0.08	-0.08	1.00					
GD	0.10	-0.03	0.05	0.23	0.26	1.00				
RI	-0.05	-0.07	-0.11	0.11	-0.52	-0.11	1.00			
FDI	-0.04	0.29	-0.05	0.49	-0.04	0.16	0.22	1.00		
GE	0.14	0.03	0.04	-0.05	0.02	-0.05	-0.06	0.08	1.00	
PS	0.15	0.22	0.27	0.08	-0.05	-0.23	0.06	0.16	0.08	1.00

Source: Authors' computation of data collected where; HDI represents Human Development Index, EX represents exports (% GDP), PSC for Private Sector credit (% GDP), CF for Capital formation (% GDP), Inflation (CPI), GD for Government Debt, RI for Real Interest Rate, GE for Government Effectiveness and PS for Political Stability.

Empirical Results

In response to the key objective which is to ascertain the interactive effect of colonial heritage and international trade on economic development, the results are presented below. The table shows the separate effects of international trade and colonial heritage and their interactive effect on economic development for Britain, France and the others

Table 3: Effect of Colonial heritage and Trade on Development

Description	British		French		Others	
	Model 1 Separate	Model 2 Interactive	Model 3 Separate	Model 4 Interactive	Model 5 Separate	Model 6 Interactive
HDI (-1)	0.904*** (0.0001)	0.9156*** (0.0001)	1.345*** (0.0001)	0.915*** (0.0001)	1.3342*** (0.0001)	0.894*** (0.0001)
HDI (-2)			-0.448*** (0.0001)		-0.421*** (0.0001)	

Exports (% GDP)	0.00023*** (0.0001)		0.0003*** (0.0001)		0.00023*** (0.0001)	
British colonies dummy	0.0058*** (0.0009)					
Int. dummy - trade and British colonies		0.00011** (0.0494)				
French colonies dummy			-0.0068*** (0.0001)			
Int. dummy - trade and French colonies				-0.0001** (0.0290)		
Other colonies dummy					-0.00044 (0.5500)	
Int. dummy - trade and Other colonies						0.00009** (0.0131)
Private Sector Credit (% GDP)	0.0001*** (0.0009)	0.0001*** (0.0044)	0.0001*** (0.0003)	0.0001*** (0.0025)	0.00008* (0.0072)	0.0001*** (0.0015)
Capital formation (% GDP)	0.00004 (0.5253)	0.0002*** (0.0074)	0.000097 (0.1609)	0.0003*** (0.0077)	0.00005 (0.4482)	0.0002*** (0.0001)
Inflation (CPI)	-0.00002* (0.0755)	0.0002*** (0.0025)	-0.00002* (0.0251)	0.0002*** (0.0005)	0.00002*** (0.0003)	0.0004*** (0.0001)
Government Debt	- 0.00009*** (0.0001)	- 0.00008*** (0.0012)	- 0.00009*** (0.0001)	- 0.00009*** (0.0001)	- 0.00005*** (0.0004)	- 0.0009*** (0.0005)
FDI (% GDP)	-0.0001 (0.2354)	-0.0002 (0.1605)	-0.0001 (0.1278)	-0.000026 (0.0737)	-0.00005 (0.6225)	-0.0003** (0.0071)
Real Interest Rate	-0.0001*** (0.0029)	-0.0001** (0.0425)	-0.00002 (0.5664)	-0.00004 (0.4513)	0.0000008 (0.9726)	-0.00003 (0.5090)
Government Effectiveness	0.00397** (0.0489)	0.0036*** (0.0070)	0.00598*** (0.0001)	0.0044*** (0.0014)	0.0065*** (0.0001)	0.005*** (0.0010)
Political Stability	0.000007 (0.7172)	0.00002 (0.3404)	- 0.00008*** (0.0003)	0.000015 (0.4887)	-0.00004** (0.0393)	0.0000009 (0.9703)
constant	0.056*** (0.0001)	0.0509*** (0.0001)	0.058*** (0.0001)	0.057*** (0.0001)	0.048*** (0.0001)	0.0654*** (0.0001)
	-1.43731	-1.77828	-1.77127	-1.856	-1.72485	-1.9347

Test for AR(1) errors - z	(0.1506)	0.0754	(0.0765)	(0.0635)	(0.0846)	0.0530
Test for AR(2) errors - z	-0.463825 (0.6428)	0.0945058 0.9247	0.227783 (0.8198)	-0.627442 (0.5304)	0.558287 (0.5766)	-1.14093 (0.2539)
Hansen over- identification test	19.3926 (0.4319)	17.5804 0.5506	16.0869 (0.5177)	17.5968 (0.5495)	15.7408 (0.5423)	16.3719 (0.6323)
Pesaran CD test for CSD	1.57946 (0.11423)	1.1195 0.262929	0.0695624 (0.944542)	1.12217 0.26179	0.408873 (0.682633)	0.788523 0.430391
Number of Observations	31	31	30	31	30	31

Notes: Coefficients and standard errors (in brackets) are given in this table. And *** p<0.01, ** p<0.05, * p<0.1.

The diagnostic tests of this model suggest that all six models validate the AR (2) tests, as designated by their p-values which are all above 0.05, hence not significant at a 5.0% level of significance and shows that the serial correlation of the error terms is not a second order serial correlation. The number of instruments for the four models is either 31 or 30, which is less than the number of countries - 40. In addition, the Hansen over-identification test with insignificant p-values validates the instruments employed. Finally, the Pesaran CD test with insignificant p-values also confirms that there exists no cross-sectional independence that could bias the estimators. We therefore, conclude that the estimators are robust and reliable enough for policy inferences.

Overall, the results show that when export is analysed independently, it is a positive and significant determinant of economic development in the first, third and fifth models at 1% significant level. This result corroborates the existing empirical and theoretical evidence that international trade contributes or promotes economic development. The result of the colonial heritage indicators offers some interesting inferences. The British dummy for colonial heritage is positive and significant at 1% significant level, suggesting that economic development for countries that were colonized by Britain were significantly higher than the rest of the countries sampled during the period covered. Also, the interactive dummy between the British country dummy and exports is also significant at 1%, showing that the interaction between being a former British colony and international trade positively affects economic development.

Conversely, the independent country dummy for France and its interactive dummy with exports show a negative but significant probability value at 5% significant level. This suggests that economic development in former French colonies is significantly lower than in the rest of the countries sampled. Worthy to note is that, even though export is positively significant in model 4 when analysed independently, it becomes negatively significant when associated with the odds of being a former French colony. This is not unrelated with the high-handedness of French relations with their former colonies that have left them with relatively lower economic development compared to their peers. The dummy for other countries not previously colonised by Britain or France in the sample considered did

not have a significantly different economic development but had a significantly positive interactive dummy with international trade.

The results, therefore, suggest that, although international trade is important and ultimately leads to growth, the influence of former colonialists that are reflected in prevailing trade and allied agreements, significantly affect economic development. The findings of the study agree with those of Salime, M., (2021) who did a qualitative comparative analysis of colonial governance and its impacts on the post-independence political and economic development of the colonies of Britain and Africa and submitted that both France's and Britain's colonial rule triggered negative effects on the political development of the colonies but France had a more detrimental effect on the economic development of her colonies.

The study also shows that private sector credit as a percentage of GDP, capital formation, inflation and Government effectiveness were positive and significant in most of the models ran as expected. On the other hand, government debt, FDI and real interest rate are significantly and negatively related to economic development which is expected except for FDI. The fact that FDI as a percentage of GDP shows a significantly negative relationship with economic development could be explained by the fact that FDI relative contribution to African countries may be dwindling, especially as private sector credit to GDP is positively significant as well as other possible competing contributors. Although inflation is positive and negative for some of the models, those with significance at 1% significant level (models 2, 4 & 6) are positive and could be explained by the inflationary pressures that often come with economic growth.

Conclusion

This study is in part motivated by increasing agitations from top government officials of African countries as well as Pan-African elites such as Jacob Zuma (former president of South Africa), Julius Malema (member of parliament and leader of the Economic Freedom Fighters political party of South Africa, and member of the Pan African Parliament - PAP), Prof Patrick Loch Otieno Lumumba (former Director of the Kenya Anti-Corruption Commission and former Director of the Kenya School of Law), Dr Arikana Chihombori-Quoa (former African Union Ambassador to the USA) etc. In May 2020, Prof Lumumba said that world powers such as France, the United Kingdom, Russia, China and India are meddling in African affairs and strategically preventing African unity to maintain influence and their interest (Make Africa Great, 2022). In June 2020, Zuma stated that "declaring political freedom without economic freedom is not enough" (Masweneng, 2020). In June 2021, Malema called out France to stay out of Africa's affairs, especially the Pan-African Parliament where he accused them of trying to impose Africans that are French loyalists as leaders (Nacheki, 2021). Dr Chihombori-Quoa said "France is still pulling the strings and stealing from Africa. Colonisation of Africa has never ended" (African WebTV, 2021). On the 25th of May 2022, Malema said "they don't want France in Africa and it doesn't mean they want Britain either" (Moichela, 2022).

In addition to these recent sentiments, Gaston Monnerville, (former French head of Senate) said, "Without overseas territory, today's France would decline to be a lesser power needing to be liberated instead of the winner of WWII" while former President François Mitterrand said that, "Without Africa, there would be no history of France in the 21st century" (Mulayim, 2017). It is this background that informed the study, which investigates the relationship between colonial heritage, international

trade and economic development especially because, international trade stands out as the most potential link of these western powers to African countries and their resources.

The study confirms empirical and theoretical literature that international trade has a positive and significant effect on economic development. The study also establishes the differential effects of the respective colonial powers and their associations' influence on economic development. Former French colonies had significantly lower economic development than other countries when analysed independently and when interacting with international trade. The reverse was the case for former British colonies and the others that showed significantly higher economic development. The goal of this study is not necessarily to celebrate any former colonial power or new intending powers like China and the USA, but to highlight the fact that the choice of trading partners and the nature of international trade is critical to determining its effect on economic development. It is therefore imperative for African leaders to re-examine their existing trade partners in a bit to ensure that their interests are primarily met for a more sustainable economic development.

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III. REGIONAL INTEGRATION PANEL

III.I Contextualising 4IR in Intra-African Trade: Critical Reflections

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1. Introduction

The Fourth Industrial Revolution (4IR) has the potential to transform Africa's economy, increase its productivity and enhance its global and regional trade, particularly through the African Continental Free Trade Agreement (African Development Bank 2019: 13). A continental market is an indispensable developmental necessity for African countries that can allow them to be a major player in global trade. Yet, currently, Africa accounts for only about 2.4 percent of total global exports and is even a relatively smaller player in its region ([Signe 2018](#)). In 2017, intra-African trade only represented about 17 percent of total African exports. This is relatively small when compared to other regions, for instance, 59 and 69 percent in Asia and Europe respectively (UNCTAD 2019). The relatively low trade levels in Africa may be improved with the utilisation of technologies such as Artificial intelligence, robotics and the Internet of Things.

Previously, Africa has not been an active participant neither has it benefitted much from the preceding industrial revolutions. Africa is strategically positioning itself to utilise digital technologies for improved production processes and marketing chains. The tone has already been set with the adoption of strategic documents such as the [Digital Transformation Strategy for Africa \(2020-2023\)](#). Specifically, the Strategy seeks by 2030, to create a safe and secure digital single market in Africa where individuals and enterprises can easily access and participate in online activities in accordance with the African Continental Free Trade Area (AfCFTA) (African Union 2020).

Barriers to trade in Africa are numerous. Too much documentation is required for customs clearing. The World Bank (2015) revealed that “whereas it only took four documents to export goods from France, it took 9 to 10 documents in Angola and the Republic of Congo. In terms of imports, while it took four documents in France, Central Africa Republic required 11 documents. Also, poor infrastructure compounds the challenge. Infrastructural challenges such as energy, high-cost ICT networks, and inefficient technologies (production processes and machinery) result in low intra-African trade. Bridging the gap in Africa's infrastructure, therefore, remains one of the non-tariff barriers required for improved intra-African trade.

Limited intra-African trade affects industrial development, poverty levels, and job creation, especially for Africa's vulnerable social groups- women and youth. Africa has the youngest population in the world, with 70 percent of sub-Saharan Africa under the age of 30 ([United Nations 2022](#), United Nations Women 2022), yet the majority of these youth are not employed and live in abject poverty. Similarly, women, who represent about 70 percent of informal cross-border traders face challenges when crossing borders, keeping many of them under poverty lines. The inclusion of youth and women

in the broader economy is not only a matter of inclusivity but is vital for economic growth, innovation, peace, and security.

The African Continental Free Trade Area (AfCFTA) is a timely and momentous instrument that has the potential to improve intra-African trade. It is a free trade area encompassing most of Africa, with the aim of creating a single market for goods and services, facilitating the movement of people and capital, and promoting industrialization and sustainable development (Albert 2019). The AfCFTA was established in 2018 by the African Continental Free Trade Agreement, which has been signed by 54 out of 55 African Union member states and ratified by 47 of them as of September 2023. The agreement entered into force on May 30, 2019 and officially commenced on January 1, 2021.

The overall objectives of the AfCFTA are to increase socioeconomic development, reduce poverty, and make Africa more competitive in the global economy (AfCFTA 2018). The AfCFTA Secretariat has created several digital platforms to support this vision and simplify the understanding of the agreement. These platforms include, the Pan-African Payment Settlement System (PAPSS), the AfCFTA hub, Online Tariff Book, AfCFTA Glossary mobile application, Africa Trade Observatory (ATO) among others. These platforms are key components of the AfCFTA Protocol on Digital trade, currently in its final stages of negotiation.

While the Fourth Industrial Revolution (4IR) has been lauded globally for its potential to improve trade, there is limited research that specifically examines its relevance for Africa. This chapter seeks to bridge this literature gap, with a focus on how African countries can benefit from 4IR at the same time minimizing its adverse effects. The chapter will explore the opportunities and challenges that 4IR presents for Africa's trade integration, innovation, and digital transformation, as well as the policy implications and recommendations for enhancing Africa's readiness and participation in 4IR.

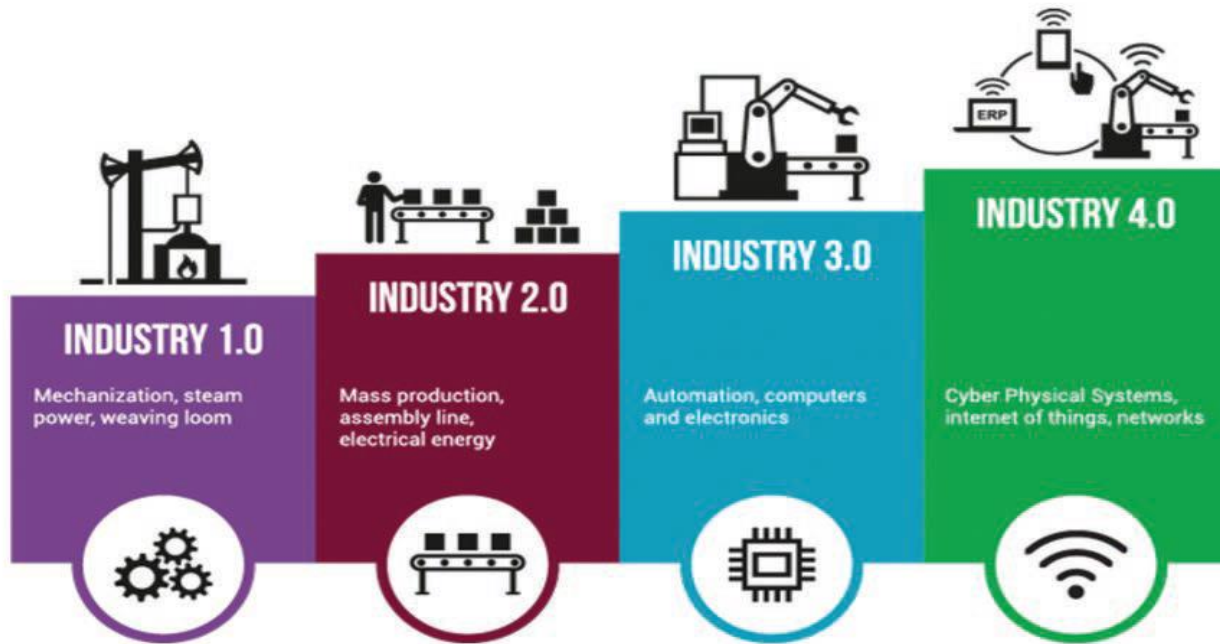
2. Conceptualizing the 4th Industrial Revolution

The fourth industrial revolution also known as 4IR is among other things changing the way people live, interact and organize production and marketing processes together with value chains. The term Fourth Industrial Revolution is thought to have been coined by Klaus Schwab, founder of the World Economic Forum in 2016. He used the term to denote the advent of or fusion of digital, biological, and physical technologies. While Nuvolari (2004) points to Britain as the harbinger of the first industrial revolution, with the second and third revolutions understood as having taken place in the USA, the leader of 4IR remains open. However, speculation is that Germany, Japan, and the USA are the leaders of 4IR (Stancioiu 2017).

The Fourth Industrial Revolution is enabled by extraordinary technological advances commensurate with the first, second, and third industrial revolutions ([WEF 2020](#)). The first three industrial revolutions were characterized by technological developments but not at the rate of the 4IR. Economic development has already gone through three phases of very rapid change, i.e., three so-called industrial revolutions (Figure 1). In all these prior revolutions, the development and diffusion of new technologies have led to significant changes in both production and trade (The National Board of Trade Sweden 2019). As Lund et.al (2019) state, "the history of trade reflects the ongoing march of new technological innovations." Marked by the technological progress of the third industrial revolution (1970-2011) which saw the digital automation of production utilizing electronics, 4IR

presents a unique opportunity to emerging and developing countries for potential growth to attain a higher level of prosperity (Alqam & Saqib, 2020; WEF, 2020; Stentoft et al., 2019; Vrchota et al., 2019; Hwang 2016:10). The figure below highlights the major changes which took place from the first industrial revolution.

Figure 1. The Major Technological Advances that Characterise Each Industrial Revolutions Leading to the 4IR



Source: (NetObjex, 20190)

As shown in the figure above, 4IR combines cyber and physical technologies. It will change the modus operandi of business, making it faster, more efficient, and more responsive particularly to user needs (Jeche 2023). This will inevitably disrupt the trade environment as it is known today since it will replace human beings with automated machines, hence, reducing levels of corruption at the borders, at the same time increasing the levels of unemployment, especially the low-skilled personnel.

One of the distinctive features of 4IR which marks a departure from the previous industrial revolutions is the fast speed at which emerging technologies are converging (Morrar et al., 2017). The three domains of technologies- cyber, physical, and biological characterizing the 4IR “are advancing and integrating regulations in the rapid distribution over the internet of several products at a cost affordable to many with the potential through social media platforms to reach every corner of society” (Mamphiswana 2020: 3). According to Mahomed (2018) Artificial Intelligence (AI) is the cornerstone of 4IR. Although AI is not new, “the global connectivity enabled by IoT technologies, cloud computing, and higher speed computers offer a possibility for AI to perform at the highest level” (Stancioiu 2017).

There have been some arguments that the technological changes salient to 4IR are not new but mere continuations of the third industrial or digital revolution which was characterized by the development of the electronic computer (Mamphiswana 2020: 4). For instance, Moll (2021: 2) argues that any industrial revolution must satisfy the criteria of having a complex and mutually generative range of

economic, social and political transformation. Consequently, if the 4IR is now upon us, as so many claims, then there should be clear evidence of fundamental innovation that is not simply an accelerated evolution of the technology of the 3IR (Moll 2022). In response, Schwab (2016) observed that “Now a Fourth Industrial Revolution is building on the Third, the digital revolution that has been occurring since the middle of the last century. It is characterized by a fusion of technologies that is blurring the lines between the physical, digital, and biological sphere.” The evolution of digital technologies no doubt is causing immense transformation of the market economy, political landscape, and the social sphere. No doubt, such transformations qualify to be regarded as the 4IR, albeit, acknowledging the ‘digital revolution’, ‘information age’, or ‘network society’ (Moll 2021b) (other names for the 3IR) as the foundation of the former. The breadth and depth of the changes attendant to 4IR have heralded the transformation of entire systems of production, management, and governance (Schwab 2016). Beyond semantics, what remains is the strategic positioning of countries and individuals to reap the benefits ensuing from the era.

4IR is the first industrial revolution that African states are attempting to participate in since they gained independence (Mamphiswana 2020: 3). Several factors make African countries suitable candidates for strategic positioning to enjoy the benefits of 4IR. First, Africa is a youthful continent that stands to benefit if the techno-savvy youths are given support to address the global and continent-specific challenges facing the continent. Second, the continent can turn the sea of poverty amidst plentiful strategic mineral resources by embracing technology for value addition. From a trade perspective, African countries can use networked technology for trading outside national borders maximizing profits and reducing production costs at the same time. The ACFTA is therefore an important vision for the realization of these goals.

3. Methodology

This analysis qualifies the opportunities of AfCFTA within the context of 4IR or networked technologies. The analysis relies on qualitative data from the African Union such as the AfCFTA, and the strategic document. It also makes use of documents on international trade from the World Bank and the World Economic Forum. Journal articles and books on the theme of analysis were also made use of. To date, studies on intra-African trade have mainly focused on the bureaucratic challenges affecting trade within the continent neglecting the potential of harnessing technologies for the realization of AfCFTA objectives. This analysis extends those studies to cover AfCFTA in terms of intra-Africa trade in the context of networked technologies. More importantly, the analysis is extended to investigate the potential of a free trade area in improving the livelihoods of women and youth.

5. Africa and the Fourth Industrial Revolution

Africa perhaps will experience the revolution (4IR) in a form different from that of other regions (i.e. Europe, Asia, and America) majorly due to demographics, the pattern of international trade, the prevalence of informal economy, and many other contingent factors (Adegbite and Govender 2021). The 4IR is expected to take the information and knowledge economy to an extraordinarily new level, with the introduction of major technological advancements that present enormous opportunities for new business models, value production, integrated production structure, intra-African trade, and IT infrastructure (African Union 2020). The introduction of artificial intelligence, advanced robotics, blockchain, drones, the internet of things, wearable technologies, cloud computing technologies, 3D

printing, Big Data, machine learning, and software-enabled industrial platforms is expected to transform every aspect of human life including intra-African trade. Emerging technologies such as AI and machine learning (ML), the Internet of Things (IoT), and smart border systems are increasingly considered key enablers of trade ([WEF 2020](#)).

However, previous research has shown that despite the enormous opportunities presented by the 4IR to Africa, the continent is not prepared to fully utilize these technologies due to poor infrastructure, a huge gender-digital gap, poor technologically-related policies, weak institutions, and lack of skills (Matt & Rauch, 2012). Hence, the African continent can only harness the full benefits of the 4IR era, if the necessary parameters, instruments, and regulations are put in place, on the national, regional, and continental levels (African Union 2020). In theory, the adoption of cyber-physical technologies in Africa will significantly change production, consumption, trade, the cost of goods and services, and living standards across the globe—and more rapidly than did previous industrial revolutions, owing to the scope and speed of innovation (Signe 2022; Fox and Signe 2022). But, in practice, 4IR is perceived as another tool to recolonize Africa as the previous industrial revolutions (Benyera 2021), as well as a threat to low-skilled workers' jobs due to the introduction of automation (Naude 2017; Frey et al 2016). Despite the lack of suitable human capital, governments in emerging economies are urged to embrace new technologies and 4IR (Shava & Hofisi, 2017) because it is inevitable and is here to stay.

The 4IR adds a layer of complexity to the already challenging task of developing and implementing industrial strategies that promote productivity and inclusive growth (AfDB 2019). Despite Africa's poor track record with industrialization, a renewed desire for re-industrialization is animating development and policy debates (Naude 2017). This is manifesting in several policy developments and interventions at a regional and continental level such as the Agenda 2063, AfCFTA Protocol on Digital Trade and e-Commerce, Digital Transformation Strategy for Africa (2020-2030), and the African Industrial Development Action Plan. In 2019 alone, the number of technology hubs across the continent grew by 40 percent to reach more than 600 (Economic Commission for Africa 2021).

In the past few years, there has been an increased use of 4IR technologies in African countries and several Regional Economic Communities (RECs) have introduced policies that seek to improve digital infrastructure in Africa. For example, mobile technology has become a platform for improving medical data and service delivery in Uganda where about 27,000 public health workers use a mobile system called mTrac to report medicine stocks (Access to Medicine Foundation 2016). Whilst, Rwanda is applauded for becoming the first country to incorporate drones into its health care system, using autonomous air vehicles to deliver blood transfusions to remote regions (Atieno 2017) and AI is being slowly implemented in Ethiopia to help medical professionals correctly diagnose cervical cancer and other abnormalities (Champlin 2017). South Africa is one of the few African countries that has fully institutionalized the 4IR into its national policy framework as evidenced by the establishment of the Presidential Commission on the Fourth Industrial Revolution to develop an integrated national strategy for harnessing the 4IR (Signe and Ndung'u 2020). Countries such as Seychelles, Kenya, Ethiopia, Morocco, Ghana, Rwanda, Mauritius, Tunisia, and South Africa scored above the world average of 0.56 points for online services, which shows that increased uptake of technologies by African countries would help in boosting the overall development (African Union

2020). However, the research by the African Union (2020) shows that overall, the African countries are still Nascent countries, meaning that they lack the production capacity, as well as the key enablers of the production component required to increase their readiness for the 4IR.

6. The Implication of the Fourth Industrial Revolution on Intra-African Trade

The development of 4IR emerging technologies shall result in the creation of new opportunities for emerging economies' growth and development. The quality of life will increase as well as income per capita (Nyagadza, Pashapa, Chare, Mazuruse and Hove 2022). Intra-African trade is not spurred from improving given the role of 4IR in eliminating non-tariff barriers caused by human beings. The adoption of the AfCFTA in the era of the 4IR will significantly impact socio-economic development in Africa. The intra-African trade is very low and remains limited at 14.4% of total trade, with a decline in low-income countries from 22.6% in 2015 to 20.4% in 2018. By comparison, interregional trade in Asia accounts for 59% of total trade (AfDB 2019). This can be explained by barriers to trade that remain very high across African borders. These barriers include; corruption, bureaucratic pathologies, poor infrastructure, long queues, poor payment systems, poor roads, cumbersome procedures, and documentation among many other non-tariff barriers. Intra-African trade is hampered by port and tax bureaucracies, resulting in high direct and indirect costs of international trade in manufacturing. The bureaucratic infrastructure varies greatly between countries. For instance, takes about 10 days to export a container from Morocco while exporting a container from Zambia can take as many as 51 days (Signé, 2018).

Positively, there have been notable efforts to improve infrastructure connectivity across the continent and the cost of cross-border trading caused by non-tariff barriers is expected to diminish thanks to the continuous investments in infrastructure and the AfCFTA (AfDB 2019). We argue that technological innovations and the adoption of the 4IR by African states will significantly improve intra-African trade by complimenting the operationalization of the five operational instruments governing the AfCFTA set to eliminate tariff and non-tariff barriers to trade. These instruments include; the rules of origin; the online negotiating forum; the monitoring and elimination of non-tariff barriers; a digital payments system and the African Trade Observatory.

Emerging technologies have the potential to transform all economic sectors (agriculture, industry, energy, mining, and services) by increasing local production, allowing the local production of goods and services which were previously imported, facilitating customization of products, developing regional value chains, creating innovative ways to respond to the needs of customers and the population and bringing producers closer to their markets (AfDB 2019). The 4IR technologies will increase intra-African trade by simplifying and facilitating trade across borders hence improving trade logistics; lowering transaction costs; reducing corruption, time costs, and cumbersome documentation and customs procedures. Many scholars agree that the 4IR will bring cost-effectiveness (Benyera 2022; Duc 2017: 33; Hamilton 2018; Hattingh 2017: 23; Menon and Castrillon 2019). African countries can use: smart robots and AI to reduce the cost of storage and inventory, and IoT and blockchain can facilitate border crossing (WTO 2018); autonomous vehicles to reduce transport costs (Hulse, Xie & Galea 2018); 3D printing to replace physical movement and make transportation and logistics costs irrelevant (National Board of Trade Sweden 2019). We explored the four 4IR-driven technologies to find out how they will impact intra-African trade and regional integration in Africa.

These are (i) Big Data, Artificial Intelligence, and the IoT; (ii) blockchain (iii) drone technology and (iv) e-commerce.

7. Big Data, Artificial Intelligence, and the IoT and Intra-African Trade

AI is allowing process automation and the development of new products and services, improving quality and efficiency. AI has the potential to impact virtually every sector of the economy and every facet of intra-African trade, especially services (WEF 2020). AI can also accelerate intra-African trade through improved trade facilitation and trade promotion. It assists already disadvantaged women-owned businesses and Small and Medium Enterprises (SMEs) since it reduces the time, cost, and complexity of identifying and delivering on export opportunities. The paper-based and human-facilitated customs procedures tend to delay the free movement of goods and persons at the African borders. Hence, adopting AI-powered applications and software can facilitate the exchange of electronic (rather than paper-based) data and documents for trade, helping authorities improve tariff and duty collection and to identify non-complying or illegal goods (ITC 2017). This reduces the risk of fraud given the growing numbers of commercial transactions and the limited number of available resources which may be impossible to inspect all the customs operations.

Big Data analytics and AI can help analysts derive powerful insights for risk profiling and management and therefore prevent customs fraud, and corruption in Africa (AfDB 2019). AI-powered robots have “eyes” and a “brain” which benefit customs authorities from advanced technologies, in particular concerning risk management and profiling, fraud detection, and ensuring greater compliance at the borders (WCO 2022). In a similar finding by [Alzaga and Martinez \(2022\)](#), AI technology can help resolve real-world problems today, like achieving more accurate and reliable border wait time estimates at land ports of entry. Longer wait times at borders delay goods from getting to their target market which may result in the spoilage of perishable goods like milk or produce. Interestingly, African countries are already using these technologies to simplify trade as well as utilizing IoT as a tool to facilitate the acquittal of transits through QR codes. For example, Zambia uses QR codes for online acquittal of transits while in Eswatini, the barcodes generated by Automated System for Customs Data software (ASYCUDAWorld) are already one element in place to implement IoT.

E-Commerce

E-commerce is seen as a valuable platform that can help Africa take advantage of the fourth industrial revolution, which is bringing a fundamental change in the way we live, work, and relate to one another (ECA 2023). This presents an opportunity for Africa to participate more actively in e-commerce, with untapped potential that can offer opportunities for small enterprises and stimulate trade across the continent. The benefits include increased speed and accuracy of business exchanges which can reduce trade transaction costs; minimal set-up expenses in terms of infrastructure required offering consumers more customized services and the ability for businesses to provide cross-border services, thus, expanding global exchange (WEF 2022). In the context of the AfCFTA, which aims to create a single market for fifty-five African nations, governments should also accelerate cooperation to remove roaming fees at the continental level and successfully harmonize or integrate payment systems

and cross-border payment mechanisms so that intra-African trade, especially e-commerce and trade in services can accelerate (Fofack 2020)

A successful e-commerce platform can help to support growth in an economy and can facilitate trade within the digital economy; for example, between large online entities and SMMEs that make equal use of this platform. For instance, in 2022, the AfCFTA secretariat launched the Pan-African Payment and Settlement System (PAPSS) which is a cross-border, financial market infrastructure enabling payment transactions across Africa (PAPSS 2022). Utilizing cutting-edge technology connecting African banks, payment service providers, and other financial market intermediaries, PAPSS enables instant and secure payments between African countries while trading under the AfCFTA (ECA 2023). The instant nature of payments, in local currency, provided by PAPSS will help African businesses avoid delays in confirming payments that have long been a barrier to trade (WEF 2023). This new platform will lead to increased trust and time capacity to increase trade volumes, hence, overall removing the payment bottleneck for companies, reducing the dependency on foreign currencies, and improving the efficiency of cross-border trade across the continent (Lanre 2022; Mike 2022).

Blockchain

Blockchain facilitates the creation and exchange of digital records without a trusted centralized agent. As shown by several types of research the cost of trading across borders remains high in Africa. Time and the cost of clearing goods add to the costs due to the numerous pieces of documentation and procedures needed to obtain the certificate of origin, quality conformity, phytosanitary certificate, authorization to import or export, and to comply with customs regulations (WEF 2019). However, the introduction of blockchain and smart contracts at African borders can potentially eliminate some of these barriers, hence, improving intra-African trade. The Blockchain-powered system will help to alleviate many of the issues and barriers caused by human-driven customs clearance processes. For instance, applications driven by blockchain-powered digital ledger technology would help to reduce the huge volumes of paperwork and multiple bureaucratic interventions, which are considered necessary in accelerating and improving intra-African trade. Blockchain and distributed ledger technology (DLT) can help to provide better transparency, immutability, and accessibility of information and data quality, as well as the sharing of relevant information on border management procedures among all stakeholders (WCO 2022).

Research by Okazaki (2018) shows that blockchain can ensure data integrity, traceability, and transparency, make information on any shipment available in real-time, and allow data to be collected. Hence, customs administrations and other border agencies can leverage this to improve their capacity for risk analysis and effectiveness at the border. In addition, opportunities for corruption or collusion (a common problem in many countries that significantly adds to the cost of trade) would be reduced as the data cannot be retroactively tampered with or altered (AfDB 2019). Generally, blockchain will lessen the time required for the completion of transactions and the associated costs, at the same time increasing transparency between the participants and mitigating fraud risks (ReedSmith 2019). Thus, the institutionalization of blockchain-powered technologies is vital for the success and acceleration of the implementation of the African Continental Free Trade Area (AfCFTA).

Drone Technology

Drones, or Unmanned Aerial Vehicles (UAVs), are essentially a conglomerate term for different types of unmanned, flying automobiles controlled remotely. Drones can be very instrumental for development and regional security challenges across borders in Africa (AfDB 2019). As contactless trade has become the new norm of the COVID-19 pandemic, the use of autonomous robotics and vehicles, including drones, for warehouse stock counting and goods delivery is gaining traction (WEF 2022). Drones will certainly be an ideal solution for border and port surveillance, warranting easy, faster, effective, reliable, and efficient means for data collection and gathering. For instance, developing countries are already utilizing drone technology for port infrastructure inspection to prevent inefficiencies in logistics operations. Hence, intra-Africa also stands to benefit from drones as they can help alleviate transport constraints such as bad road infrastructure and the high costs for land transport by enabling increased speed of delivery at a lower cost. They will also be used to increase border security as border patrols can utilize them for patrolling, scouting, and inspecting warehouses and other remote areas. In the trade environment, modes of physical delivery of goods are being continually re-defined. The latest entrant is drones, which are being tested not only for domestic deliveries, for instance within a town but even for cross-border deliveries (WCO 2016). Customs may potentially use drones for surveillance in inaccessible and hazardous terrains, filling up the gap, if any, in border surveillance in those areas. Equipped with infrared and high-resolution imaging, drones can be effective in border and maritime surveillance, in particular for monitoring suspects; curbing cross-border smuggling and drug trafficking; nuclear, biological, and chemical sensing and tracking (WCO 2016). The use of drones can also be expected to appear in cross-border deliveries in neighboring countries, notably in regions that lack adequate road transport infrastructure.

Threats

While it is clear that progress has been made to bridge the technological gap and connect more people to the internet, several factors contribute to this disparity (and ultimately the market failures) that Africa is experiencing, including 1) outdated government policies; 2) poor digital infrastructure; 3) a lack of the right skills (or skills mismatch); and 4) high levels of corruption (WEF 2022). Adoption of 4IR technologies in Intra-African Trade under the African Continental Free Trade Area (AfCFTA) has proven to be a major challenge for African countries. These challenges include the infrastructural deficit, gender-digital gap, labor-related issues, lack of adequate/sufficient resources, lack of regulation policies, lack of harmonized policies as well as lack of political will to adopt these technologies.

i.) Infrastructural and resource deficit

The lack of adequate infrastructure in terms of power, connectivity, and logistics has been a significant challenge for African countries. This lack of infrastructure makes it difficult for businesses to adopt and integrate 4IR technologies into their operations. Limited financial resources and access to capital hinder the adoption of 4IR technologies in many African countries. The high cost of implementing these technologies can be prohibitive for small and medium-sized businesses, limiting their ability to compete in the global market.

ii.) Digital Gap

Gender inequality persists in many African countries, with limited access to education and training opportunities for women in the STEM fields (Science, Technology, Engineering, and Mathematics). This gap in education and training can limit the number of women in the workforce who are equipped to handle 4IR technologies, making it difficult to implement these technologies effectively. Specific attention should be given to the gender divide, as part of the digital divide. It is worth noting in this regard that the proportion of women using the Internet on the continent is 25 percent lower than the proportion of men, a challenge with significant implications for harnessing the transformative power of the technology-driven Fourth Industrial Revolution for inclusive and sustainable development (UNECA 2021). The current digital gender divide, driven mostly by access to resources rather than education, could end up disadvantaging women, especially in the informal sector (Fox and Signe 2022). Poorer households, especially those in rural areas, who have little access to electricity and ICT services and even less access to quality education and training, are at the highest risk of being left behind. In addition, the poorer households, especially those in rural areas, who have little access to electricity and ICT services and even less access to quality education and training, are at the highest risk of being left behind. One of Africa's weakest areas is ICT infrastructure with below-world average connection speeds, and highly unequal broadband connection and quality between countries and between urban and rural areas (OECD, ESCAP, ECA, ECLAC and 2022) The divide and bifurcation of digi-privileged and digi-deprived, rural and urban areas as well as men and women undermine inclusive implementation of the 4IR technologies under the AfCFTA.

iii.) Labor-related Issues

With high unemployment rates in many African countries, there is a risk that the adoption of 4IR technologies may result in further job losses, particularly for low-skilled workers. This concern can lead to resistance to the adoption of 4IR technologies. It is predicted that among others including machine learning and artificial intelligence (AI) - could lead to a loss of familiar and well-established professions and jobs (SATRI 2021). The WEF observed that new industries are creating fewer jobs, and those jobs require advanced skills (WEF 2017). For instance, women may lose five jobs for every job gained, while men lose three jobs for every job gained (WEF 2016; Dicks and Govender 2019). Robotics and AI will make millions of jobs obsolete and according to 2018 estimates, about 14% of the global workforce will have to switch occupations due to job displacement caused by automation and advances in AI by 2030 (Manyika 2017). Automation, robotics, and machines are already replacing human beings in workspaces resulting in high levels of unemployment in Africa, and border agencies such as customs officials, and security personnel who lack technological skills may be replaced by robots, drones, and automated machines.

iv.) Lack of Harmonized and Regulatory Policies

African countries have different policy frameworks and implementation levels, which make it difficult to have a harmonized approach toward adopting 4IR technologies. African governments lack harmonized data protection frameworks at the regional level which allows compatibility between national legislations, which sets core agreed data protection principles. There is no single policy that defines how data protection under 4IR technologies will be handled. However, other regions have already started developing frameworks or already have clear frameworks dealing with these issues.

For example, ECOWAS has set up a harmonized regional regulatory framework that lays the foundation for the development of 4IR technologies, namely those related to cybersecurity, data protection, and e-commerce. In West Africa, ECOWAS has set up a harmonized regional regulatory framework that lays the foundation for the development of 4IR technologies, namely those related to cybersecurity, data protection, and e-commerce (AfDB 2019). Harmonizing such regional policies with the AfCFTA Protocol on Digital Trade and e-Commerce, and AU's Digital Transformation strategy for Africa (2020-2030) will help in ensuring uniformity of digital technology-related regulations hence, reducing bottlenecks caused by such differences.

In addition, many African countries, do not have clear regulations regarding the use and implementation of 4IR technologies. This lack of regulatory framework can create uncertainty, making it difficult for businesses to invest in and implement these technologies. Given the 4IR's emphasis on data accessibility, there are serious concerns around privacy as well as the need to develop regulatory frameworks to protect the intellectual property of businesses and sensitive personal information. Regulatory harmonization is essential for the integration of markets together with common online payment systems and cross-border trade facilitation and standardized cross-border taxation and duties (AfDB 2019). Thus, African countries should collaborate to create regulatory frameworks concerning the use of 4IR technologies under the AfCFTA.

8. Conclusions and Recommendations

In conclusion, 4IR technologies have the potential to significantly facilitate intra-African trade. The adoption of these technologies can lead to increased efficiency, reduced transaction costs, and improved connectivity across borders. However, there are significant challenges to adoption, including a lack of infrastructure, inadequate access to finance, and inadequate policy frameworks. Despite these challenges, policy recommendations can help mitigate these issues and increase the pace of adoption of 4IR technologies in intra-African trade. These include investing in infrastructure for digital connectivity, providing access to financing, and developing policies to support SMEs in the use of 4IR technologies. Additionally, the implementation of the AfCFTA provides an opportunity to create a conducive environment for the adoption of 4IR technologies.

However, there is a significant digital gap between African countries, and urgent action is needed to bridge this gap. This includes investing in digital literacy programs and ensuring that data protection and privacy regulations are put in place to build trust in the use of 4IR technologies. In summary, while there are challenges to the adoption of 4IR technologies in intra-African trade, there is a clear need for African countries to embrace these technologies to unlock the potential for economic growth and improve livelihoods across the continent.

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III.II The extension of ‘safeguard duties’ in South Africa within and outside the framework of the Agreement Establishing the African Continental Free Trade Area Protocol on Trade in Goods

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1. Introduction

According to Article XIX of the General Agreement on Tariffs and Trade 1994 (GATT), a ‘safeguard measure’ is imposed if as a consequence of unforeseen developments and of the effect of the obligations incurred by a contracting party under the GATT, including tariff concessions, any product is being imported into the territory of that contracting party in such increased quantities and under such conditions as to cause or threaten serious injury to domestic producers in that territory of like or directly competitive products, the contracting party may, in respect of such product, and to the extent and for such time as may be necessary to prevent or remedy such injury, to suspend the obligation in whole or in part or to withdraw or modify the concession. However, not every measure suspending, withdrawing or modifying a GATT obligation or concession will constitute a ‘safeguard measure’ (World Trade Organization (WTO) Panel, *Indonesia – Iron or Steel Products* WT/DS490/R, WT/DS496/R adopted on 27 August 2018 paras 7.14-7.15). Rather, it is only measures which temporarily release a contracting party from its WTO commitments in order to pursue a course of action required to prevent or address serious injury that will constitute ‘safeguard measures’ (WTO Panel, *Indonesia – Iron or Steel Products* paras 7.14-7.15). In essence, a ‘safeguard measure’ has two features: first, it should suspend or change a GATT obligation in whole or in part and second, the suspension, withdrawal, or modification in question must be modelled to prohibit or address serious injury to the Member's domestic industry caused or threatened by increased imports of the subject product (WTO Appellate Body Report, *Indonesia – Iron or Steel Products* WT/DS490/AB/R WT/DS496/AB/R adopted on 27 August 2018 para 5.60). Thus, a safeguard measure is employed against “fair” trade as opposed to “unfair” trade actions, as is the case with anti-dumping or countervailing measures’ (WTO Appellate Body Report, *Argentina - Footwear EC* WT/DS121/AB/R adopted on 12 January 2000 para 96; Brink, 2008).

These ‘safeguard measures’ can manifest as either a duty or a quota or a combination of these two. These substantive and procedural aspects of the imposition of safeguard measures are provided by the Agreement on Safeguards which augments Article XIX of the GATT. In this regard, South Africa is a member of the World Trade Organisation (WTO) (*International Trade Administration Commission v SCAW South Africa (Pty) Ltd* 2012 4 SA 618 (CC) (‘SCAW’) para 2). South Africa’s membership of the WTO was approved by Parliament on 2 December 1994 (SCAW para 25). The WTO Agreement was approved by Parliament on 6 April 1995 (*Progress Office Machines v SARS* 2008 2 SA 13 (SCA) para 6 (‘*Progress Office Machines*’); SCAW para 25). The AGS is part of the multilateral agreements on trade in goods contained in Annex 1A of the WTO Agreement and, therefore, it is binding on all Members including South Africa (See *Progress Office Machines* paras 5-6; WTO Appellate Body Report, *US Subsidies on Upland Cotton* WT/DS267/AB/R, adopted 20 June 2008 paras 549-550; WTO Appellate Body Report, *United States Standards for Reformulated and Conventional Gasoline*

DSR 1996:I, 3, adopted 20 May 1996 at 21; WTO Appellate Body Report, *India Patent Protection for Pharmaceutical and Agricultural Chemical Products* DS50, adopted on 16 January 1998 para 45). Thus, South Africa's international obligations on safeguard measures arise out of the AGS (*Degussa Africa Pty Ltd v ITAC*, Transvaal Provincial Division, Case Number 22264/2007, delivered 20 June 2007 (Unreported) para 6; SCAW para 2). The AGS entered into force as part of the WTO Agreement at the same time (WTO Appellate Body Report, *Argentina - Footwear EC* para 81). In pursuance of these obligations under the GATT and AGS, South Africa enacted the Customs and Excise Act 91 of 1964 (CEA), the International Trade Administration Act 71 of 2002 (ITAA), the Board on Tariffs and Trade Act 107 of 1986, where relevant and the Amended Safeguard Regulations (SGR) (GN No. R. 662 in GG No. 27762 of 8 July 2005). However, the AGS does not form part of South African law and thus, no rights can arise out of it (SCAW para 25; *Progress Office Machines* paras 5-6). But the AGS is relevant to the interpretation of the SGR in light of section 233 of the Constitution which requires a reasonable interpretation of international law (*Bridon International GMBH v International Trade Administration Commission* (538/2011) [2012] ZASCA 82 (30 May 2012) para 13).

While the AGS provides for the right and the criteria to extend safeguard measures, it does not provide the procedure for the extension of safeguard measures. The AGS does not explain how a safeguard measure can be 'extended' beyond its 'initial' 4-year period of imposition. This discretion is conferred on the contracting parties to the AGS. This ambiguity was then transplanted into the SGR. Yet recently, the International Trade Administration Commission of South Africa (ITAC) published the Amended Guidelines and Conditions relating to Extension of Safeguard Measures. However, these guidelines are not 'binding' on ITAC nor any Court. This issue is not resolved by the Agreement Establishing the African Continental Free Trade Area (AfCFTA) Protocol on Trade in Goods ('Protocol') which delegates this matter to its Annex 9 on Trade Remedies ('Annex 9') and its Guidelines on Implementation of Trade Remedies ('AfCFTA Guidelines'), Article XIX of the GATT and the AGS. The Protocol and its Annex 9, like the AGS, are silent on this issue. The AfCFTA Guidelines are not yet in existence. Thus, this gap leads the current regime for the extension of duties under the AfCFTA, circuitously back to the unhelpful AGS. Therefore, unlike the regime for anti-dumping, there is no clarity on amongst other issues, when exactly does the extension investigation occur? Do the safeguard measures continue to be applied pending the decision on the extension? In light of this uncertainty, this paper reviews the extension of a safeguard measure in South African law within and outside the context of the Protocol. This inquiry is prompted by the aborted litigation in *Macsteel Services Centre SA (Pty) Ltd v ITAC and Others* (Case No.: 55450/20 ('*Macsteel*'), which challenged the legal validity of the purported 'extension' of the safeguard duties on hot-rolled steel by ITAC. This analysis will be conducted through an analysis of relevant case law, legislation and WTO law. This inquiry is also necessary since ITAC acts as the de facto trade investigative body of the Southern African Customs Union (SACU) pending the long-awaited operationalization of the SACU Tariff Board.

2. Background to *Macsteel* safeguards dispute

It is apposite here to outline the peculiar facts leading to the litigation in *Macsteel* to set the scene for this discussion on extension of safeguard measures. Initially, after a safeguard investigation, ITAC had made a finding on 12 April 2017, that it will be in the public interest to apply safeguards of 12%

ad valorem on certain flat hot-rolled steel products for all exporters excluding imports originating from a developing country member that meets the exclusion (ITAC Investigation Report No. 551- Investigation into Remedial Action in the form of a Safeguard against the increased imports of certain flat hot-rolled steel products: Final Determination, dated 12 April 2017). ITAC further recommended that the duties be imposed for a period of three years and to be liberalized as follows: Year 1-12%; Year 2-10%; Year 3-8%. Year 3 would end on 10 August 2020, at which point the duty should have been removed, in terms of the original decision.

Thereafter, on 24 July 2020, ITAC published an Initiation Notice indicating that the expiry of the safeguard duties on imports of the products in question will likely lead to the recurrence of serious injury. South African Iron & Steel Institute (SAISI) on behalf of ArcelorMittal South Africa Limited (AMSA), the only producer of the subject product in the SACU, submitted an application to extend the safeguard duties to ITAC on 6 July 2020 (Notice of Initiation of the Investigation into the Extension of Safeguard Measures on Imports of Certain flat-rolled steel, products of iron, non-alloy steel or other alloy steel (not including stainless steel), whether or not in coils (including products cut-to-length and ‘narrow strip’), not further worked than hot-rolled (hot-rolled flat), not clad, plated or coated, excluding grain-oriented silicon electrical steel (Notice No. 392 of GG No. 43542). Based on the information submitted, ITAC found that the Applicant had submitted *prima facie* information to indicate that the SACU industry is suffering serious injury and the expiry of the current duties will likely lead to the recurrence of serious injury and to keep the existing safeguard duties in place pending the finalization of the investigation. ITAC decided to proceed with the process of extending the safeguard measures in question at its meeting on 8 July 2020. Interested parties were given 20 days to submit their comments on the investigation from the date of publication of the Initiation Notice of 24 July 2020. It is this Initiation Notice that triggered the litigation in *ITAC v Macsteel*. This discussion below will use this matter as the lens to assess the regime for the extension of safeguard measures in South Africa.

3. An evaluation of the legal framework for the extension of safeguard duties in South African law

3.1 Extension of safeguard measures in South Africa outside the context of the AfCFTA

This discussion must commence with a discussion of the place of the AGS in South African law since it is an underlying issue. The place of South Africa's WTO obligations in South African law has been the subject of much litigation and academic debate. First, the Supreme Court of Appeal (SCA) explained that the WTO Agreement, which includes the AGS, was approved by Parliament on 6 April 1995 and is therefore binding on South Africa in international law but it has not been enacted into municipal law (*Progress Office Machines* para 6). Thus, the text to be interpreted remains the South African legislation, and its construction must conform to section 233 of the Constitution, which requires interpreting it in line with a reasonable interpretation of international law (*Progress Office Machines* para 6). This dictum was endorsed in the *AMIE* case (*Association of Meat Importers and Exporters v International Trade Administration Commission* 2014 (4) BCLR 439 (SCA) (13 September 2013) paras 58-60). Recently, the High Court in *Tata Chemicals and Bosch* rejected any application of the WTO Agreement and its covered agreements such as the AGS (*Tata Chemicals South Africa (Pty) Ltd and Another v International Trade Administration Commission and Others*

(48248/2020) [2023] ZAGPPHC 295 (28 April 2023) para 54; *Bosch Home Appliances (Pty) Ltd t/a Bosch v International Trade and Administration Commission and Others*; *Bosch Home Appliances (Pty) Ltd t/a Bosch v Minister of Trade Industry and Others* (12160/18; 67553/18) [2021] ZAGPPHC 8 (5 January 2021) para 92.3).

However, *Progress Office Machines* explained that the adoption of the ITAA and its regulations is “indicative” of an intention to give effect to the provisions of the treaties binding on South Africa in international law (*Progress Office Machines* para 6). The Constitutional Court confirmed in *SCAW* that South Africa's international obligations on trade arise from the WTO Agreement (*SCAW* para 2). This court then held that these obligations are “honoured” through domestic legislation such as the ITAA and the CEA that govern the imposition of trade remedies. This construal is augmented by the approach of the same court in *Glenister v President of the Republic of South Africa and Others* (2011 (3) SA 347 (CC) (‘*Glenister*’)).

In *Glenister*, it was held that a treaty becomes law in South Africa when it is promulgated into law by national legislation (para 90). This will be done by either domesticating the treaty into South African law or amending legislation to align South Africa’s law with the treaty (para 91). This rigid approach is criticized by Dugard, who deems it unpragmatic in light of the bureaucratic processes of government and thus frustrates the noble goal of harmonizing international law and domestic law (Dugard & Coutsoadis, 2019).

Significantly, the court in *Glenister* explained that the adoption of a treaty by a resolution of Parliament is not a “merely platitudinous or ineffectual act” (para 96). Ratification of a treaty by Parliament constitutes a “positive statement” to the signatories of that treaty that Parliament, subject to the provisions of the Constitution, will act “in accordance” with the ratified treaty (para 96). Thus, both binding and non-binding treaties have an important place in South African law (*Glenister* para 96). This does not mean that they acquire the status of domestic law in the Republic (*Glenister* para 98). They provide “interpretive tools” to assess the Bill of Rights (*Glenister* para 96; *Arena Holdings (Pty) Ltd t/a Financial Mail and Others v South African Revenue Service and Others* [2023] ZACC 13 para 92). The majority decision here is silent on international law obligations cited in the minority judgment despite the constitutional mandate to consider it.

Stubbs argues that the decision in *Glenister* breeds uncertainty, while *SCAW* is in accordance with the Constitution (Stubbs, 2011). Sucker contends that, in practice, treaties are approved and ratified but not incorporated into municipal law unless domestic implementation is required for compliance with South Africa's international obligations (Sucker, 2013). Thus, the current practice means that South Africa usually becomes a party to treaties without incorporating them into domestic law (Sucker, 2013). Phooko asserts that the decisions in *Louis Karel Fick v. Government of the Republic of Zimbabwe* (‘*Fick*’) and *Law Society of South Africa and Others v. President of the Republic of South Africa and Others* (‘*LSSA*’) propagate monism by ignoring constitutionally prescribed process of incorporation of treaties into municipal law i.e. dualism, unless it is a self-executing treaty in light of the separation of powers doctrine (2013 (5) SA 325 (CC) paras 31,59; 2019 (3) SA 30 (CC) para 53; Phooko, 2021; Tladi, 2018). Schlemmer argues that the WTO Agreement and its covered agreements which includes the AGS, despite being ratified, have never been incorporated into South African law

and, thus, ‘cannot be a source of any rights for South African legal subjects’ (Schlemmer, 2020). Thus, South Africa follows a ‘hybrid approach’ incorporating both the monist and dualist approaches (Tladi, 2018). However, as held by the apex court in *SCAW*, the obligations under the WTO Agreement, including the AGS, must be ‘honoured’. It is common cause that the decisions in *Makwanyane*, *Grootboom*, *Fick*, *LSSA* and *Glenister* require that South Africa's international obligations such as the AGS are used as interpretive tools. ITAC, the body charged with trade remedy investigations in South Africa certainly administers its investigations as if the WTO obligations under the GATT apply to its investigations (Khanderia, 2017; Vinti, 2016). The court in *Bridon* aptly captured the approach to follow by holding that the WTO Agreement which includes the AGS is ‘relevant’ to the interpretation of the regulations to the ITAA as required by section 233 of the Constitution (*Bridon International GMBH v International Trade Administration Commission* (538/2011) [2012] ZASCA 82 (30 May 2012) para 13). *Bridon* echoed the decision of the court in *SCAW* that the ITAA legislative framework ‘was a clear attempt to give effect to South Africa’s obligations under these international instruments’ (*Bridon* para 13). This would appear to mean that the AGS has been incorporated into South African law. At the very least, the WTO Agreement and its covered agreements, which includes the AGS must be employed as “interpretive tools” in the construal of our legislation. This is the approach that is employed in this paper to review South Africa’s framework for the extension of safeguard measures.

The investigation on the extension of safeguard measures is conducted by ITAC in accordance with sections 16 and 26 of the ITAA and the SGR read with the AGS. To this end, the SGR regulates the imposition of ‘definitive general safeguard measures’. A ‘definitive general safeguard measure’ may be applied only where ITAC finds that the product in question is being imported into the SACU in such increased quantities, absolute or relative to SACU production, and under such conditions as to cause or threaten to cause serious injury to the SACU industry that produces like or directly competitive products, and as a result of unforeseen developments and of the effect of the obligations incurred by the Republic or SACU under the WTO, such measures are required to facilitate adjustment in the SACU industry and the SACU industry has submitted a detailed plan showing how it will adjust to meet import competition or has submitted proof of restructuring that is being undertaken as provided by section 1.2 read with section 21.1. According to section 21.5, ITAC may recommend a definitive safeguard measure in the form of either a customs duty, or a quantitative restriction, or a combination of these two measures. As per section 21.6, a definitive measure ‘may remain in place’ for a period not exceeding four years, unless extended in terms of section 21.7. To this end, section 21.7 then provides that any definitive safeguard measure may be extended by a period of up to six years where ITAC ‘finds’ that the lapse of the safeguard measure imposed in terms of section 21.6 of the SGR is likely to lead to the recurrence of serious injury, and there is evidence that the SACU industry is adjusting. This means that a safeguard measure can be imposed for a maximum period of 10 years.

Furthermore, section 21.8 of the SGR provides that where a definitive safeguard measure is imposed for a period exceeding one year, ITAC shall recommend how the measure should be liberalized at regular intervals over the period that the measure is applied. Where the application of a safeguard measure is extended in terms of section 21.8, the safeguard shall continue to be further liberalized

over the period of its application as provided by section 21.9. Section 21.9 then states that where the application of a safeguard measure is extended in terms of subsection 8 the safeguard shall continue to be further liberalised over the period of its application. Section 21.10 then provides that where a definitive safeguard measure is imposed for a period exceeding three years, ITAC shall self-initiate a review of the measure at the halfway mark of the application of the safeguard measure to determine whether the continued application of the safeguard measure is required the safeguard measure cannot be liberalised at an increased pace and the SACU industry is implementing its adjustment programme. This framework does not explain the process of extending a safeguard measure. Consequently, and presumably prompted by the litigation on this point in *Macsteel* on 21 August 2020, ITAC, published the Guidelines and Conditions relating to Extension of Safeguard Measures to purportedly address this issue. These were subsequently replaced on 10 September 2021 with the publication of the Amended Guidelines and Conditions relating to Extension of Safeguard Measures ('Amended Guidelines'). The Amended Guidelines owe their existence to section 60(1) of the ITAA, which provides that ITAC may issue guidelines on any matter within its jurisdiction. Section 1.1 states that the purpose of the Amended Guidelines is to provide a reference and procedural guide pertaining to the application for an extension of safeguard measures in terms of the AGS. Their scope under section 2.1 covers the application process by applicants for an extension safeguard measures in terms of section 21.7 of the AGS. Thus, the Amended Guidelines confirm and attempt to address the gap that exists in South African law in terms of the procedure for the extension of safeguard measures. Section 3.1 of the Amended Guidelines provides that the SACU industry should submit a properly documented application to request an extension of the safeguard measure to ITAC no later than 12 months before the lapse of the existing measure. This means that the application for extension of safeguard measures cannot be filed 17 days before the safeguard measure lapses as was done in the *Macsteel* matter.

The Guidelines further require that the SACU industry must bring an application to ITAC containing information on the subject product relating to likelihood of recurrence of serious injury and or threat thereof caused by increased imports and evidence that the SACU industry is adjusting. A public file will be available for inspection at the Commission's offices by all interested parties, by appointment, and interested parties are encouraged to inspect the public file regularly.

Section 3.11 requires that the application must contain injury information for the period of time when the safeguard measure was in place and an estimate should the safeguard measure lapse. The application must contain information on how the industry is adjusting as contemplated in the adjustment plan and a detailed explanation where the adjustment is not according to plan. In terms of section 3.13, ITAC will, after considering the merits of an application made on behalf of SACU industry decide to initiate an investigation if it is satisfied that there is prima facie proof of likelihood of recurrence of serious injury should the measures lapse. To this end, section 4.1 then provides that an investigation shall be formally initiated through the publication of an initiation notice in the Government Gazette. Section 4.3 states that a period of 20 days from the date of publication of the initiation notice will be provided for interested parties to submit comments to ITAC. The investigation shall consist of a single investigation phase which will allow for oral hearing. Section 5.1 requires that all participating interested parties will be informed of the essential facts to be considered by ITAC

in making its final determination. All participating interested parties will receive seven days from dispatch of the essential facts letter to comment in writing on the essential facts.

In the final determination, ITAC will consider if the lapse of the safeguard measure imposed in terms of subsection 6 is likely to lead to the recurrence of serious injury and there is evidence that the SACU industry is adjusting. Under section 6.3, ITAC's final recommendation will be forwarded to the Minister of Trade for final determination. Section 6.4 requires that ITAC must make available a final report on reasons and conclusions reached on issues of fact and law considered by it once the Minister's determination has been published. It is self-evident that these steps were not complied with in the *Macsteel* matter when the duty was 'maintained' without a completed investigation as outlined above.

However, there are numerous issues posed by the Amended Guidelines. First, they do not provide that the extension investigation must be completed prior to the lapse of the safeguard measure. They merely require that the investigation must not commence beyond 12 months of the lapse of the safeguard measure. This is in contravention of Article 7.2 of the AGS and section 21.7 of the SGR which require that the period mentioned in paragraph 1 may be extended provided that the competent authorities of the importing Member have '*determined*' or '*finds*' in conformity with the procedures set out in Articles 2, 3, 4 and 5, that the safeguard measure continues to be necessary to prevent or remedy serious injury and that there is evidence that the industry is adjusting, and provided that the pertinent provisions of Articles 8 and 12 are observed. Article 7.2 and section 21.7 are couched in the past tense in that the investigation to extend the safeguard measure must be completed before it is reimposed.

Furthermore, Article 7.5 requires that safeguard measure cannot be imposed 'again' for a period of time equal to that during which such measure 'had been previously applied' provided that the period of non-application is at least two years, whereas section 21.16 of the SGR provides that reimposition can only happen after half the life of that measure has passed provided that the period of non-application is at least two years. The import of Article 7.5 and section 21.16 is that once the measure has lapsed, it can only be reimposed after the 2-year moratorium. This entrenches the urgency of completing the extension investigation before it lapses. The drafters of the AGS did not see it fit to accord the right to extend a fair trade remedy during its undetermined period of investigation. That would lead to countries potentially conducting safeguard investigation in such a manner that they would subvert the 8-10 year maximum period of imposition contemplated in the guillotine clauses in Articles 7.3 and 9.2 of the AGS and section 21.7 of the SGR. By rule of construction, the Appellate Body has held that provisions of the WTO Agreement, which includes the AGS, must be interpreted in such a manner that they 'give meaning and effect to all the terms of the treaty' (WTO Panel, *US — Gasoline* WT/DS2/AB/R adopted on 20 May 1996 at 21). An interpreter does not have the right to construe 'whole clauses or paragraphs of a treaty to redundancy or inutility' (WTO Panel, *US — Gasoline* at 21; WTO Panel, *Canada — Dairy* WT/DS103/AB/R, WT/DS113/R adopted on 27 October 1999 para 133). The proper interpretation of this "inseparable package of rights and disciplines" has to be one that 'gives meaning to all the relevant provisions' of the relevant WTO Agreement (WTO Appellate Body Report, *Argentina - Footwear EC* para 81). Thus, the AGS cannot be read to lengthen the period of imposition beyond the prescribed periods. The context of the AGS

confirms that the notion of an extension investigation with no time limits is alien to safeguard measures (1984 Report on “Safeguards” by the Chairman of the Council MDF/4, 31S/136, 137 para 7).

Even in the South African context, it can be read into section 21.7 of the SGR that the investigation period must be completed before the measure lapses in terms of section 21.6 to give effect to section 21.7. This approach has been unequivocally endorsed by South African courts, which have held that ‘words cannot be read into a statute by implication unless the implication is necessary in the sense that without it effect cannot be given to the statute as it stands and that without the implication the ostensible object of the legislation cannot be realised’ (*Minister of Water and Sanitation and Others v Lotter N.O. and Others*; *Minister of Water and Sanitation and Others v Wiid and Others*; *Minister of Water and Sanitation v South African Association for Water Users Associations* 2023 (4) SA 434 (CC) (15 March 2023) para 30). It is necessary within the purpose of the SGR that safeguard measures must not exceed the 10 year period lest they be deemed to be unnecessary and not meant to ensure adjustment. Thus, the extension investigation, however long it is, must be concluded before the initial period of imposition lapses so as to accord meaning to sections 21.7 and 21.16 of the SGR.

Furthermore, section 21.7 does not provide for any of the procedural safeguards provided by Article 7.2 that it must comply with Articles 2,3,4 and 5 of the AGS, which essentially require a duly completed investigation and duration of such measures. A reasonable interpretation of section 21.7 would favour a construal of this provision that incorporates these procedural safeguards required by Article 7.2. This is the approach that was followed by the apex court in *SCAW*, which rejected a construal of WTO obligations in a manner that countenances ‘inelastic term of duties’, which would lead to a ‘routine breach of WTO obligations’ (*SCAW* paras 26-40 and 80). Certainly, even in circumstances when they appears to be no duty in law to conduct a safeguard investigation before imposing a duty, it cannot be said that that ‘nothing would be expected, in most instances, from a party that seeks to adopt a valid safeguard measure’ (*Final Report of the Arbitration Panel Southern African Customs Union – Safeguard Measure Imposed on Frozen Bone-In Chicken Cuts from the European Union* 3 August 2022 para 316). This accords with the ‘limited and extraordinary nature of safeguard measures’ (para 316). In short, ITAC could only extend the safeguard measure after a duly completed investigation. This did not happen in the *Macsteel* matter and as such, the purported extension was invalid.

Second, the Amended Guidelines do not clarify whether the safeguard measure continues to apply during the tenure of the extension investigation as is the case with anti-dumping duties under Article 11.3 of the Anti-Dumping Agreement in respect of sunset reviews. Ultimately, the inherent defect of the Amended Guidelines is that they are not binding on ITAC nor the courts, and they can be deviated from as per section 60(2)(b) of the ITAA. Therefore, they offer no permanent solution in respect of the extension of safeguard measures in South African law for trade outside of the AfCFTA. Thus, it is my recommendation that section 60(2) of the ITAA must be amended to say that the Guidelines promulgated under this section are binding. In the alternative, the Minister must rather promulgate these Guidelines as ‘regulations’ which are binding. This would provide the much need legal certainty in this area of our law.

In line with the approach of the apex court in *SCAW* and the SCA in *Bridon*, I seek interpretive guidance from the AGS. This approach is also directly justified by the only other litigation on safeguard measures in *Degussa*, where the High Court held that the AGS is binding on South Africa and directly applied it to the issue of the imposition of provisional payments under the SGR (*Degussa Africa (Pty) Ltd and Another v International Trade Administration Commission and Others* (22264/2007) [2007] ZAGPHC 112 (20 June 2007) 152-156). In this regard, Article 7.1 of the AGS provides that a Member shall apply safeguard measures only for such period of time as may be necessary to prevent or remedy serious injury and to facilitate adjustment. This period shall not exceed four years, unless it is extended under Article 7.2. In this respect, Article 7.2 then provides that the period mentioned in Article 7.1 may be extended provided that the competent authorities of the importing Member have determined, in conformity with the procedures set out in Articles 2, 3, 4 and 5, that the safeguard measure continues to be necessary to prevent or remedy serious injury and that there is evidence that the industry is adjusting, and provided that the pertinent provisions of Articles 8 and 12 are observed. There is no WTO jurisprudence on Article 7.2, the extension clause of the AGS.

From the aforementioned, it is unclear from the AGS and the SGR how the process of extending safeguard measures is conducted. To this end, in *Macsteel*, it is unclear what is the actual term that can be used to describe the measure that was imposed by the Deputy Minister of Finance on 7 August 2021 (GN NO. R. 866 in GG No. 43597). The Gazette stated that the “safeguard duties” imposed through Notice Nos. R. 829, R. 830 and R. 831 of Government Gazette No. 41038 dated 11 August 2017 are hereby “extended” up to and including 10 August 2021 at the current rate of 8%. There are several issues with this amendment of Schedule 2 to the CEA especially since these measures are imposed indiscriminately unlike dumping duties.

First, Article 7.2 of the AGS does not allow ITAC to “extend” a safeguard measure without a completed investigation since that provision requires an investigation completed in terms of Article 3 as outlined above. So ITAC had no right to impose the safeguard measure, let alone “extend” it without a completed investigation. Thus, the so-called “duty” was not in law a ‘definitive safeguard duty’. It was certainly not a ‘provisional safeguard measure’ as per Article 6 of the AGS because that can only be imposed prior to a definitive safeguard duty and that must last for only 200 days. As per the Gazette of 7 August 2021, the Deputy Minister of Finance ‘extended’ the safeguard for at least another year. Thus, this is definitely not a ‘provisional safeguard measure’. In any event, a provisional safeguard measure requires a preliminary finding. This was not done and ITAC had only received a prima facie case that triggers an initiation of an investigation, but that is not the same as a preliminary finding. There was definitely no ITAC Report of a Preliminary Finding as they would normally do in all trade investigations including safeguard measures. In short, the purported ‘duty’ reimposed on 7 August 2020 had no legal definition nor legal basis. It is likely that this purported extension of the safeguard duty was prompted by the fact that these measures would lapse before the ITAC investigation was concluded and once the duties have lapsed, they could not be reimposed on the same product unless a period equal to half that during which such a measure had been previously applied, has lapsed, which period of non-application must be at least two years as stipulated by section 21.16 of the SGR read with Article 7.5 of the AGS. This would essentially prevent the imposition of a safeguard duty on hot-rolled steel until 24 months has lapsed from the expiry of the initial period of

imposition. Section 21.16 contradicts Article 7.5 of the AGS which requires that the period of non-imposition must be the same as the period of initial imposition and such period must be at least 2 years. Regardless, the measure imposed on 7 August 2020 would not have even met the lower threshold of 18 months of non-imposition as set out in section 21.16 of the SGR.

Secondly, the *Macsteel* matter was compounded by the SARS Correction Notice of 28 August 2020, which purported to correct the apparent error in the Notice by the Deputy Minister of Finance on 7 August ‘extending’ the safeguard duty (GN R.939 in GG No. 43661). This was done by the substitution of the word ‘extended’ with the word ‘maintained’ where it appears in Notice No. R. 866 of Government Gazette No. 43597 on 7 August 2020, with retrospective effect from 7 August 2020 (SARS Correction Notice of 17 August 2020). The issue here is that the AGS does not allow the ‘maintenance’ of a duty. Duties can only be ‘extended’ and they cannot be ‘maintained’ under Article 7.2 of the AGS, which requires a completed investigation because it incorporates compliance with Articles, 2,3,4 and 5 of the AGS. In particular, Articles 2.1 and 3.1 explicitly require that a safeguard measure can only be imposed after the investigating authority has ‘determined’ and ‘only following an investigation’ by the investigating body. It is common cause that the safeguard investigation in *Macsteel* had not been completed when the duty was reimposed on 7 August 2020. A prima facie case of injury or likelihood of injury for the purposes of initiation of an investigation is not sufficient to ‘maintain’ a duty.

In any event, a duty if it could be ‘maintained’ as stated in the Correction Notice Gazette, would require that the duty to continue to at the very least, to be ‘progressively liberalized’ as required by section 21.4 of the SGR and Article 7.4 of the AGS. Article 7.4 of the AGS provides that in order to facilitate adjustment in a situation where the expected duration of a safeguard measure as notified under the provisions of paragraph 1 of Article 12 is over one year, the Member applying the measure shall progressively liberalize it at regular intervals during the period of application. If the duration of the measure exceeds three years, the Member applying such a measure shall review the situation not later than the mid-term of the measure and, if appropriate, withdraw it or increase the pace of liberalization. A measure extended under Article 7.2 must not be more restrictive than it was at the end of the initial period, and must continue to be liberalized. To this end, the WTO Panel in *Ukraine - Passenger Cars* held that ‘regular intervals’ within the meaning of Article 7.4 meant ‘uniform intervals’ but that Article 7.4 did not specify how long such regular intervals should be and that the duty of ‘progressive liberalization’ also prohibits the importing Member from back-loading liberalization, i.e. not taking any liberalization steps until a late stage in the period of application of a safeguard measure (WT/DS468/R adopted on 20 July 2015 paras 7.362-7.363). It bears mention that the WTO Panel in *Ukraine – Passenger Cars* also stated that the AGS does not require that progressive liberalization start at a given point in time (para 7.364). Furthermore, the WTO Panel in *Argentina - Footwear EC* held that the only modifications of safeguard measures that Article 7.4 contemplates are those that reduce its restrictiveness and thus, the AGS does not envisage measures that increase the restrictiveness of a measure, and thus has no notification requirement for such restrictive modifications (WT/DS121/R adopted on 12 January 2000 para 8.303). Thus, the purported extension of the safeguard measure at the same level of 8% by ITAC violates sections 21.8-21.10 of the SGR and Article 7.4 of the AGS. Even if ITAC was authorised to extend this measure, at the very least, the

AGS and SGR require that the duty should then be liberalized. Thus, the Correction Notice of 28 August 2020 did nothing to save the safeguard duty on hot rolled steel as it has no legal basis in either the AGS nor the even the SGR. In effect, the duties on hot rolled steel which were terminated on 10 August 2021 by settlement before the court should have entitled the affected parties to refund of all duties paid from 7 August 2020. The effect and design of the measure imposed on 7 August 2020 effectively ‘extended’ the measure for at least another year.

The other related fundamental issue of ITAC was that the purported extension would have required a mid-term review at the 18-month mark by ITAC for it to be extended for another year as required by section 21.10 of the SGR and Article 7.4 of the AGS. It is common cause that this mid or half term review was never conducted by ITAC. This procedural error is fatal to the purported extension of the safeguard duty on hot rolled steel. Thus, the unprecedented catalogue of administrative missteps in ITAC’s purported ‘extension’ or ‘maintenance’ of the safeguard measures on hot-rolled steel aptly captures the problem caused by the lack of a binding procedural framework for the extension of safeguard measures in South Africa under the regime of the SGR and the AGS. Even the Amended Guidelines fail to address all issues in this regard such as whether the safeguard measure continues to apply during the safeguard investigation and do not actually specify the length of the investigation. Thus, ITAC is free to do the investigation for as long as it needs to establish the need for the safeguard measure. This situation is untenable and promotes routine breaches of South Africa’s international law obligations on ‘account of the laxity or tardiness of domestic authorities’ as cautioned by the apex court in *SCAW* (*SCAW* para 80).

3.2 Extension of safeguard measures in South Africa within the AfCFTA context

Article 8 of the AfCFTA states that the Protocol and its associated Annexes and Appendices shall, upon adoption, form an integral part of the AfCFTA and it shall form part of the single undertaking, subject to entry into force. Pursuant to this, the AfCFTA has been ratified and incorporated into South African municipal law (Part 8 of Schedule 10 to the CEA in No. R. 1433 in Government Gazette No. 44049 of 31 December 2020). It thus creates rights in domestic law. Article 3.1 of the Protocol provides that the provisions of this Protocol shall apply to trade in goods between the State Parties. Annex 9: Trade Remedies (‘Annex 9’) shall, upon adoption form an integral part of this Protocol as provided by Article 3.2 of the Protocol. The Protocol entered into force

Article 18 of the Protocol provides for global safeguard measures, whose implementation of this Article shall be in accordance with Annex 9 and the AfCFTA Guidelines, Article XIX of GATT 1994 and the AGS. Article 19 then states that in respect of preferential safeguards, State Parties may apply safeguard measures to situations where there is a sudden surge of a product imported into a State Party, under conditions which cause or threaten to cause serious injury to domestic producers of like or directly competing products within the territory. The implementation of this instrument must be in accordance with the provisions of Annex 9 and the AfCFTA Guidelines. It is apposite to note here that the terms global safeguard measures and preferential safeguards are not defined. It is assumed that global safeguards refer to those applied between countries who do not have preferential trade agreements and the latter apply to safeguard measures imposed between countries who are party to preferential trade agreements. This is as far as the Protocol goes offering no guidance on extension of safeguard measures.

Article 6.3 of Annex 9 requires that in global safeguard investigations, a State Party must immediately notify all State Parties of such initiation of the investigation according to the AGS. However, under Article 6.4 of Annex 9, in preferential safeguard investigations, a State Party shall immediately notify such initiation according to this Annex and the AfCFTA Guidelines. Article 2 of Annex 9 then provides that State Parties may, with respect to goods traded under the provisions of this Annex, apply safeguard measures as provided for in Articles 17-19 of the Protocol, this Annex and the AfCFTA Guidelines in accordance with the AGS. This leads the regime for the imposition and extension of safeguard measures back to the AGS. This formulation suggests that Article 2 is not a typical interpretation clause, which would only apply in case of uncertainty (Erasmus, 2021). Erasmus then argues that this provision says the AfCFTA trade remedies must, from the outset, be WTO compatible. Article 3 of Annex 9 reiterates that State Parties confirm their rights and obligations under Article XIX of the GATT and the AGS presumably in the application of global safeguards since that is the heading of this provision. Thus, it is clear that the extension of these global safeguard measures is governed by Article XIX of the GATT and Article 7 of the AGS. Erasmus then explains that if this is the case, then Annex 9 and the AfCFTA Guidelines will only add original principles and procedures where explicitly provided for. Thus, Erasmus concludes that even then, it will be possible to argue that where the AfCFTA provisions are ambiguous, WTO law must be used for the purpose of clarification.

Article 4.6 of Annex 9 states that the preferential safeguard measure shall be applied only to the extent necessary to prevent or remedy serious injury or threat thereof and to facilitate adjustment following an investigation by the importing State Party under the procedures established in this Annex and the AfCFTA Guidelines. Article 4.7 then provides that preferential safeguard measures shall not exceed a period of four (4) years and shall contain clear indications of their progressive elimination at the end of the determined period. The preferential safeguard measure may be extended for another period not exceeding four (4) years, subject to justification by the Investigating Authority under Article 4.7. Thus, the Annex does not provide any guidance on the process of extending a safeguard measure beyond the 4-year mark save for saying that there must be clear proof of progressive elimination and a justification provided. So, in all, global and preferential safeguards must be applied and extended in accordance with AGS as stated by Article 2 of Annex 9. As established above, the AGS does not provide the procedure for the extension of safeguard measures. This uncertainty mirrors the application of safeguard measures outside of the AfCFTA.

The Southern African Development Community (SADC) Protocol on Trade, the Revised Treaty of the Economic Community of West African States (ECOWAS Treaty) and the East African Community Customs Union (Safeguard Measures) Regulations are also silent on the procedure for the extension of safeguard measures (Articles 25.5-25.6 of SADC Protocol on Trade, Article 49.2 of the ECOWAS Treaty and Regulation 19 of the East African Community Customs Union (Safeguard Measures) Regulations). The SADC Protocol on Trade actually specifies that its rules for extension of safeguard measures are derived from Article 7 of the AGS and thus offers no tangible solution to this issue. Thus, these regional trade agreements as building blocs of the AfCFTA under Article 5(b), do not provide any persuasive guidance in this regard. Since the AfCFTA suffers from the same affliction as the SGR of not providing a procedural framework for the extension of safeguard measures

and thus follows the AGS approach of deference to Member States, it is likely, to pose the same problems for ITAC as the AGS regime unless the AfCFTA Guidelines are used as an opportunity to address this problem.

4. Conclusion

South African law remains unclear on how to extend a safeguard measure, on when the investigation should be triggered, the duration of such investigation and whether there is a duty to pay the duty during the tenure of the extension investigation. The issue of extension of safeguard measures within and outside the context of the Protocol reflects two sides of the same coin since they both lead one back to the AGS. The AGS is not useful in this regard since this power is delegated to the Member States of the AGS. This means that the SGR must actually be amended to provide for the procedure for the extension of safeguards for both AfCFTA and non-AfCFTA trade, the timing and duration of the extension investigation and whether the duty remains extant during such investigation. In the same breath, the yet to be promulgated AfCFTA Guidelines must also address these issues. The futility of the ITAC Guidelines is self-evident since they are non-binding on ITAC and the courts.

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III.III ECOWAS – WAEMU Dichotomy: Challenges for Regional Integration and Intra-Regional Trade in West Africa

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Abstract

The Economic Community of West African States (ECOWAS) and the West African Economic and Monetary Union (WAEMU) are the two main regional organizations in West Africa. While ECOWAS is the only sub-regional economic community encompassing all countries in West Africa (except Mauritania), WAEMU is a customs and currency union among eight ECOWAS member States, and as such, is a sub-regional group within ECOWAS. Both regional groupings have been existing (ECOWAS since 1975 and WAEMU since 1994) in West Africa with different mandates that often seem to undermine each other. The WAEMU countries, bound together by a common colonial history, seem to be in the firm grip of France and, thereby, relate more with France than they relate with the rest of West Africa. Efforts to strengthen regional ties between the two institutions have not yielded the desired results, as they continue to pursue their programmes and policies independent of each other. This dichotomy poses a serious setback for regional integration and intra-regional trade in West Africa.

This study was, therefore, motivated by the need to examine the challenges that the dichotomy between ECOWAS and WAEMU has posed to regional integration and intra-regional trade in West Africa. The paper began by looking at the historical background and the defining characteristics of the two organizations. In doing so, their respective roles in West Africa were identified, with particular focus on the relationship between them. Subsequently, the study examined the level of trade integration in the sub-region, and evaluated the effect of the dichotomy on regional integration and intra-regional trade in West Africa by examining documentary evidences. The findings of the study revealed a number of unique challenges that have been posed by the dichotomy. These findings illustrated the complexity of regional integration and intra-regional trade in West Africa due to the existence of diverging objectives between the two organizations. These findings led to the conclusion that a greater collaboration between ECOWAS and WAEMU and improved coordination of their respective policies is essential for the successful implementation of regional integration agenda and an increased intra-regional trade in West Africa.

Keywords: regional integration, intra-regional trade, ECOWAS, WAEMU, dichotomy

1. Introduction

The need to increase the level of trade between and among countries in West Africa and to foster cooperation and integration among the countries in the sub-region led to the formation of the Economic Community of West African States (ECOWAS) on May 28, 1975. At the heart of ECOWAS is “trade and market integration through the formation of a customs union designed to bring about rapid growth and development for member states” (Oshota and Wahab, 2022: 75). ECOWAS is committed towards deepening the integration of its member countries and removing trade barriers within the community in order to increase intra-regional trade. On the other hand, the West African Economic and Monetary Union (WAEMU), also known in French as *Union Economique et Monétaire Ouest Africaine* (UEMOA) is a sub-group within ECOWAS. It was established on January 10, 1994. Its mandate also hinges on trade and monetary integration of its member states, and the coordination of their macroeconomic policies. Both ECOWAS and WAEMU are, therefore, the two major economic communities in West Africa.

While WAEMU is a sub-group of former French colonies in West Africa (except Guinea Bissau that was colonized by Portugal), ECOWAS is the parent group comprising both WAEMU countries and those in the West African Monetary Zone (WAMZ) – Gambia, Ghana, Guinea, Liberia, Nigeria, and Sierra Leone. Both institutions have different and, in some cases, overlapping mandates that often contradict or undermine each other. As empirical evidence shows, WAEMU, with support from France, is more advanced in terms of regional integration and intra-regional trade than the parent institution, ECOWAS, leaving the latter to always trying to ‘catch-up’, despite being older and broader in terms of membership. There have been several efforts at harmonizing the policies and programmes of the two regional bodies, but these efforts have not yielded the desired results, as they continue to pursue their programmes and policies independent of each other. This dichotomy poses a serious setback for regional integration and intra-regional trade in West Africa.

The existence of the two regional economic communities (RECs) in the West African sub-region, with overlapping functions and mandates, creates practical difficulties, especially as regards the promotion of intra-regional trade. Each views the other as a competitor or rival in policy development and implementation. Though ECOWAS has been in existence for almost two decades before WAEMU was established, the latter has moved ahead of ECOWAS in creating more advanced institutions, policies and programmes that have deepened integration among its member countries much more than is experienced in ECOWAS. Having been united by common colonial history, common currency, shared economic institutions, common language and culture, WAEMU member states show that their duty is to WAEMU first, before ECOWAS, especially where the mandates of the two institutions overlap, or contradict each other. A good example is the existence of both the ECOWAS trade liberalization scheme (ETLS) and the Community Preferential Tax (CPT), which is WAEMU’s version of ETLS. CPT is often viewed as being used by WAEMU to undermine ETLS in WAEMU member countries. Empirical evidence has also shown that in regional trade, for instance, WAEMU countries prefer trading among themselves to trading with non-members within ECOWAS. This explains why intra-regional trade has advanced more in WAEMU than in ECOWAS. This dichotomy poses some challenges for integration and trade in West Africa.

Intra-regional trade refers to the exchange of goods and services between and among countries that are located in the same geographical region (Yaduma and Khan, 2023), while regional integration refers to the process of “strengthening interconnectivity undertaken by the economies of a region through enhanced collaboration and unified policies, along several dimensions” (UNCTAD, 2021: 10). These dimensions include: macroeconomic convergence and monetary and financial integration; trade and investment integration; migration and the free movement of persons; infrastructure integration; health integration; mining sector integration; and governance, peace and security (ECA, AU, AfDB, and UNCTAD, 2019). It, therefore, means that regional integration requires cooperation among countries in many of these dimensions. This study, however, focuses on trade integration, which is a key element of regional integration. In fact, trade integration is at the heart of regional integration schemes. Most states which desire to cooperate among themselves at the regional level usually begin by ensuring that trade amongst them is increased (Iloh and Ojukwu, 2021).

Following this introduction is the historical background of both the ECOWAS and the WAEMU. Section three attempts an analysis of the level of trade integration in both communities. In section four, the dichotomy between ECOWAS and WAEMU is explored, while section five examines the challenges of the dichotomy for regional integration and intra-regional trade. Section six concludes the study and proffers some policy recommendations.

2. Historical Background of ECOWAS and WAEMU

ECOWAS came into existence on May 28, 1975, through the Treaty of Lagos, and it is the oldest regional economic community in Africa (ECA, 2018). Its declared objective is to promote economic cooperation among member states who have different historic differences in language, culture and colonial history but at the same time sharing similar socio-political and economic conditions and challenges. It aims to deepen integration in the sub-region, create a large market for goods and services, and increase the movement of people within the sub-region (AfDB, 2019). Apart from these formal reasons usually adduced in the literature for the formation of ECOWAS, the community also: ... stemmed from a willingness and indeed interest from Nigeria to engage with the wider region to balance the external influence of France... ECOWAS was formed at the initiative of Togo’s Eyadema and Nigeria’s Gowon in response to dynamics both internal and external to the region. ‘Nigeria had been actively canvassing for the formation of a West African grouping’ to ‘strengthen ties between Nigeria and its Francophone neighbours, weaken the grip of France in the region and open up markets for Nigerian industrial products’... ‘French and Ivorian support to Biafra during the civil war had made Nigeria particularly sensitive to the implications of being isolated amidst francophone states with which it only had episodic interactions until Biafra’s secessionist attempt in 1967’ (Bach, 2016, cited in Byiers and Dièye, 2022: 4).

The process of integration envisaged by ECOWAS begins with a free trade area, to a customs union, to a common market, and lastly, to an economic and monetary union (Bossuyt, 2016). It adopted a common external tariff (CET) in 2013 which was largely built on the CET earlier adopted and being used by the WAEMU (Karakı and Verhaeghe, 2019), but it was applied from January 2015 (Byiers and Dièye, 2022). ECOWAS is the oldest of the eight RECs recognised by the African Union as the building blocks of the envisaged African Economic Community (AEC) (Iloh and Ojukwu, 2021).

Presently, ECOWAS has 15 countries as members. They include Benin, Burkina Faso, Cape Verde, Côte d'Ivoire, Gambia, Ghana, Guinea, Guinea-Bissau, Liberia, Mali, Niger, Nigeria, Senegal, Sierra Leone and Togo. Mauritania, the 16th member country, withdrew from the union in 2000 because of the ECOWAS' free movement of people policy as well as due to its multi-party democracy agenda in West Africa (Kedem, 2019). ECOWAS has some of the poorest countries in the world as its members. Seven of its member countries - Niger, Mali, Burkina Faso, Guinea, Sierra Leone, Liberia, and Guinea Bissau – are in the bottom fifteen (out of 191 countries) of the 2021/2022 Human Development Index (UNDP, 2022). Thus, the community is home to some of Africa's least developed countries (LDCs).

Building on the goals of ECOWAS, WAEMU, a sub-regional bloc within ECOWAS, came into existence on January 10, 1994 through the Treaty of Dakar, held together by a common language (French) and a common currency (West African CFA franc) (Yaduma and Khan, 2023), and was established to enhance economic integration among its member states. WAEMU's membership is comprised of seven former French West African colonies - Benin, Burkina Faso, Côte d'Ivoire, Mali, Niger, Senegal, Togo, and one former Portuguese colony – Guinea Bissau (which joined the community in 1997). WAEMU's main objective is the promotion of regional economic integration, as well as a common market for its members. It also aims at facilitating freedom of movement of persons, capital, goods and services, as well as factors of production. Part of its objectives also includes making the member states more economically competitive, in a harmonised legal environment, the convergence of macroeconomic policies, coordination of sectoral policies and harmonised fiscal policies (AfDB, 2021). Its citizens are also meant to enjoy the right of establishment, and of residence anywhere within the territory of the community (Zoma and Congo, 2022). WAEMU, and its sister institution in Central Africa – the Economic and Monetary Community of Central Africa (CEMAC) – were formed as a result of economic deterioration arising from devaluation of the CFA franc currencies (Iloh and Ojukwu, 2021).

Though WAEMU was established in 1994, its history dates back to many regional initiatives that existed among Francophone West African states. Its root could be traced to the establishment of currency blocs by European colonial masters in their overseas colonies. In French-controlled territories in Africa, the currency bloc was the franc zone. While other currency blocs (such as sterling area, the Belgian monetary zone, the peseta zone, and the dollar zone) were dismantled after independence, the franc currency zone was not. In West Africa, the CFA franc, created in December 1945, as a currency zone, united all French colonies, except Guinea that exited the zone after independence in 1960, and thereby severing political and economic ties with France, and Mauritania that exited in 1973 and decided to pursue an identity with its fellow Arabian countries in North Africa (Fielding and Shields, 2003). The CFA franc zone, thus, laid the foundation for other institutions that eventually gave birth to WAEMU. It also cemented the vertical integration between France and its former West African colonies, a path which subsequent institutions followed.

Therefore, subsequent institutions formed by Francophone countries in West Africa had their roots in this currency zone. It began with the formation of the *Union Douanière de l'Afrique Occidentale* (UDAO) in 1959 to preserve the customs union of colonial French West Africa. This was followed closely by the creation of the West African Monetary Union (WAMU) in 1962, and the *Union Douanière des Etats de l'Afrique occidentale* (UDEAO) in 1966, which came up after tensions over

fiscal transfers arose between coastal and landlocked members of the UDAO (Byiers and Dièye, 2022). UDEAO was replaced in 1973 with the *Communauté Economique de l'Afrique de l'Ouest* (CEAO), which was championed by Félix Houphouët Boigny of Côte d'Ivoire, and Léopold Senghor of Senegal due to “apprehensions about the rise of Nigeria” (Back, 2016, cited in Byiers and Dièye, 2022). WAEMU came into existence on January 10, 1994 after CEAO was dissolved following the devaluation of the CFA franc. Its constitutive act entered into force on August 1, 1994, after the last member state deposited its instrument of ratification (Zoma and Congo, 2022). All the eight member countries of WAEMU share borders with at least one other member country, meaning that the union forms a closed geographic area. However, while five of the members - Benin, Cote d'Ivoire, Guinea Bissau, Senegal and Togo – are coastal states, the remaining three - Burkina Faso, Mali and Niger – are landlocked.

WAEMU has become a full monetary union, with a common currency and a central bank - *Banque Centrale des Etats de l'Afrique de l'Ouest* (BCEAO) (or the Central Bank of West African States) headquartered in Dakar, Senegal. This bank issues the CFA franc that is used across all WAEMU countries. Member countries also cooperate among themselves on issues relating to exchange rates, insurance and business law, and intellectual property rights.

3. Level of Trade Integration in ECOWAS and WAEMU

Integration and trade are like Siamese twins, in such a way that trade plays a significant role in the integration agenda of any region. Intra-regional trade is also one of the indices of measuring the level of integration a region has achieved. As trade within the region grows, the region becomes increasingly integrated (Yaduma and Khan, 2023). Thus, regions that intend to integrate usually begin by creating free trade areas (FTAs). This entails removing those barriers that hinder free flow of trade among themselves – whether they are tariff barriers or non-tariff barriers (NTBs). In other words, by encouraging intra-regional trade among themselves, regional integration is deepened. However, the level of trade integration in RECs has been uneven, and the effectiveness of these regional communities in boosting intra-regional trade is limited by certain factors, among which are the nature of their design, enforcement issues, and the problem of multiple and overlapping membership of regional trade arrangements (IMF, 2023). Others include poor institutional frameworks, non-implementation of policies to ease movement of persons, and free flow of goods and services, weak rule of law, tight control over information, and other challenges that hinder trade facilitation (Oshota and Wahab, 2022). However, countries have made progress in terms of overcoming many of these challenges by reforming their regulatory frameworks.

Empirical evidence in extant literature suggests that though ECOWAS has had more years in terms of longevity, and more countries in terms of membership, WAEMU has been ahead in terms of intra-regional trade and achieving regional integration agenda. Recorded trade figures show that WAEMU countries have more intense trade relations than the wider ECOWAS countries (Byiers and Dièye, 2022) and this is easily explained by the level of integration within the community. Findings of a study done by Oshota and Wahab (2022) also show that the magnitude of intra-regional trade cooperation among WAEMU countries is greater than that of the WAMZ – a group of non-WAEMU ECOWAS member countries. WAEMU is, therefore, a strong force in intra-regional trade integration within the ECOWAS.

Table 1 supports the foregoing thesis. It shows that intra-WAEMU trade is more intense than trade that takes place among other non-WAEMU ECOWAS countries. For instance, Nigeria, Ghana and Gambia (non-WAEMU countries) did not have a single non-WAEMU country as part of their three main export destinations in 2022. All were WAEMU countries. The other non-WAEMU countries had at least one or two WAEMU countries as their main export destination. On the other hand, majority of WAEMU countries exported to fellow WAEMU member countries. As a matter of fact, the three main West African export destinations of Mali and Togo in 2022 were all WAEMU countries. For the remaining six WAEMU countries, out of their three main West African export destinations, two were fellow WAEMU member countries. Thus, WAEMU countries import more from fellow member countries more than they import from other ECOWAS countries.

Table 1: Intra-regional exports of ECOWAS/WAEMU members 2022 (per cent)

S/N	Exporting country	3 top destination countries and share in exporting country's exports					
		Country 1	% Share	Country 2	% Share	Country 3	% Share
1	Nigeria	Cote d'Ivoire	3.4	Senegal	1.2	Togo	1.1
2	Cote d'Ivoire*	Mali	8.9	Burkina Faso	5.2	Ghana	4.2
3	Ghana	Burkina Faso	1.9	Cote d'Ivoire	1.1	Togo	0.7
4	Guinea	Senegal	0.1	Liberia	0.1	Cote d'Ivoire	0
5	Senegal*	Mali	19.9	Cote d'Ivoire	3.2	Guinea	3.2
6	Burkina Faso*	Mali	6.7	Cote d'Ivoire	3.7	Ghana	1.2
7	Mali*	Burkina Faso	1	Cote d'Ivoire	0.4	Togo	0.1
8	Togo*	Burkina Faso	12.5	Benin	9.4	Cote d'Ivoire	8.4
9	Sierra Leone	Senegal	1.2	Nigeria	0.2	Liberia	0.2
10	Benin*	Togo	4.1	Nigeria	1.5	Niger	1.3
11	Niger*	Mali	17.8	Nigeria	15.2	Burkina Faso	3.6
12	Guinea Bissau*	Cote d'Ivoire	2.6	Togo	2.4	Liberia	0.1
13	Liberia	Guinea	0.8	Ghana	0.8	Senegal	0.6
14	Gambia	Senegal	1.9	Benin	0.1	Cote d'Ivoire	0.1
15	Cabo Verde	Nigeria	0	Burkina Faso	0	Cote d'Ivoire	0

*WAEMU member countries

Source: Table developed by authors with data from ECOWAS (2023a).

The implication of the data in Table 1 is that WAEMU countries are more integrated in terms of trade, more than the rest of ECOWAS countries. They trade more among themselves more than they trade with the rest of ECOWAS, and more than the rest of ECOWAS trade among themselves. As shown in Table 2, Cote d'Ivoire and Senegal had Mali (a fellow WAEMU country) as their main export destination globally, whereas many non-WAEMU countries had India, Switzerland, China etc as their main export destinations.

Table 2: Total exports of ECOWAS/WAEMU members, 2022

SN	Country	Exported values in 2022 (millions)	Annual growth in value (2018-2022)	Share in ECOWAS imports	Main export destination
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1	Nigeria	US\$ 63,339	2%	6.5%	India
2	Cote d'Ivoire*	US\$ 16,395	9%	24.3%	Mali
3	Ghana	US\$ 16,258	2%	5.1%	Switzerland
4	Guinea	US\$ 8,606	25%	0.3%	China
5	Senegal*	US\$ 5,725	10%	35.7%	Mali
6	Burkina Faso*	US\$ 4,549	12%	13.8%	Switzerland
7	Mali*	US\$ 2,034	9%	1.7%	Switzerland
8	Togo*	US\$ 2,034	6%	54.3%	India
9	Sierra Leone	US\$ 1,303	17%	1.8%	China
10	Benin*	US\$ 833	-1%	10.7%	Bangladesh
11	Niger*	US\$ 446	-15%	44.0%	France
12	Guinea Bissau*	US\$ 222	4%	5.3%	India
13	Liberia	US\$ 203	0%	2.8%	USA
14	Gambia	US\$ 184	8%	2.3%	India
15	Cabo Verde	US\$ 42	-14%	0.0%	Spain

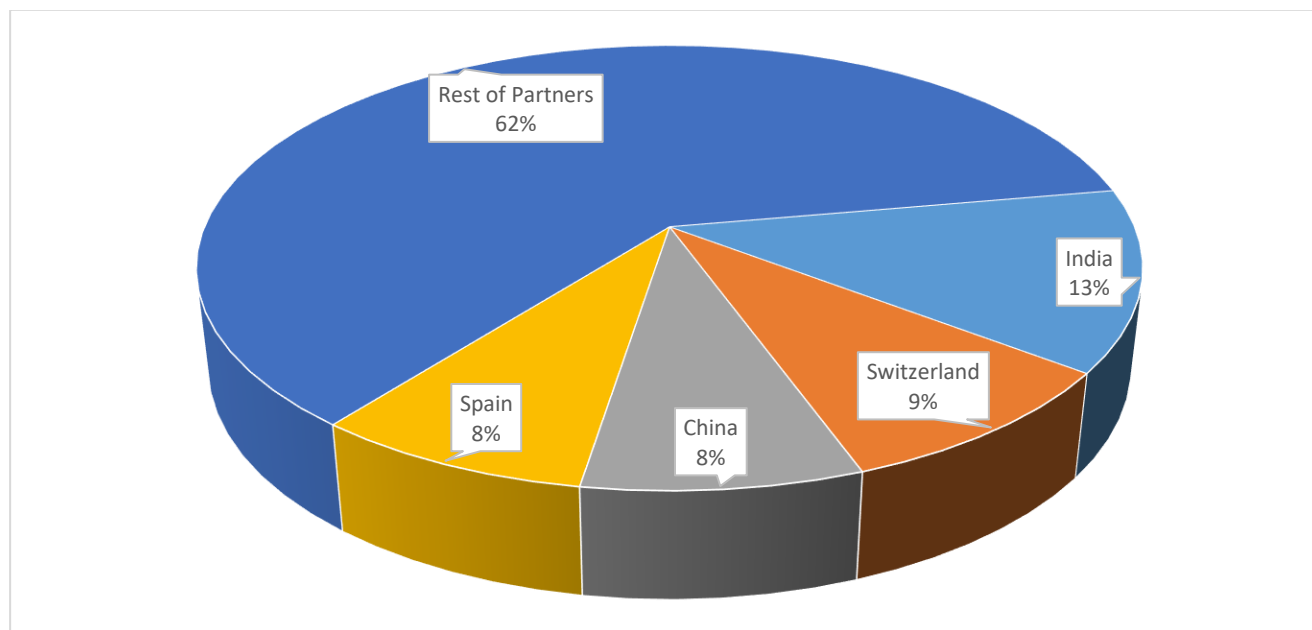
*WAEMU member countries.

Source: Table developed by authors with data from ECOWAS (2023a).

A critical look at Table 2 shows that WAEMU countries exported more to fellow ECOWAS countries much more than non-WAEMU countries did in 2022. When the ECOWAS share of imports in each country's total export is considered, it is evident that WAEMU countries are ahead of the rest of ECOWAS in terms of promoting intra-regional trade. For instance, 54.3% of Togo's exports circulated within West Africa. 44% of Niger's exports were within ECOWAS, and 35.7% of Senegal's exports in 2022 was within the sub-region as well. On the other hand, most exports of non-WAEMU countries were to other countries outside the ECOWAS sub-region more than within. Only 6.5% of Nigeria's exports was within the ECOWAS, and that was the highest from a non-WAEMU country. So, there are higher intra-WAEMU exports than intra-ECOWAS exports. In terms of total trade (imports and exports), WAEMU has one of the highest shares of intra-regional trade when compared with other RECs in Africa (Byiers and Dièye, 2022).

However, despite having most of their exports circulating within the sub-region, WAEMU countries could not steer the volume and value of exports in West Africa to concentrate within the West African sub-region. Many ECOWAS countries (WAEMU countries inclusive) choose to export to third countries instead of within. Large trade volume from countries such as Nigeria, and the limited share of such volumes in ECOWAS imports, account for this. Figure 1 shows the main destinations of ECOWAS total exports in 2022.

Figure 1: Main destinations of ECOWAS/WAEMU total exports (2022)



Source: Figure created by authors with data from ECOWAS (2023a).

In real monetary terms, ECOWAS exports to India in 2022 were valued at US\$15.10 billion; exports to Switzerland were US\$10.31 billion; China was US\$9.58 billion; Spain US\$8.64 billion; and the rest of the world, including West African countries, accounted for US\$69.38 billion of ECOWAS exports in 2022 (ECOWAS, 2023a).

A number of measures have been implemented by WAEMU countries to strengthen regional trade integration, and which places it ahead of ECOWAS in this regard. These measures include common external tariff (CET), removal of internal customs duties, free movement of workers and capital, competition policy, coordination of economic policies, harmonization of commercial legislation, and common currency, etc. (Zoma and Congo, 2022). More importantly, trade within the WAEMU region is tariff-free (IMF, 2023). Conversely, ECOWAS has not implemented many of these measures. For instance, the common currency initiative of ECOWAS has lingered since 2003. After several postponements, it is still not certain when the Eco currency will be launched. Till date, the ECOWAS free movement protocol is yet to be fully implemented owing to the fact that the third phase of the protocol – the right of establishment – is still not ratified by many member states. Furthermore, intra-ECOWAS trade is not fully tariff-free despite the existence of the ECOWAS trade liberalization scheme (ETLS), which facilitates free movement of goods within the region. The only goods that are qualified for duty-free and quota-free (DFQF) access under the ETLS are unprocessed goods, traditional handicrafts and certain industrial products of ECOWAS origin (Tralac, 2028). However, the scheme has strengthened trade performance in West Africa since its adoption, though four countries - Nigeria, Côte d'Ivoire, Ghana and Senegal – out of the fifteen ECOWAS countries, dominate trade in the sub-region, accounting for an average of 86 per cent of ECOWAS trade with the outside world (UNCTAD, 2019).

4. ECOWAS/WAEMU Dichotomy: Some Stylized Facts

It is imperative to state from the onset that efforts have been ongoing in West Africa for a possible convergence and harmonization of the integration schemes and trade policies of the two organizations. To some extent, this has been successful. In 1999, efforts were made for the alignment of regional policies between ECOWAS and WAEMU, through institutional cooperation. ECOWAS Heads of State went on to establish a Joint Technical Secretariat (JTS) for this purpose (Byiers and Dièye, 2022). Part of the mandate of the JTS was implementation of joint programmes, to adopt common positions on issues, and to jointly seek funding for their programmes. A good example where both RECs secured joint funding was in the area of trade facilitation through the establishment of the West Africa Trade Facilitation (TFWA) programme. TFWA comprises both ECOWAS and WAEMU, and other partners and funders such as the European Union (EU), the United States Agency for International Development (USAID), the German Development Cooperation Agency (GIZ), the World Bank Group and the Government of the Kingdom of Netherlands. The programme aims to ensure that regional trade networks are strengthened in West Africa, and to improve the movement of goods in the sub-region, as well as ease trade between West Africa and her trading partners abroad by reducing the time and cost of trade (ECOWAS, 2019).

Byiers and Dièye (2022: 7) further note that: A cooperation protocol was required in 2012 to further clarify the role of the two Commission Presidents coordination mechanisms with the Commissioners in charge of ‘convergence’, and the JTS. 2014 saw a further protocol to establish an “institutional juridical platform to define modalities and legal mechanisms to arrive at coherent community norms”, and “to establish a synergy between their technical services in general, and their legal services in particular”. That was followed in 2017 by the Protocol on convergence, agreeing that sectoral departments will consult each other to take account of different advances in specific areas and to plan activities through a common mechanism.

There are other areas of cooperation between the two RECs. In the agricultural sector, both institutions have adopted various joint texts, especially as they concern seeds, fertilizers and pesticides. There are joint efforts towards harmonizing legislations on competition, and a unified macroeconomic database known as Ecobase, has been created (Byiers and Dièye, 2022). Most recently, a Cooperation Strategy for Convergence between ECOWAS and WAEMU (2024 – 2033) is also being developed. A technical validation workshop on the draft cooperation strategy was held in Dakar, Senegal, in March 2023, and the workshop was attended by technical staff of both institutions (ECOWAS, 2023b). The cooperation strategy for convergence aims to build on earlier instruments and legal texts meant to strengthen the partnership and cooperation between ECOWAS and WAEMU, as well as putting together strategies for the joint management of projects and programmes owned by the two communities. There are many other areas of convergence between the two institutions in policies, programmes, and projects, though in some cases, there have been implementation concerns.

However, there are many areas where ECOWAS and WAEMU have worked at cross-purposes and seem to undermine each other’s authority. To begin with, ECOWAS, in Article 2 of its revised treaty (1993) notes that “it shall ultimately be the sole economic community in the region for the purpose of economic integration and the realisation of the objectives of the African Economic Community” (ECOWAS Commission, 1993:4). This forecloses the existence of any other economic community in

West Africa, or in the minimum, considers the existence of such other community as a rival. The reason for this feeling of pre-eminence or supremacy is not far-fetched. Being the first economic community in the sub-region, ECOWAS is also the oldest, having been established in 1975. Secondly, ECOWAS is the only REC in the sub-region that has all the West African countries as members, except Mauritania that withdrew its membership in December 2000. Thirdly, ECOWAS is the only REC included from West Africa as part of the eight RECs recognised by the African Union (AU) as the building blocks of the African Economic Community (AEC). In the preamble of its own revised treaty of January 2003, WAEMU pledged faithfulness to the objectives of ECOWAS (WAEMU Commission, 2003), even though in its short span, it has achieved more in terms of intra-regional trade and economic integration.

Perhaps it is important to state immediately that the dichotomy between ECOWAS and WAEMU stems from the nature and character of an Africa inherited from Europe at independence. Africans inherited a highly fragmented continent that has become an impediment to integration, as some of the regional integration arrangements were tailored along colonial and historical lines, especially among former French colonies. The first area of dichotomy between ECOWAS and WAEMU, therefore, emanates from the continued meddlesomeness of France in the affairs of WAEMU, and by extension, ECOWAS (Iloh, Osimen and Okafor, 2022). This intrusiveness on the part of France and her influence in the lives of WAEMU countries poses a threat to a wholesome regional agenda in West Africa. As a condition for granting independence to its former colonies in Africa, France ensured that African leaders signed a ‘cooperation agreement’ in many areas of governance, which guaranteed their remaining in the CFA franc zone (Tadei, 2017). Intimidation and repression were used by France to ensure this. This agreement guaranteed French influence in the governance of these new territories, to the extent that their relationships with non-members of the bloc are dictated by France.

It is also important to note that in rallying round its former colonies in West Africa (and other parts of Africa) for regional cooperation using the CFA franc currency as a tool, France’s intention was not to create an integrated Africa but was propelled by its selfish economic interests. Zoma and Congo (2022) have argued that as a matter of policy, France preferred to deal with small separate states rather than with a group of states. The intention was to block any process of integration among its former colonies. However, with the reality of decolonization, it became necessary to coalesce these former colonies into a coherent whole under the already existing CFA franc, and then use the bloc as a counterpoise to the wider ECOWAS agenda where France perceives Nigeria as threat to its economic interests in the sub-region. There has been a silent power tussle between France and Nigeria about influence and control in West Africa, to the extent that in official French circles, Nigeria is seen as the main ‘problem’ of France in the region (Idrissa, 2013). As such, France uses WAEMU to undermine Nigeria’s dominance in the region (Bossuyt, 2016). This view was also shared by Byiers, Woolfrey, Medinilla and Vanheukelom (2019) who maintain that the eight WAEMU countries in West Africa pose as a counterweight to Nigeria’s hegemony in shaping the ECOWAS agenda. Georges Pompidou, a former president of France, voiced out this sentiment by proposing a strong francophone regional body “to counter-balance the heavy weight of Nigeria” (Uche, 2001, p.14) and to curtail its overbearing influence on the region. This rivalry has been at the heart of the inability of ECOWAS to launch the Eco as a common currency for all the countries in the sub-region.

The loyalty of the WAEMU countries to the Eco currency project has been in doubt. The idea for an Eco currency started in 2003 and since then, ECOWAS has consistently missed the timelines it sets for itself for the launch of the currency: from 2003 to 2005, to 2010, and 2014. In June 2019, Heads of State and Governments of ECOWAS after its meeting, decided on a launch date of January 2020 for the Eco currency. In December 2019, six months after the meeting of the Heads of States and Governments, WAEMU declared that the following year (2020), the CFA franc would be renamed as the Eco. They added that the currency would still be pegged to the Euro to guarantee its stability, contrary to the original Eco envisaged by the ECOWAS leaders. That the French president, Emmanuel Macron, was present during the press conference in Abidjan where President Alassane Ouattara of Cote d'Ivoire made the announcement on behalf of his colleagues in the WAEMU, says a lot about the input of France in the decision. The CFA franc notes and coins are printed and minted in France, and the Bank of France holds 50 percent of the currency's foreign reserves. France also has a representative on the board of the currency union. The transition to Eco would have changed many of these vestiges of French colonialism, but the fact that it did not happen fuels the suspicion that the announcement was targeted at derailing the launch of the Eco by the larger ECOWAS. However, the rest of the ECOWAS are yet to satisfy the 'convergence criteria' required for a common currency to operate. Thus, though a common currency remains an active agenda in ECOWAS, it is yet to materialize, and as such, widens the dichotomy between ECOWAS and WAEMU, which already has a functional monetary union.

Another area of concern points to the attitude of WAEMU, as an institution, towards ECOWAS. There is an existing formal agreement among WAEMU countries to define position before discussing them in other fora, ECOWAS inclusive (Byiers and Dièye, 2022). This implies that they consider ECOWAS as an 'outsider', more of a third party, and as such should not be privy to discussions within WAEMU. This goes to suggest that decisions made by political leaders from the WAEMU in favour of convergence lacks genuine commitment. Accordingly, Byiers and Dièye (2022: 14) note that 'the same Heads of State that could push for greater harmonisation between the two organisations and implementation on the ground are the same who approve their separate annual workplans'. It is, therefore, safe to state that though ECOWAS and WAEMU have cooperated in many areas of integration, there are still many areas of divergence.

5. Challenges of the Dichotomy for Regional Integration and Intra-Regional Trade in West Africa

The co-existence of both ECOWAS and WAEMU in one sub-region, with similar mandates and functions, and with overlapping memberships, sure creates some challenges for regional integration and intra-regional trade. The objectives and aims of ECOWAS and WAEMU overlap in many areas. Both communities aim for economic integration of their member countries; promoting intra-regional trade among them by dismantling trade barriers; enhancing free movement of people, goods and services within the community; promoting and developing intra-regional infrastructure; etc. For some of these countries that belong to both RECs, the first challenge is in implementation of policies and programmes of both communities, especially when they are contradictory. As Byiers and Dièye (2022) note, incompatibilities usually arise from incorrect implementation of agreed policies and programmes. In many cases, member countries of both institutions selectively use ECOWAS and

WAEMU rules for different purposes, as they suit them. WAEMU member countries, in fact, by virtue of being the only countries belonging to both organizations, defer more to WAEMU than ECOWAS, suggesting that WAEMU is more prominent in deciding their development strategies. This has grave consequences for regional integration and intra-regional trade in West Africa generally.

Evidence has shown that as regards integrating with countries outside the same historical, cultural, linguistic and colonial past, integration has been difficult. Those who share the above characteristics forge closer integration among themselves, than with third countries, and colonial history embodies all these elements. In this case, WAEMU's colonial ties with France have constituted a huge challenge for wider regional integration and trade in West Africa. Uche (2001) has identified colonial solidarity as the major factor undermining economic integration in West Africa. French economic interests in West Africa, which are met through the WAEMU, partly explain why efforts at harmonizing both RECs have been largely unsuccessful. The link with France undermines the commitment of WAEMU members to the wider ECOWAS agenda. Ultimately, this has weakened the resolve of ECOWAS members towards monetary integration with a common currency, as evidenced in the numerous postponements of the take-off date of the Eco. It also shows in the trade data in West Africa where WAEMU countries trade more among themselves than with the rest of the countries in West Africa.

The creation of the franc zone in West Africa (that is, WAEMU) has, therefore, deepened vertical integration of its member countries with France, and not only weakened horizontal integration among its members but has also undermined the growth of wider regional economic community in West Africa. As a result of the support offered by France, WAEMU has advanced more than the larger ECOWAS in regional integration, especially in monetary cooperation. It has established more effective institutions, including a regional central bank. This explains why WAEMU member states have not shown much enthusiasm for a larger ECOWAS integration, because aside a larger market, there seems to be nothing in ECOWAS that WAEMU cannot offer their members (Iloh and Ojukwu, 2021).

Karaki and Verhaeghe (2019) report that the relationship that exists between ECOWAS and WAEMU depicts competition and rivalry especially on issues of integration and trade. This is evident in the incorrect application of the ECOWAS common external tariff (CET) which, in principle, has been harmonized with the CET of WAEMU, but in practice, results in two different trade regimes (Byiers and Dièye, 2022). WAEMU CET protects its market from non-WAEMU exports within ECOWAS, which partially explains why intra-WAEMU trade shares are higher than with the rest of ECOWAS. The fact that WAEMU CET was birthed first also means that ECOWAS, which is older and has a larger membership, is the one trying to catch up, since its CET was largely built on that of WAEMU. In other words, in this particular issue, ECOWAS is the one converging towards WAEMU, with the latter naturally feeling superior, and undermining the authority of ECOWAS.

Another main challenge posed by the dichotomy between the two institutions is the duplication of trade rules, policies, programmes and projects, with dire consequences for integration and trade in the sub-region. Apart from the fact that the overlap and duplication increase cost of implementation for WAEMU countries, thereby slowing down trade integration, foreign partners and donors also complain that support to both institutions means that WAEMU benefits from projects through both

organizations (Byiers and Dièye, 2022). Both institutions share same foreign partners and funders. Some of them include the African Development Bank (AfDB), the European Union (EU), the World Bank, the United States Agency for International Development (USAID), France etc. Their funding for integration projects is often duplicated, and sometimes work in opposite directions. Furthermore, international support for WAEMU is often viewed with hostile feelings by other ECOWAS members who believe that WAEMU's projects are being used by international donors to undermine those of ECOWAS (Lavergne, 2000; Camara, 2001). ECOWAS sees these supports as undermining the more ambitious agenda of regional integration in West Africa through the instrumentality of ECOWAS. Worse still, both institutions' rivalry manifests when they perceive themselves as more qualified and legitimate to undertake certain projects and programmes. Byiers and Dièye (2022) cite an example of WAEMU's work to create e-certificate of origin procedures and establishing a transit regime tool. Meanwhile, these are already being designed by ECOWAS. The end result will be duplication of policies, and WAEMU countries, who have the benefit of being members of both RECs, adopt and implement whichever ever that satisfies their trade interests. Thus, when ECOWAS takes the lead in initiating programmes and policies, WAEMU tends not to show interest, or worse still, try obstruct progress by launching its own policies and programmes.

Another example is in the application of the ECOWAS trade liberalization scheme (ETLS). ETLS is major instrument of promoting free trade within the sub-region. In principle, this scheme is being implemented by all ECOWAS member countries, but in practice, the Community Preferential Tax (CPT) – WAEMU's version of the ETLS - is operational among its members. The implication of this is that when both schemes are in conflict, WAEMU member countries adopt the CPT over the ETLS. Accordingly, Byiers and Dièye (2022: 12) again remarked that:

Although the ETLS was already theoretically in place, UEMOA also put in place procedures and structures for approving companies and products to benefit from its scheme, reportedly similar, but not quite, identical to those of ECOWAS. Each organisation has adopted a distinct definition of value addition based on different approaches, leading to differing approval processes whereby “an application for approval may be rejected by the [UEMOA] but accepted for the ECOWAS Liberalization Scheme” ... Although the ETLS and CPT rules of origin are meant to have been harmonised since 2003..., in practice this is not the case. This means firms must seek two separate approvals and follow, depending on the case, different rules of origin and export procedures.

Thus, this means that firms and business people trading only within the WAEMU sub-region do not need ETLS certificates. They only need the CPT. The implication of this is that in most cases, the ETLS does not have effect within the WAEMU, as the ETLS certificates of origin are sometimes not even recognized at border posts by officials within WAEMU territory. Another implication is that companies and business people that trade within WAEMU with the CPT, will have to seek for approval from ECOWAS for them to export to non-WAEMU countries within West Africa, thereby subjecting them to seeking for double approval in order to export their goods. These challenges undermine integration and trade within the West African sub-region.

6. Conclusion and Recommendations

The study examined the challenges of the dichotomy existing between ECOWAS and WAEMU on regional integration and intra-regional trade in West Africa. Though there are several areas of convergence between the institutions, the existence of both institutions in West Africa, with overlapping mandates, creates practical difficulties for the implementation of their agenda. This study found that in many instances, both institutions try to undermine each other, as they view themselves as competitors or rivals. In donor-funded projects and programmes, each sees itself as the legitimate institution to implement such programmes or projects. The study also found that some ECOWAS policies are duplicated in WAEMU, and as a result, business people and firms are left with no option than to comply with both, if they must trade across both communities. A good example is the ETLS of ECOWAS and the CPT of WAEMU. In some cases, the ETLS certificates of origin are not recognized by border officials in WAEMU territory.

All these pose challenges for regional integration and intra-regional trade in West Africa. A good example is the inability of ECOWAS to launch a unified common currency since the idea was birthed in 2003. Meanwhile, WAEMU countries have been using the West African CFA franc long before even the institution came into existence. Another challenge is in the inability of ECOWAS to increase the level of intra-regional trade. Evidence shows that WAEMU countries are more advanced in trade integration than ECOWAS as a community. They trade more among themselves than they trade with the rest of ECOWAS, and even much more than WAMZ countries trade among themselves.

In conclusion, therefore, the existence of both communities, especially in the case of WAEMU, generates additional obstacles, costs and difficulties that should not have been if uniform procedures were applied across the entire ECOWAS territory. Thus, the dichotomy between the two institutions undermines broad based integration and intra-regional trade in the West African sub-region.

In line with the above findings, the study offers the following policy recommendations:

Though some progress has been made in harmonising some policies and programmes of both institutions, a lot of work still needs to be done by the Commissions of both organizations. More areas of possible convergence should be explored and implemented to minimize friction and unhealthy competition and rivalry.

Since many of their policies, programmes and projects overlap, there should be an agreement or understanding that where this is the case, ECOWAS, being the parent institution, should take the lead in implementing these policies and programmes. WAEMU should be concerned with areas not covered by the ECOWAS Treaty.

Efforts should be made by WAEMU to minimize the influence of France in the economic affairs of its member states, and by extension, in West Africa. This will free up these countries to forge a broad-based cooperation with their other kith and kin in West Africa.

ECOWAS member states need to muster the political will required to launch the Eco currency. The ‘convergence criteria’ can be reviewed to enable member countries meet with the criteria. After the currency becomes operational, member states can make the necessary fiscal adjustments. This will greatly enhance regional integration in the sub-region.

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III.IV Assessing the Influence of International Credit Rating Agencies on Investment and Development in Sahelian African States

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Abstract

This paper examines the instrumentalization of International Rating Agencies as a tool of soft power diplomacy by certain States to influence investment and development in Africa. The socio-political crisis experienced by African states in the early decades of independence and exacerbated by the Economic Financial Crisis of the 1990s undermined foreign investment and development as remarks on business climate published by International Rating Agencies (ICRA) were not encouraging. ICRA in the past decades has proven to be an efficient Early Warning System (EWS) to lessen economic, political, and foreign policy fallout. ICRA became more influential after the 2008 global financial International investors, Development agencies, and donors in Africa strongly rely on studies and reports produced by ICRA to carry out their activities. Over the past two decades, the number of African governments issuing Eurobonds for debt restructuring and infrastructure financing has increased. Drivers of this shift towards Eurobonds include the desire of African governments to rely less on aid resources to support development financing needs and the increased inclusion of African countries in global capital markets (Chirikure et al, 2023). It is worth mentioning that Eurobonds are issued on international financial markets, and global investors require credit assessments from internationally recognized rating agencies of the issuer country. This suggests the significant influence ICRA has on the choice of international investors and as brokers of development in Africa. Given that ICRA has a nationality and identity, some States, notably Western nations have weaponized the latter as their foreign policy tool, especially against African regimes considered autocratic. Using the qualitative approach founded on existing secondary and primary literature, this paper analyses the socio-political, economic, and external drivers that have prompted ICRA to determine whether or not certain African countries notably those of the Sahel save for foreign investment and are capable of meeting their financial obligations fully and on time.

This study supports the thesis

This paper makes the case that the investment rate and development of African states notably those of the Sahel region strongly depend on the whims and caprices of international actors who use rating agencies to externally control the pace of development and degree of the African state's sovereignty.

Keywords: Rating agencies, Soft power, Sahelian African countries, investment, and Development.

1. Introduction

Right from the colonial fabrication of modern African states, the development and progress of the latter have been fashioned in such a way that its success or failure depends on the whims and caprices of Western states. The paradox of African States as one of the richest continents and at the same time the poorest has often animated several scholarly debates. The reality is that the pace of development and stability in Africa has been historically and umbilically linked to Western interests. Colonialism created a dual economy in Africa, two economic systems co-existed within the society, but one was disarticulated or not connected with the other: the village subsistence economy which served local needs, and the modern economy which fed the needs of international commerce. In fact, upon achieving their independence, most African States had no specific development model nor a solid industrial base.

Since independence, virtually all development initiatives in Africa such as Structural Adjustment Program (SAP), Heavy Indebted Poor Countries Initiatives (HIPC), and Poverty Reduction Strategy Papers (PRSPs) have been designed and implemented through Western international financial and rating institutions. Baah opines that since independence, all initiatives that have been designed by “aliens” for Africa and, have failed. The ever-growing debt and increased incidence of poverty on the African continent evidence the failure (Baah, 2003). The degree of success of development initiatives designed by African States such as the New Partnership for African Development (NEPAD) and recently African Continental Free Trade Area (AfCFTA) depends on the technical and financial assistance of Western international organizations including International Crediting Rating Agencies (ICRA).

ICRAs today are strategic actors in international relations as their influence in states other than their territory of origin is increasingly been felt especially in the African continent. Their capacity to influence foreign direct investment and loan eligibility of States through ratings makes them unavoidable brokers of development initiatives and investment in Africa.

Thus, the development model and decision for foreign investment in Africa depend on the methodologies, indicators, and rating process determined by Western International Crediting Rating Agencies (ICRA). The information manufacturing and opinion-leading role of rating agencies remain critical to capital flow and economic development in Africa (Mutize and Nkhalamba, 2021). Against this background and using both qualitative research methods, and drawing from the literature on heterodox questions, the discrete but very powerful influence of ICRAs on the development and investment in sovereign states with a focus on the Sahelian African States. This paper seeks to show how ICRA reports on some African countries, notably Sahelian states have been subtly influenced by Western values such as democracy, human rights, capitalism, and the rule of law which in effect are some of the rating indicators. Empirically, the fundamental challenge the majority of African States’ economies are confronted with is the issue of access to funds to support infrastructure development, which is less those that do not conform to Western values. In other words, access to funds for development and even to Foreign Direct Investment is conditioned by the level of the appropriation of Western values in African States.

Paradoxically, there exist some developing nations States, not necessarily African that don't align with Western values but yet have experienced sustained economic development and unprecedented economic development. This poses the problem of the objectivity of ICRA in the development and investment process in African states. This study makes literature contributions in three folds. First, it adds an exploratory perspective to the international credit rating debate by examining the instrumentalization of ICRA's as soft power political tools on the development and investment in African states with a focus on Sahelian African States. It can be hypothesized that the fragility of Sahelian African States can partly be attributed to instrumentalized ICRA's influence on investment possibilities in this region of Africa. Second, it examines the idiosyncrasies of ICRA's confronted with varying different ratings by one or more agencies for countries in similar situations. This paper is organized into four sections; the first circumscribes countries of the Sahel in Africa and a snapshot of ICRA's. The second dwells on a series of theoretical considerations that help in the understanding of ICRA as a tool of soft power diplomacy. The third section deals with the Instrumentation of ICRA's as tools of Foreign Policy Control and finally, the last chapter examines the impacts of ICRA's on African States.

2-Circumscribing Sahelian African States/ICRA's

Section one of this paper is essentially geared at presenting the socio-political and economic environment of the Sahel region in Africa as well as an overview of ICRA's.

2.1-Snapshot of the Sahel Region in Africa

From a geographical perspective, the Sahel comprises a semi-arid region of Africa extending from Senegal eastward to Sudan – or from the Atlantic Ocean to the Red Sea (ECA, 2021). African countries that make up the Sahel region include Mauritania, Senegal, The Gambia, Mali, Burkina Faso, Niger, Nigeria, Chad, Sudan, Ethiopia, Eritrea, and Djibouti (Heinrigs, 2023). In all, twelve countries make up the region and belong to three different Regional Economic Regional groupings: The Economic Community of West African States (ECOWAS) -07 (Gambia, Senegal, Mali, Burkina Faso, Mali, Niger, Nigeria), Economic Community of Central African States-ECCAS (Cameroon, and Chad), Intergovernmental Authority on Development (IGAD)-04 (Djibouti, Eritrea, Ethiopia, and Sudan) and the Arab Maghreb Union (AMU),-01 Mauritania. Geopolitically, this region of Africa constitutes Europe's southern geopolitical border and the majority of sub-Saharan Africa.

2.2 Socio-political, economic, and environmental context

Since independence, the Idiosyncrasies of Sahelian African States have demarked this area of Africa from others. The Sahel has claimed its place in the global spotlight, largely as a zone of fragility and vulnerability occasioned by system socio-political, economic, and environmental factors. States are fragile when state structures lack political will and/or capacity to provide the basic functions needed for poverty reduction, development and to safeguard the security and human rights of their populations" (OECD/DAC, 2007a).

Despite formal adhesion by countries in the Sahel to regional and international standards promoting governance, human rights, and the rule of law, weak state institutions, poor human rights track records, as well as poor governance and corruption remain widespread (Affa'a Mindzie, 2013), and have built up to erupt in the political and security crisis that unfolded in Mali, Burkina Faso, Chad, and Niger.

2.3 Political Instability in the Sahel

Among the myriad of challenges, the Sahel region has been confronted with in the past decades is the problem of political stability manifested principally by the multiplication of military coup d'états. The Sahel region in Africa holds the highest record of military coup d'états that have affected the region since independence. Between 1990-2022, four countries in the area experienced 29 successful military takeovers as seen in table 1 below.

Table 1: A synopsis of Military coups in Sahel countries from 1960-2023

Year	Coup Proprietor	Affected President
Burkina Faso (07)		
1966	Sangoulé Lamizana	Maurice Yaméogo
1980	Saye Zerbo	Sangoulé Lamizana
1982	Jean-Baptiste Ouédraogo	Saye Zerbo
1983	Thomas Sankara	Jean-Baptiste Ouédraogo
1987	Blaise Compaoré	Thomas Sankara
January 2022	Lt-Col Paul-Henri Damiba	Blaise Compaoré
September 2022	Captain Ibrahim Traoré	Lt-Col Paul-Henri Damiba
Chad (04)		
1975	Noël Milarew Odingar	François Tombalbay
1982	Hissène Habré	Goukouni Oueddei
1990	Itno Idriss Déby	Hissène Habré
2021	Mahamat Idriss Déby	Haroun Kabad
Mali (05)		
1968	Moussa Traoré	Modibo Keita
1991	Amadou Toumani Touré	Moussa Traoré
2012	Amadou Sonogo	Amadou Toumani Touré
2020	Assimi Goïta	Ibrahim Keïta
2021	Assimi Goïta	Bah N'Daw
Mauritania (06)		
1978	Mustafa Ould Salek	Moktar Ould Daddah
1979	Ahmad Ould Bouceif	Mustafa Ould Salek
1980	Mohamed Khouna Ould Haidallah	Mohamed Mahmoud Ould Louly
1984	Maaouya Ould Sid'Ahmed Taya	Mohamed Khouna Ould Haidallah
1999	Ely Ould Mohamed Vall	Maaouya Ould Sid'Ahmed Taya
2010	Mohamed Ould Abdel Aziz	Sidi Ould Cheikh Abdallahi
Niger (05)		
1974	Seyni Kountché	Hamani Diori
1996	Ibrahim Baré Maïnassara	Mahamane Ousmane
1999	Daouda Malam Wanke	Ibrahim Baré Maïnassara
2010	Salou Djibo	Mamadou Tandja
2023	General Abdourahamane Tchiani	Mohamed Bazoum

Source: Author's compilation 2023.

The ensuing political instability in the Sahel region has affected states' overall developmental objectives and contributed to deteriorating security conditions in the area.

2.3 Security Challenges in the Sahel

The security challenges in the Sahel are complex and multi-faceted. Mali, Niger, and Burkina Faso, and especially the borderlands of these three countries, or the so-called Liptako-Gourma triangle, are particularly vulnerable (Conkar, 2020). There is significant military activity in this zone, and the self-proclaimed Islamic State in Greater Sahara (ISGS) and other non-state armed groups like Boko Haram have intensified their activities there. The security challenges in the Sahel and the irregular migration flows resulting from them have had serious political, social, and economic consequences for North African and European countries. Indeed, these migration flows from the region have emerged as a particularly important matter in Europe and have provided fodder for populist anti-migration parties and movements both in Europe and beyond.

2.4 Economic Context

The multidimensional nature of threats notably conflicts have adversely impacted the economic performance of the Sahel region in Africa. As a result of persistent insecurity, the area has experienced a 40% reduction in trade between trading partners; up to a 32% reduction in bilateral trade in the event of economic sanctions; and trade partner substitution (Rega et al, 2023). In terms of investment, the region has suffered a 40% decrease in FDI flows compared with non-conflict countries; a decline in overall FDI inflows by a third (or 33%); FDI reversals; and displacement of investment towards non-conflict country/region (Ibid).

The financial sector in the area has been characterized by the weakening of financial regulatory institutions and the banking sector; increased reliance on informal systems (e.g. for financial services, remittances); foreign exchange shortages; and a higher probability of banking crises. Public spending in the Sahel has recently increased on the military by 1.8– 2.5% of GDP, often at the expense of spending on welfare; higher public debt by up to 13% of GDP compared with in non-conflict countries; lower tax mobilization (Ibid).

2.5 Governance deficits

One of the major challenges facing the Sahel region is the governance deficit. This deficit is epitomized by a noticeable increase in corruption, conflicts, and extreme violence spurred by institutional weakness, and contestation of the legitimate power of the state (ECA, 2019). There is also an emergence of non-governable spaces, leading to geopolitical confrontation exacerbated by combined effects of resource conflicts and an erosion of social cohesion.

2.6 Social inequality

The Sahel is one of the poorest regions in Africa and the world. The headcount poverty ratio was estimated at 43 percent in 2015 ranging from 38 per cent to 55 per cent against an average of 42.3 per cent in Sub-Saharan Africa and 10.7 per cent in the world. This poverty stems from the Sahel's vulnerability to multiple environmental, social, and political shocks that not only undermine the region's productive capacity, but also increase its susceptibility to a breakdown in social order, food security, and political stability (Ibid, 2019). Human development in the Sahel has deteriorated significantly in the past decade. Out of 191 countries ranked on the human development index

comprising indicators for health, education, and income, Burkina Faso (184th), Mali (186th), Niger (189th), and Chad (190th) are in the bottom 10 as of 2022, having fallen by more than 20 spots from their ranks in 2010 (UNDP, 2010; 2022).

2.7 Climate Change Threat

The Sahel countries are climatically, the most vulnerable in Africa with extreme weather conditions such as drought and floods occurring every five years on average (also known as the El Nino effect), and exacerbating the prevalence of low and unpredictable precipitation. Climate change is and will remain a key phenomenon, compounding the problems of already fragile environmental conditions, leading to food insecurity, human vulnerability, poverty, and social unrest (ECA, 2019). The region is warming faster than the world, recording further warming of 2.27° C (1950-2018) and 3.88° C (1990-2018) per century compared to a global average of 2.2° C every 100 years (Ibid). The average annual temperature in 2018 was the seventh warmest in the region since 1950. The year 2018 was also characterized by above-average seasonal precipitations, which resulted in devastating floods that affected 2 million people in the Sahel.

2.8 The Demographic Factor

Demographically, Sahel is the fastest-growing population region in the world at 2.9 percent per annum, and in 2017, its total population-weighted 25.8 percent (324.1 million people) of the overall African population and will reach 28.7 percent (724.2 million) in 2050. The region has the world's highest total fertility rate established between 4.6 and 7.2 births per woman and the world's highest fertility rate of teenage girls (152 %)- (ECA, 2019).

Paradoxically, the Sahel is endowed with abundant natural resources (oil, bauxite, gold, and uranium), lakes, river basins, underground water resources, and aquifers, which, if managed equitably and sustainably, could turn the region's fortunes around. Also, in the current digital era, the region is experiencing a technological dynamic supported by a large penetration of mobile devices. The mobile cellular telephone subscription per 100 inhabitants is estimated at 88 per cent in 2018 against 76 percent in Africa. This positive move could lead to new economic opportunities, particularly in trade and financial services, with the adoption of the African Continental Free Trade Area (AfCFTA).

It is worth mentioning that the adverse socio-political context in the regions is contrary to the majority of the criteria on which ICRA determines a state's eligibility to credit facilities in the international market.

3. Overview of ICRA

A Credit Rating is a forward-looking opinion regarding the relative creditworthiness of an issuer, an instrument, or an obligation and is assigned using an established and defined ranking system of Credit Rating categories. This rating is generally done by specialized commercial and economic agencies otherwise called Credit Rating Agencies. Historically, The origins of CRAs lie in the late 19th century with the beginnings of the American railroad companies (Johnson, 2013). Everything about the railroad companies was unique—most importantly their financing. The railroads were probably the largest and most sustained construction program in world history at the time; by the 1890s they accounted for half of all capital nationwide (Panitch & Gindin, 2012). Indeed, no other enterprise at the time, or previously, required such large sums of private capital (Abdelal, 2007).

Because the American banking system was fragmented during this period it was unable to provide the large sums of capital required for financing the railroads, and the railroad companies had to seek private capital from outside the United States (Sylla, 2002). In an attempt to fill the information gap that existed in the corporate securities market, in 1909 John Moody invented the modern practice of credit rating (Abdelal, 2007). Moody began collecting information on the railroad companies and sold subscriptions to his publication, *Analyses of Railroad Investments*, to potential investors. Rather than being purchased on faith, securities, Moody argued, should be bought on statistically compiled data and objective information. This information would eventually take the form of a credit rating, as John Moody believed that investors would pay for a service that synthesized information into an easily digestible format (Partnoy, 2006).

Within a few years, other rating agencies began entering the market. Poor's Publishing Company was established in 1916 and was soon followed by Fitch in 1924 (Partnoy, 1999). Rating agencies experienced solid growth up until the mid-1940s. The widespread use of capital controls throughout the Bretton Woods period meant that global private capital flows were minuscule and financial markets were relatively stable. As the amount and riskiness of investment declined, so too did the demand for credit ratings. Not until the late 1970s did CRAs return to similar levels of profitability as a result of the major economic shocks experienced throughout the period, which resulted from the abandonment of the Bretton Woods system and the deregulation of financial markets.

Currently two major American companies, Standard and Poor's and Moody's Investors Service, both based in New York, dominate the credit rating market, controlling approximately 80% of market share. Fitch, a French-owned company based in Paris, comes in a distant third. Together these three companies, described as the "Big Three", control a staggering 95% of the total market share (SEC, 2012). The credit rating market is thus highly concentrated and contains significant barriers to entry (Hunt, 2008). There are several other agencies active in the United States, and over a hundred operating worldwide. These firms are limited to niche credit markets and specific geographic regions and thereby hold comparatively little market share (Hunt, 2008). Only the Big Three agencies are truly global in scope and broad in their product coverage (IMF, 2010). With around 160 CRAs globally with roughly 4500 employees, the highly influential rating industry is surprisingly small (Langohr & Langohr, 2008). In comparison, for example, the investment bank Goldman Sachs employed 31,700 people worldwide in 2009 (Harper, 2010).

Developments in the international financial markets, specifically governments' increased reliance on raising capital in bond markets, have meant international investors have gained a significant degree of influence over government policy (Underhill, 2000). The ability of governments to raise funds at a reasonable cost has become increasingly dependent upon the willingness of private monetary agents to buy and hold public securities (Germain, 1997). Furthermore, the integration of financial markets has undermined the macroeconomic autonomy of nation-states.

A diffusion of authority is taking place in the global economy. The role of economic governance is being stripped away from governments and towards a heterogeneous group of private corporations, supra-national organizations, regional trading blocs, and non-governmental organizations (NGOs), thereby constituting a heterogeneous distribution of regulatory power to differing centers of action

within the global economy. In the interest of economic competitiveness and growth, nation-states have yielded a substantial amount of their domestic regulatory authority to transnational regimes and organizations (Lipschutz & Fogel, 2002). CRA, for example, has become instrumental in the determination of the creditworthiness of sovereign bonds to states. As such, this has contributed to the deconstruction of the perception of the State as the central decision-maker in international economic affairs.

Given the emergence of non-state actors and the inability of States to control their international actions, the latter has become a serious thermometer in all aspects of international relations especially, the global economic economy. This is the case with CRA significantly determines who has access to credit and at what costs. The primary economic and social function of a financial system is therefore to establish relationships between savers and borrowers; the idea is to bring their situations into harmony while making optimum use of available monetary resources (Dembinski 2009). Financial markets, however, are not historically stagnant but are subject to forces of change. Recent systemic changes in global financial markets have, indeed, provided an impetus for the development of the credit rating industry and the consolidation of CRAs' influence in global financial markets. From their perspective, CRAs have market legitimacy as an outcome of their contribution to market efficiency. Their authority is thus the result of the particular function they perform in solving existing information asymmetries in capital markets and providing market participants with needed information on the risk of various financial products.

4-Theorizing ICRA's influence on the development of Sahelian African States

Two main theories can better elucidate the instrumentalization of ICRA's in the control of other sovereign States as has been the case with Sahelian African States. These theories include the structuralist paradigm and the Dependency theory.

4.1 Structuralist Paradigm

Conceptually, Structuralism can be seen as a perspective on the world that prioritizes the plight of the poor, the marginalized, and the oppressed (Stean, et al, 2010). Structuralists argue that global economic relations are structured to benefit certain social classes and that the resulting 'world system' is fundamentally unjust. For several decades now, the structuralist paradigm has increasingly gained within the field of international political economy (IPE). The concept (IPE) encompasses the intersection of politics and economics as goods, services, money, people, and ideas move across borders (Held et al, 1999). Given the intrinsic link between the economy and politics, structuralists argue that global economic forces are eroding the social, economic, and political foundations of the state.

This is justified by the observations that there has been a shift in the dominant pattern of socio-economic organization away from the territorial confines of the nation-state; power is shifting from state to non-state actors; and there has been a convergence in national economic policies around neoliberalism and an ensuing retreat, or hollowing out, of the state (Johnson, 2013). The principle of territorial sovereignty, along with traditionally state-based instruments of economic governance, assumes a direct correspondence between economy, society, and polity, all of which are said to exist within an exclusive and bounded national territory (Held et al 1999).

Strange (2000) opines that impersonal forces of world markets are now more powerful than the states to whom ultimate political authority over society and economy is supposed to belong. The main victims of this world economic dynamics are African states and specifically those of the Sahel. Studies have shown how rich Sahel countries are but unfortunately, States in this area have very little control neither on the price of their natural resources nor how much they receive in the State coffers upon selling their goods in the International Market. This is because virtually all countries of the Sahel that are former French colonial States must deposit 50% of their funds in the French treasury to ensure the stability of their local currencies (FCFA).

Neoliberal globalization is weakening the capacity of developing African states of the Sahel to autonomously govern their national economies. This is because their access to sovereign credit and the nature of FDI is strongly determined by ICRAs.

With the collapse of Berlin characterized by increased proliferation of non-state actors, many states especially large and influential ones experienced the liberalization of capital markets, financial markets deregulation, and currencies allowed to float (Ibid). This somehow unleashed a wave of economic globalization that has weakened the state's centralized role in economic governance (Ibid). The situation was even worse for African States especially those of the Sahel region that were experiencing the 1980s economic crisis that had completely shifted the economic power into the hands of private individuals through massive privatization of State enterprises. From the 1990s until today, a spatial disjuncture is now said to exist between territorial sovereignty as the organizing principle of world politics and the increasingly global structure of markets.

4.2 Dependency Perspective

The dependency theory holds that “the condition of underdevelopment is precisely the result of the incorporation of the Third World economies into the capitalist world system which is dominated by the West and North America” (Randall and Theobald, 1998), hence in development studies, dependency implies a situation in which a particular country or region relies on another for support, “survival” and growth. Worst still the decision to provide the much-needed support, especially for Sahel countries depends on the whims and caprices of western-owned ICRAs.

The third world countries are the economically underdeveloped countries of Asia, Africa, Oceania, and Latin America, considered as an entity with common characteristics, such as poverty, high birthrates, and economic dependence on the advanced countries (Emeh, 2013). The term therefore implies that the third world is exploited and that its destiny is a revolutionary one. Dependency has been defined as an explanation of the economic development of a state in terms of the external influences (political, economic, and cultural) on national development policies (Seers, 1969). There are three common features to these definitions which most dependency theorists share.

First, dependency characterizes the international system as comprised of two sets of states, variously described as dominant/dependent, center/periphery, or metropolitan/satellite. The dominant states are the advanced industrial nations in the Organization of Economic Co-operation and Development (Ibid). The dependent states are those states of Latin America, Asia, and Africa which have low per capita GNPs and rely heavily on the export of a single commodity for foreign exchange earnings and the importation of a variety of goods from the western developed dominant states.

Second, both definitions have in common the assumption that external forces are of singular importance to the economic activities within the dependent states. These external forces include multinational corporations, international commodity markets, foreign assistance, communications, and any other means by which advanced industrialized countries can represent their economic interests abroad. Third, the definitions of dependency all indicate that the relations between dominant and dependent states are dynamic because the interactions between the two sets of states tend to not only reinforce but also intensify the unequal patterns. Simply put, dependency theory attempts to explain the present underdeveloped state of many nations in the world by examining the patterns of interactions among nations and by arguing that inequality among nations is an intrinsic part of those interactions. The underdeveloped nations therefore have become and remain underdeveloped because they are economically dominated by developed capitalist nations that have continually been extracting wealth from them. Frank has called this process the development of underdevelopment (Ibid).

One of the major instruments of African dependence on developed countries is the lack of financial capital for development. At the same time, the little that has to be borrowed from African states to finance development is determined by Western ICRA agencies.

5 Instrumentation of ICRAs as tools of Foreign Policy Control

States and private investor's acknowledgment of strategic information provided by International Credit Rating Agencies on a country's creditworthiness in the past decades have positioned the latter as one of the most influential actors in international relations. All non-state actors including ICRA share a common feature: they are not institutionally part of the apparatus of a State (Antonopoulos, 2019). Like any other non-state international relations actors, ICRA has nationalities and is generally protected by States in which the latter have their origin. Antonopoulos remarks that Non-State actors or entities have been "upgraded" or "elevated" to de facto State agents or organs because they are under the absolute dependence and control of a State (Ibid). In this contingency, the acts of such persons or entities are attributed to the State in the same manner as the acts of de jure State organs or agents.

Given that the most influential ICRA (Standard and Poor's and Moody's Investors Service, both based in New York and Fitch, based in Paris) have their nationalities in the United States and France, they benefit from the status of the latter as major superpowers. It is worth mentioning that democracy, human rights, and the rule of law are some of the main values to which countries (France and the US) harboring the most influential ICRAs attached much interest, especially in their foreign policy deployment. As such, both states and their allies do not hesitate to instrumentalize ICRA to impose these values on other states. Access to Sovereign Credit and FDI since the collapse of the Berlin Wall has been determined by the democracy criteria. Unfortunately, repeated military takeovers in some Sahel countries (see Table 1) State of Human rights and rule of law published by NGOs, and international organizations are in contradiction to Western values. (Abe, 2022; Amnesty International, 2022).

5.1 The Democracy Criterion

Since the collapse of the Berlin Wall in the early 1990s, the rise of international, transnational, and private non-state actors has had ambiguous effects on the state. Even though they constrain state autonomy, at the same time, they hinge critically on state support (Philipp, and Zangl, 2017). The

state remains central not because it still commands a near-exclusive claim to political authority, but because of its crucial contribution to enabling and managing non-state authority. The discrete control of certain elements of authority (regulatory, operational, or legitimating) by non-state actors has prompted states to instrumentalize the latter as tools of international deployment.

ICRA has not escaped this reality as they have been used politically, economically, and geo-strategically to discriminate their ratings on States considered by superpowers like the (USA and France) as “unfriendly” as a result of the absence of transparent democratic principles and respect for human rights which are strongly upheld values by Western powers. African States particularly those of the Sahel where effective democracy and respect for human rights are lacking are victims to the whims and caprices of Western powers who dispose of several tools including ICRA to influence other states (Cordes, 2014). Emily Beaulieu, G.Cox, and Sebastien Saiegh (2012) posit that democracies can sell more bonds on better terms than their authoritarian counterparts. Despite the strength of their economic credentials, non-democratic or authoritarian states in Africa like in several developing countries have hardly received objective ratings from ICRA. Credits ratings carried out by Moody’s and Standard and Poor between 1963-2008 clearly show the bias (Ibid).

Table 2: Average values of economic indicators for rated countries, by regime

Economic indicators (units)	Democracies	Dictatorship	t
Natural resources (% merchandise exports)	16,49	36,11	8,91***
Current accounts (% GDP)	-1,31	2,15	5,25***
GDP per capita growth (annual %)	2.19	3,35	4,10**
GDP (in US\$ 100,000,000 units)	373,98	167,97	-6,42***
Inflation (annual % change in CPI)	27.94	7,78	-3,06**
GDP per capita (US\$)	11,955	4,092	-17,48***
Trade (% GDP)	64,53	89,51	6,48***
Default (=1 for default or debt restructure)	.08	.09	0,1
Population (in millions)	51,95	142,6	4,02***
Moody’s rating (16-point scale)	10,82	7,63	-10,87***
S&P rating (16-point scale)	10,84	7,04	-12,87***

Source: Beaulieu et al, Sovereign Debt and Regime Type, 2012.

N.B: The third column reports the t-statistic used to test the difference in means between regime types. Statistically significant differences are at ** 95% confidence level; *** 99% confidence level.

Schultz and Weingast (2003) argue that democratic states have to pay lower borrowing costs on sovereign bond markets and hence enjoy a “democratic advantage”. Beaulieu et al. (2012) provide evidence that such a democratic advantage exists for sovereign ratings.

The large difference in the rate at which autocracies and democracies participate in the international bond market is important in and of itself. It also raises the possibility that a single-equation estimator of how regime type affects credit ratings or interest rates will underestimate the relevant effects. One does not directly observe how much autocracy depresses credit ratings (increases interest rates). It is important to recall that in the 1990s like today in the Sahel region, there were two routes by which a

country might enter the sample of rated polities(Ibid). One route, traveled by a substantial majority of new entrants, particularly since the mid-1990s, was self-selection: the country itself requested a rating from one of the CRAs.

A second route, traveled by the remaining minority, was selection by interested third parties, either international investment bankers or development banks providing concessionary funding because those autocracies that would receive low ratings (high rates) decide not to enter the bond market(Cox, 2011). However, whether the request for rating came directly from the investment banker or the country on the advice of the investment banker, these financial intermediaries were and are still clearly central to the decision to enter the market for sovereign debt.

Major credit rating agencies (“agencies”) from the US, UK, and other industrialized countries provide advice to and certify the creditworthiness of borrowers from developing countries (Block and Vaaler, 2001). Indeed, State-controlled agencies facilitate credit transactions for developing country borrowers by publishing letter-grade sovereign risk ratings, typically on a 6- or 16-point ordinal scale commonly understood and relied on by capital market participants (Ibid).

5.2 Political Influence of ICRA in Sahel States

Although ICRA’s decisions are mostly motivated by the emergence of news about a country’s fiscal and economic performance, anecdotal evidence (Military coup d’états in the Sahel. Increasing anti-French and Western sentiments and undemocratic practices, etc.) indicates that ICRA’s incorporate political considerations into their assessment of highly rated (and politically stable) sovereigns’ debt (Barta and Johnson, 2017).

Steven Block and Paul M. Vaaler (2017) opine that in developing countries like in Africa, political business cycles may have implications not only for incumbent, political regimes, governments, and their electorates but also for foreign actors involved in allocating credit and pricing it appropriately for investment. The wide spread of military regimes qualified by French President Emmanuel Macron as the “ coup epidemic” in some Sahelian countries like Mali, Niger, Guinea, Chad, and Burkina Faso have significantly and negatively impacted the sovereign crediting ratings of these countries.

Table 3: Summary of ICRA in Sahel countries 2004-2022

Agency	Rating	Outlook	Date
Moody's	Caa2	Stable	9/2022
Moody's	Caa2	Negative	5/2022
Moody's	Caa2	Under Review	2/2022
Moody's	Caa1	Stable	3/2021
Moody's	Caa1	Negative	9/2020
Standard & Poor's	B	Stable	11/2005
Standard & Poor's	B	Stable	5/2004
Fitch	B-	Stable	4/2004

It is important to remark that since 2020, following the increasing anti-French and Western sentiments observed in several Sahel states have witnessed a drastic degradation of the latter’s credit rates (The Global Economy, 2022).

Sinclair opines that CRAs promote “institutional arrangements of a neoliberal form” (Sinclair 2000) and an “American-derived mental framework” (ibid). In a quest to either improve or maintain favorable SCRs, governments subject themselves to the fiscal and monetary policy recommendations of the three international CRAs (Armstrong, 2016). Armstrong (2016) argues that a government that crafts an economic policy that contradicts the recommendations of the three international CRAs consequently suffers the loss of being downgraded. For instance, South Africa is facing a high threat of sovereign downgrade partly because of the land expropriation bill (IMF, 2018).

5.3-Economic and Policy Influence

Like several African countries whose economic policies have always been crafted upon orientations of the World Bank and the International Monetary Fund since the economic crisis of the late 1980s, Mutize, and Nkhalamba (2021) argue that in the quest for either improving or maintaining good credit ratings African governments have subjected themselves to the fiscal and monetary policy recommendations by the three international Credit Rating Agencies (Moody, S&P, and Fitch). Any government that crafts an economic policy that contradicts the recommendations of the three international CRAs consequently suffers the loss of being downgraded (Ibid). These dynamics have ultimately shifted the regulation of national economies from state governments to the credit rating institutions in which African developing countries do not have control, undermining the role of the state in providing essential goods and services (Ibid).

Barta and Johnston (2017) add that sound economic logic is absent behind CRAs discouraging certain economic policies in emerging economies, which suggests that Sovereign Credit Ratings may be prone to be used as punitive measures against states that contradict Western interests. Armstrong (2016) and Barta and Johnston (2017) concur on the view that the three ICRAAs have displayed political biases by assigning widely distinct sovereign ratings to countries that have relatively similar macroeconomic indicators. They present evidence showing cases where CRAs have assigned a better rating to sovereigns with crisis conditions whilst continuing to unreasonably justify their refusal to upgrade countries that are performing well.

Policy recommendations by rating agencies are restrictive and forbid fiscal stimuli through government spending and tax relief, which usually align with emerging economies to increase consumer demand, encourage private investment, create jobs, and stimulate economic growth. However, in contrast, extreme forms of these expansionary policies highly denounced in emerging economies are permitted and left unquestioned in the European and American setting under the banner of monetary easing and/or bailouts.

Despite the long-term economic potential in African countries, the credit rating methodologies over-emphasize the political risk in the rating criteria (Ahern and Painter, 2016). These circumstances have taken away the economic freedom of credit-rated African governments and their sovereignty to freely craft their preferred long-term economic policies without threats of sovereign downgrades. This ultimately shifts the regulation of

5.4 An International Law Enforcement Instrument

Cordes remarks that in contrast to domestic law, the international system lacks a central enforcement agency with a monopoly of force. One of the central questions in international relations is therefore

why states adopt and comply with international agreements if this entails short-term costs (Morgenthau 1978, Keohane 1997). International agreements are agreements signed by a sovereign state with other sovereign states or with an international institution and can range from informal standards to formal international treaties and commitments as a member of an international organization.

Given the lack of a central enforcement power, several authors argue that financial market participants can help enforce international agreements by taking them into account in their risk assessments (Singer 2007). In particular, scholars and international institutions expect that credit rating agencies, as one central actor in sovereign debt markets, enforce international agreements (Arner & Taylor 2009). If CRAs take international agreements into account in their sovereign rating assessments, this may provide countries with an incentive to adopt and comply with these agreements to gain a better rating.

6. Impacts ICRA on African growth

One of the key purposes of credit rating agencies (CRAs) is to provide accurate analysis of countries' long-term solvency, in ways that do not vary through the cycle. This would contribute to making international private capital flows, which themselves are inherently pro-cyclical less so (Griffith-Jones and Kraemer, 2021).

ICRA has a strong potential to contribute to or undermine the socio-economic transformation of African states as it plays the role of financial monitoring that acts as a source of information for investment decisions in the provision of sovereign credit ratings (SCR). It is based on opinions provided by the latter that investors are attracted or discouraged from investing in some African States. Socioeconomic and political dynamics in a country strongly determine the government's creditworthiness. A state considered undemocratic and poorly governed will likely not be well-rated by ICRA.

It is worth mentioning that Investments are crucial for any economy's socio-economic transformation, whether it is foreign, or domestic. Meyer and Mothibi (2021) opine that an average growth rate of 7% or above in the medium to long term is needed for Africa to make a significant impact on economic development and poverty alleviation. Therefore, this will require an investment rate of at least 25% of GDP or above over a sustained period. However, given the instrumentalization of ICRA as a tool of foreign politics, the economic growth of certain African countries is hypothecated as is the case with some Sahel African countries. Even though the 21st century has been characterized by a relative scarcity of sovereign defaults and major restructurings, the influence of ICRA in the past decades has had a serious impact on Sahel African countries in specific areas like fragility and economic sovereignty.

6.1 Source of fragility

A fragile region or state has a weak capacity to carry out basic governance functions and cannot develop mutually constructive relations with society. Fragile states are also more vulnerable to internal and external shocks such as economic crises or natural disasters (Jones, 2013). One of the great challenges confronting the international community is the real and persistent fragile Sahel region

in Africa. Insecurity—with the rise of radical Islamism and transnational criminal activities—is a serious concern in the region, particularly in northern Mali, but it affects all the countries across the Sahel band, and down even into the Great Lakes region (WEF, 2014). Weak governance practices, enduring socio-economic challenges, combined with sporadic drought and flooding also continue to fuel a recurring humanitarian crisis.

In the Sahel region plagued by violence and conflict, security risks and instability as well as lack of infrastructure, access to finance, and workforce skills can stunt government creditworthiness, Foreign Direct Investment, private sector-led growth, and job creation. All of these can only be possible depending on the ICRA opinion in the various countries of the region. In other words, ICRA has the power to unlock remedy measures or reinforce the resilience of fragile countries depending on the score allocated to the latter.

6.2 Economic sovereignty

The majority of sub-Saharan countries including those of the Sahel region supposedly gained independence and sovereignty in the 1950s and 1960s. Unfortunately, more than 60 years after independence, the socio-economic and development policies are still determined by formal colonial powers or institutions controlled by former colonial powers. There is hardly a country in the Sahel that has autonomously defined its national economic and development policies for fear of being sanctioned or not obtaining the required financial and technical assistance for its development. One of such strategic and influential institutions that have undermined African States sovereignty are ICRA which determines the SRC worthiness of the latter. This has contributed to depreciating the already political and economic sovereignty of most African countries like those of the Sahel. So long as ICRA continues to be used as a yardstick to measure the SCR of African states, the less sovereign they will be.

7. Conclusions and recommendations

This paper set out to examine the instrumentalization of International Rating Agencies as a tool of soft power diplomacy by certain States to influence investment and development in Africa. The collapse of Berlin and the democratization process that followed experienced the emergence and proliferation of non-state actors in international relations. Non-state actors have proven their worth in international relations as States do not have the required means to control their actions. In this sense, proactive States have engaged in the instrumentalization of non-state entities to foster their foreign power diplomacy. In examining the instrumentalization of ICRA in international relations findings show that some States have instrumentalized international rating agencies to influence and control other states. This is the case with the three big rating agencies (Fitch Ratings, Moody's Investors Service, and Standard & Poor's) all Western-based rating agencies. Their ratings are not only a thermometer to measure the doing business climate in a country, but also it is a core requirement for issuing a Eurobond as they determine the conditions and the costs under which governments access capital markets.

The following two major impacts can be drawn from the findings. First, it is imperative to recognize that, the instrumentalization of ICRA in developing Africa countries in the Sahel makes it difficult for a sovereign to increase or broaden its investor base with SCRs and attract FDI. By so doing has

contributed to exacerbating the fragility of States in the Sahel region in Africa. Hence, de-instrumentalized ICRA is crucial in unlocking competitive global capital which can effectively tackle poverty, and promote good governance, peace, and security in the Sahel region. By depoliticizing the assessment of sovereign ratings, it implies that a country's policy thrust is to promote self-reliance and build capacity to enable self-sustenance in economic development.

Second, the instrumentalization of ICRA in Sahel Africa only confirms the lack of economic sovereignty that characterized virtually all African states. The fact socio-economic development policies and the worthiness of African States to access SCR needs to be assessed by the West constitute a major challenge for many African economies. In other words, this implies that, as long as there are no alternative manufacturers of more credible sovereign credit information than those produced by pro-western ICRA, then the influence of the international rating agencies on the African continent will remain and continue to expand. Their opinions will thus continue to influence national policies on democratically elected governments against public interest and by extension punish undemocratic governments.

Based on the findings from the analysis in this paper, it is recommended that Africa seizes the opportunity offered by the multipolarity of international relations today by tasking Africa to develop a continental policy framework to manage international CRAs and provide technical support to governments in their engagements with ICRA. As proposed by former studies (Mutize and Nkhalamba, 2021) there is need to establish an African Financial Regulatory Authority to regulate the activities of international CRAs on the continent.

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IV. DIGITAL TRADE AND BLOCK-CHAIN PANEL

IV.I Digital Technology as A Catalyst for Regional Integration in the Southern African Region

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Abstract

The study contributes to the literature on how digitalisation can impact trade dynamics, economic integration, and regional cooperation. It uses a more comprehensive index of information and communication technology (ICT) development and focuses on 15 Southern African Development Community (SADC) countries over the period 2011-2021. The study employs a gravity model estimated through the Ordinary Least Squares (OLS) and the Poisson Pseudo-Maximum Likelihood Estimator (PPMLE) to determine the relationship between digitalisation and intra-SADC trade. The results reveal a positive relationship between digitalisation and intra-regional trade for the exporting country, suggesting that countries with more advanced digital technologies tend to engage in greater trade within the SADC region. Conversely, the study finds a negative relationship between digitalisation and intra-regional trade for the importing country, implying that countries with less advanced digital infrastructure may experience lower levels of intra-SADC imports. Overall, the study's findings suggest that digitalisation plays a significant role in shaping intra-regional trade within the SADC region. Countries with more advanced digital technologies are more likely to export to their neighbouring countries, while those with less advanced digital infrastructure may experience constraints in their imports.

Keywords: regional integration, structural gravity, SADC, digital technology

1 Introduction

Digital technology has had a profound impact on international trade in recent years, transforming the way businesses engage in cross-border commerce, improving efficiency, expanding market access, and enabling new trade opportunities. Digital technology primarily serves as a tool to facilitate trading in goods and services, as well as a channel through which new types of services are developed (Herman & Oliver, 2022). Digitisation lowers sunk transaction costs across borders, particularly regarding information and transport costs in the production of some services (Goldfarb & Tucker, 2019). The literature further shows how innovation in digital technology has improved product variety through the creation of new digitally transferrable services, thus creating exports that are not restricted by either distance or borders (Lund & Manyika, 2016; Meyer *et al.*, 2023). Yet most studies did not pay much focus on Southern African countries, while the ones that used the Southern African case studies only concentrated on the selected economies and analysed them within the groups of other developing countries (Bekkers *et al.*, 2021; Seetanah *et al.*, 2021).

Southern Africa is confronted with several challenges that could prevent the region from leveraging opportunities presented through digital technology. These include low internet penetration data, little existence of digital marketplaces, high digital illiteracy and a skill shortage required to innovate and absorb digital technologies (Lemma *et al.*, 2022; Razzano *et al.*, 2022; Seetanah *et al.*, 2021). Shortage of infrastructure that is required to adequately handle the digital, logistics and transportation challenges as well as shortage of online payment systems limit the effectiveness of digital transformation (Tempest, 2020). This has largely contributed to the growing digital divide that sees Southern Africa being left further behind in the adoption and innovation of new digital technologies relative to the rest of the world. As a result, while the world economy is changing because of digital technologies, Southern Africa has not yet fully benefited from digital technologies' capacity for development.

The COVID-19 related restrictions highlighted the importance of adopting digital technologies. A unique global policy momentum, which was brought on by the COVID-19 restrictions that led to unlocking barriers to technology and innovation during the pandemic, provides further evidence that regional governments can play a key role in enabling technological innovation and promoting its uptake and use. The African Continental Free Trade Agreement (AfCFTA) provides a digitally enabled market as a protocol for its establishment; it also provides a framework for the establishment of technological standards, harmonising digital market regulations and fostering digital functionalities to enable intra and international trade (UNECA, 2020). Therefore, digital technologies would help to operationalise the AfCFTA agreement by improving the ease of doing business, digital financial inclusion and transport innovations (Mangeni & Atta-Mensah, 2022). These are key to enhancing Southern Africa's intra and extra-regional African trade.

The SADC community has gone to great lengths trying to lower the digital divide within the region. Even though the cost of internet fell from 2008 to 2020, from a median cost of about \$60 for 5GB to about \$20, the cost of the internet remained high in Southern Africa (Worldwide Data, 2023). In 2022, the SADC region had the fifth-highest average data costs at \$3.79. Internet penetration in the SADC rose from 6% low population using the internet in 2008 to 33% in 2020. However, the only region in the world that seemed to perform worse than the SADC in terms of internet penetration was South

Asia. Most of the countries in the SADC region had great improvement in the ICT development from 2011 to 2021. However, a large digital divide still persists within the region, with growth in digitalisation being far greater in some countries than others (see Figure 1 in Section 2). The SADC exports, however, have not been growing as fast as the rate of digitalisation, and this can be due to a multitude of reasons, including fluctuations in commodity prices, and recently the twin problems of COVID and the Russia-Ukraine war.

Using the structural gravity model of international trade, this study, therefore, investigates the effect of digital technology on regional trade flows in the SADC region for the period 2011-2021. The study contributes to the literature on the relationship between digital technologies and international trade, exploring differences in adoption, income groups and level of development of countries (Abeliansky *et al.*, 2021; Abeliansky & Hilbert, 2017; Clarke & Wallsten, 2004). Even though there have been studies focusing on Sub-Saharan Africa and other regions in Africa (Kere & Zongo, 2023; Abenden *et al.*, 2022; Epo & Nguenkwe, 2020), this study employs a more comprehensive index of ICT development as a measure of digital technology and concentrates on the SADC region, which has undertaken considerable efforts to lower the digital divide. Furthermore, the study builds on the existing related literature by integrating the COVID-19 pandemic period, when there was acceleration of digitalisation in developing countries. The literature has shown that the match in the adoption of digital technologies matters for its effect on international trade (Rodriguez-Crespo *et al.*, 2019).

2 Background and Evidence

2.1. SADC Policies and Strategies on Digitalisation and Trade

The Southern Africa Development Cooperation Conference (SADCC) was first founded on the 1st April 1980. In August 1992, the SADCC was converted into the Southern Africa Development Community (SADC). After the subsequent admission of new member states, the SADC is now a coalition of 16 independent states made up of 13 countries.¹⁴ To further improve the regional economic integration, 12 of 14 SADC member states established a free trade area in January 2008 (SADC, 2012).

Some of the SADC's primary objectives are to foster more trade and investment between its member states and establish common political interests. Thus, ICTs were regarded as catalytic to these objectives, and new technologies were covered by infrastructure and service provisions in the 1992 SADC Treaty (Article 21) (SADC, 1992). The Protocol on Transport, Communications and Meteorology represented a commitment by member states to implement fundamental reforms in the transport and communications sectors. It placed particular emphasis on the deployment of dependable infrastructure in the transport and communication sectors to accelerate development and ease trade amongst the member states (SADC, 1996).

As part of ongoing efforts to promote the ICTs, the SADC Heads of State signed the SADC Information and Communication Technologies Declaration in August 2001. The Declaration called on member countries to create “a cohesive regional policy” for the ICT that “bridges the divide

¹⁴ Angola, Zambia, Botswana, Eswatini, Comoros, the Democratic Republic of the Congo, Mozambique, Lesotho, Tanzania, Malawi, Namibia, South Africa, Zimbabwe, Madagascar, Mauritius, and Seychelles.

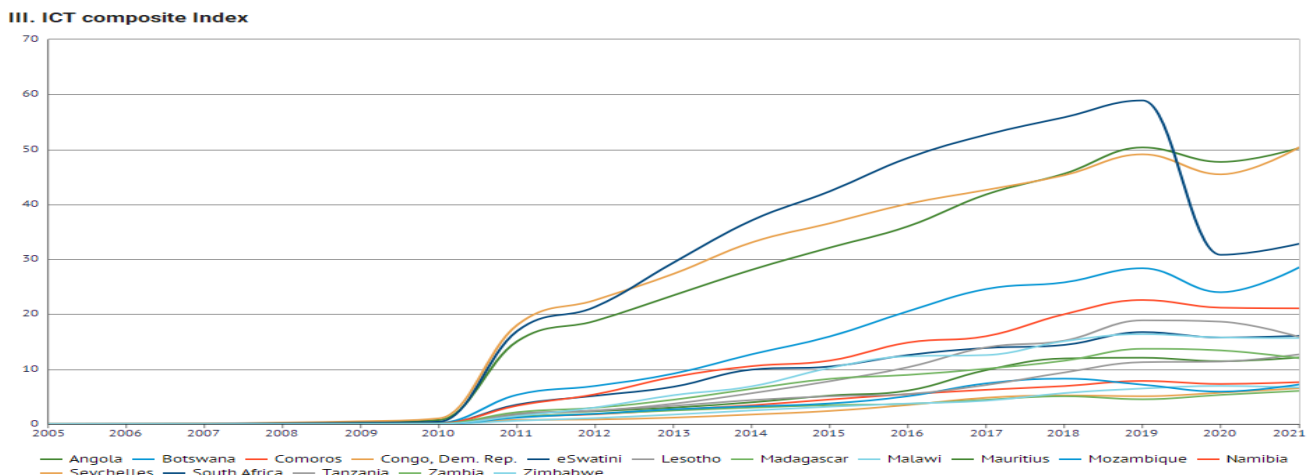
between the region and the rest of the globe” (SADC, 2001). The declaration has also emphasised the need to adopt and adapt new technology to avoid exclusion from global commerce (SADC, 2001). Another key strategy paper by the SADC concerning the ICT development is the SADC Regional Indicative Strategic Development Plan (RISDP) first put forth in 2003 (SADC, 2020). The transformation of the SADC is included in the RISDP strategies and visions into an information-based economy (SADC & UNECA, 2010).

In 2010, the e-SADC strategic framework was established to serve as a guideline for the implementation of the information society in the sub-region. One of the specific objectives of the framework was the enhancement of connectivity and access to ICT services amongst and within the member states of the sub-region to promote the ICT use for the regional economic integration (SADC & UNECA, 2010). The second strategy objective of the e-SADC framework (Develop ICT infrastructure and Security), recognises that globalisation and regional integration require effective regional infrastructure to widen markets, achieve economies of scale and improve private sector participation. The framework also identifies a lack of trust in e-transactions, limited availability of infrastructure and equipment, together with the lack of e-applications, skills and pricing as key bottlenecks for the limited use of the ICT by businesses (SADC & UNECA, 2010). Other important strides towards technologically driven trade taken by SADC include the sub-regional e-commerce strategy framework (SADC & UNECA, 2012), the HIPSSA model laws (Support for Harmonisation of the ICT Policies in Sub-Sahara Africa) (ITU, 2013), and the numerous national ICT policies developed by SADC member states (SADC & UNECA, 2010, 2012).

2.2 State of Digital Technologies in the SADC Region

SADC has made significant progress towards narrowing the digital divide in terms of access to the digital enablers, resulting from the policy reforms. The state of the ICT infrastructure has been improving in the SADC region in the past fifteen years (Markowitz, 2019), with South Africa and Seychelles leading the pack, and Malawi, Madagascar and the Democratic Republic of Congo being the lowest performers (see Figure 1). Most of the countries in the SADC region show that there was a great improvement in the ICT development from 2011. However, a large digital divide persists within the region, with growth in digitalisation being far greater in some countries than others.

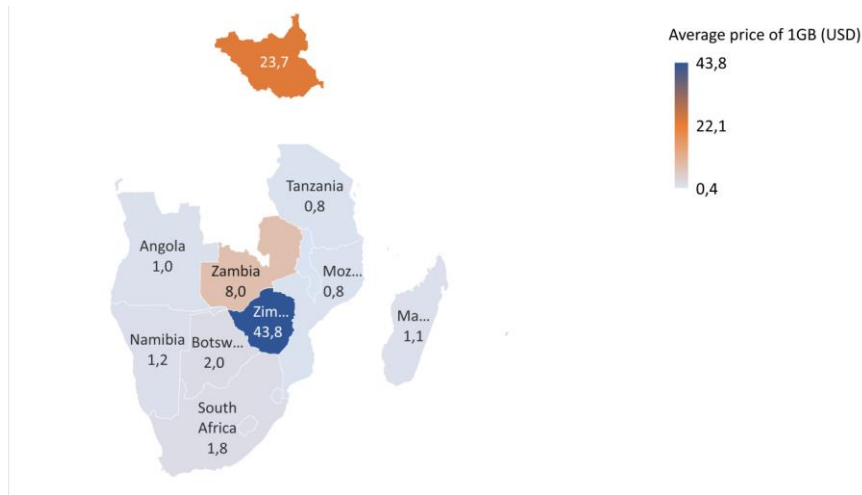
Figure 1: ICT Composite Index (ICT Infrastructure Development)



Source: African Development Bank Group: Africa Infrastructure Development Index (AIDI) (2022)

Although the cost of internet has been falling from 2008 to 2020, from a median cost of about \$60 for 5GB to about \$20, respectively, it remains high when compared to other regions – the fifth-highest average data costs at \$3.79 in 2022 (Worldwide Data, 2023). Remarkably, data costs show great variation in the region (see Figure 2) and are not necessarily correlated with the ICT infrastructure development. The high data costs in some SADC countries are mostly attributed to high infrastructure shortages, high costs of expanding coverage for large countries with low population densities and transit passage, and other costs associated with the connection of the international internet (TS2 Space, 2023; Makati, 2021).

Figure 2: Cost of Internet in SADC in 2022



Source: Worldwide Data (2023):¹⁵

According to World Bank data¹⁶, SADC generally has low internet penetration, below the world average of 60%. But SADC has also shown indications of improvement in recent years, from 6% in 2008 to 33% of population with access to internet in 2020. This is much higher than 13% in the Democratic Republic of Congo but lower than 79% in Seychelles. Mothobi (2018) attributes this low penetration to poor coverage, unaffordability of services and devices, illiteracy, and lack of digital literacy in some parts of some countries even though the SADC had made so much stride in investing in the undersea cables.

2.3 Regional Export Performance

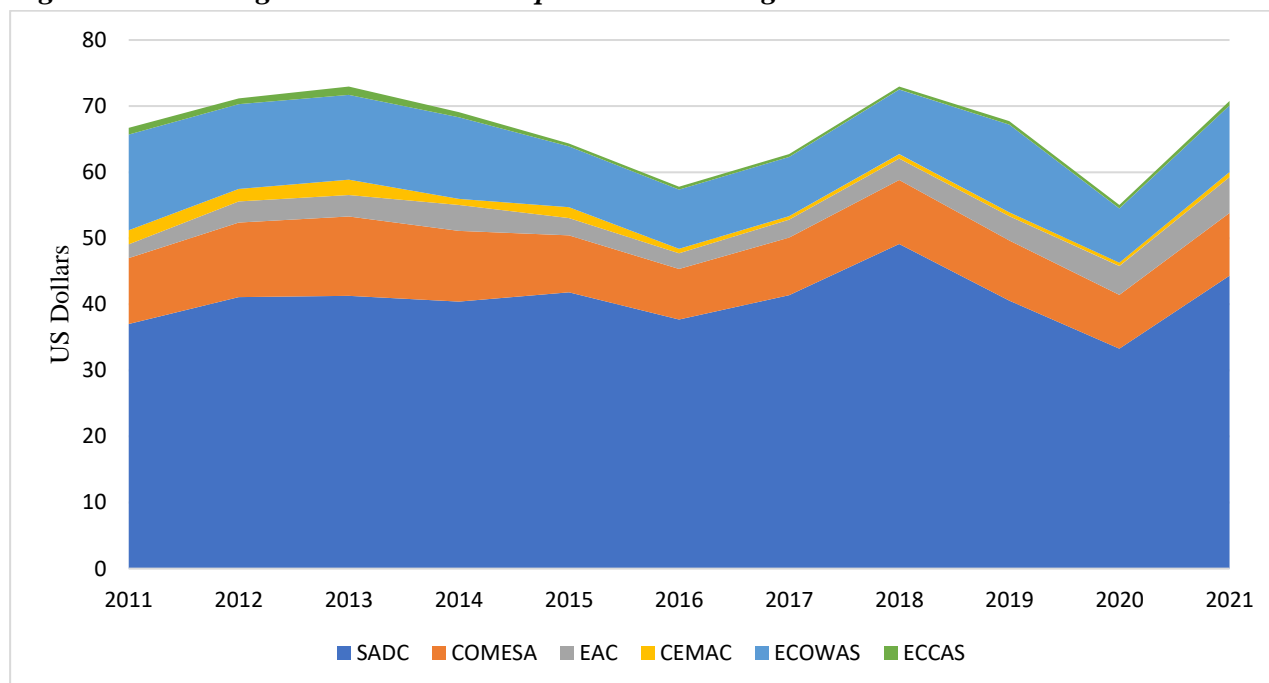
A large percentage of SADC exports are directed towards regions outside of the SADC and Sub-Saharan Africa. Intra-bloc exports within the SADC constituted 18% of member states' total exports in 2021 (see Figure 3). The SADC trades more with the rest of the world than it does with the African economies. The SADC is however outperforming other Sub-Saharan regions in terms of the value of exports, be it in intra-trade or trade with the rest of the world (see Figures 3 and 4). The comparatively low level of intra-bloc exports within the SADC in comparison to global export levels can also be

¹⁵ <https://www.cable.co.uk/mobiles/worldwide-data-pricing/>

¹⁶ <https://databank.worldbank.org/source/world-development-indicators#>

attributed to the region's substantial reliance on exporting raw materials that other member nations do not process, such as diamonds, oil, copper and gold (Economist Intelligence, 2022).

Figure 3: Intra-Regional Trade: A Comparison across regional blocs



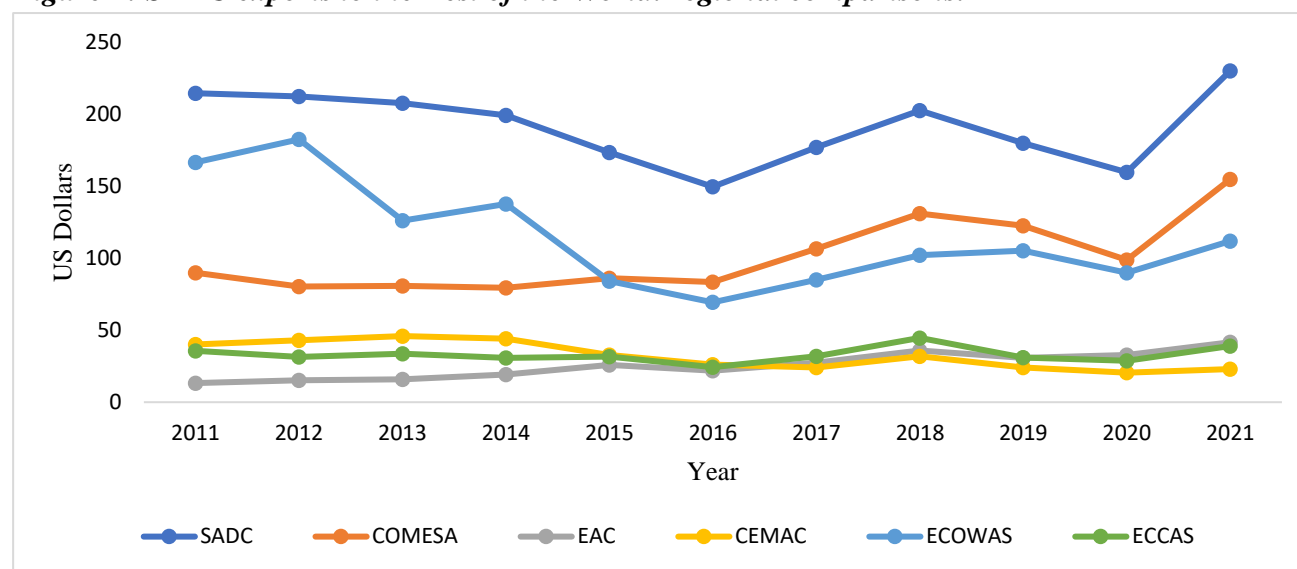
Source: TradeMap (2023)¹⁷

Notes: The Common Market for Eastern and Southern Africa (COMESA); East African Community (EAC); Central African Economic and Monetary Community (CEMAC); Economic Community of West African States (ECOWAS); Economic Community of Central African States (ECCAS).

The performance of SADC exports in the global markets can be compared to other regions in Africa using data presented in Figure 4 and two important insights can be noted. First, the share of exports from SADC to the rest of the world was significantly higher compared to exports from other regions within Africa. Second, there was a significant decline from 2014 to 2016 and from 2019 to 2020 in SADC exports to the global markets. The 2014-2016 decline was first due to low global demand for the products and commodities exported by SADC member countries, arising from factors, including economic downturns in major trading partners (SADC, 2016). The SADC region's exports were further impacted by a sluggish global economic recovery which led to reduced consumer and business spending, affecting demand for imported goods, including those from SADC countries (SADC, 2016). The second decline in SADC exports between 2019 and 2020 was mainly due to falling commodity prices, which remained subdued in 2020, coupled with a slowdown in economic activity due to the COVID-19 pandemic restrictions and escalating global trade tensions (SADC, 2021). The recovery in 2021, was influenced by China's quick economic recovery, which played a significant role as a major export destination for many countries, including those in the SADC region (SADC, 2021).

¹⁷ <https://www.trademap.org/Index.aspx>

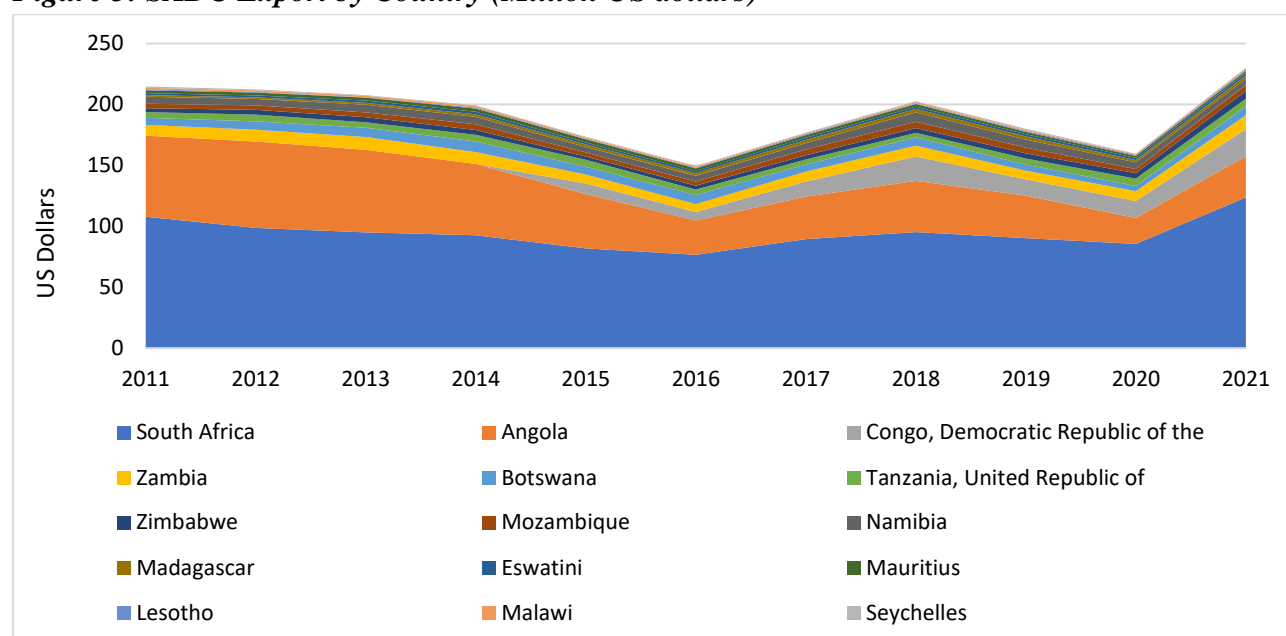
Figure 4: SADC exports to the Rest of the World: regional comparisons.



Source: TradeMap (2023)¹⁸

The major driver of SADC export flows to the rest of the world is South Africa followed by Angola although Angola's performance has significantly declined over time, particularly from 2013 and subsequently a steep decline in 2016 (see Figure 5). Generally, the majority of exports from SADC are dominated by commodities while South Africa exports both goods and services, Angola mainly exports goods, and Namibia mainly services (Economist Intelligence, 2022).

Figure 5: SADC Export by Country (Million US dollars)



Source: TradeMap (2023)¹⁹

¹⁸ <https://www.trademap.org/Index.aspx>

¹⁹ <https://www.trademap.org/Index.aspx>

2.4 Literature Review

There is a plethora of related studies that have explored the link between technology and trade. The general conclusion is that the role of digital technologies on trade differs between developing and developed countries (Abeliansky *et al.*, 2021; Rodriguez-Crespo *et al.*, 2019; Abeliansky & Hilbert, 2017; Clarke & Wallsten, 2004). Furthermore, the literature indicated that digital technology affects both extensive and intensive margins of trade differently (Visser, 2019). The match between the levels of adoption of digital technologies is also important for trade facilitation (Yi *et al.*, 2021; Cariolle *et al.*, 2020; Osnago & Tan, 2016; Mattes *et al.*, 2012). The literature went further to show the role that the institutions play in amplifying the effect of digital technologies on trade (Álvarez *et al.*, 2018). The period of study and the treatment of the multilateral trade resistance term is important when looking at the relationship between trade and digital technology when using the gravity model.

Most studies used internet as a proxy for digitalisation and the results are generally mixed. Some studies found a positive relationship between internet penetration and adoption and export flows (Rodriguez-Crespo *et al.*, 2019; Osnago & Tan, 2016; Clarke & Wallsten, 2004). Other studies found different results for developing and developing economies. Clarke and Wallsten (2004), for example, found that higher internet penetration in developing countries was correlated with greater exports to developed countries, but not with exports from developed countries, and that internet penetration did not affect intra-trade between developing countries. However, other studies found that using the internet had a greater impact on trade in developed countries (Cariolle *et al.*, 2020; Rodriguez-Crespo *et al.*, 2019).

Another strand of the literature shows that the difference in levels of digitalisation could explain the heterogeneous effect on export flows between countries (Yi *et al.*, 2021; Osnago and Tan, 2016; Mattes *et al.*, 2012). Yi *et al.* (2021), specifically, found that ICT facilitated the exports of services between countries with the same level of the ICT development, and Mattes *et al.* (2012) found that trade is even more amplified when the use of ICTs is advanced for both trading partners. Furthermore, the literature shows that digitalisation affects both the intensive and the extensive margin of trade positively, and this effect is mostly pronounced for the extensive margin of trade for developing countries (Abeliansky *et al.*, 2021; Visser, 2019).

The types of industries in a country have a great deal to do with the country's ability to leverage digital technology. The effect of digital technology is mostly pronounced for countries with high-tech industries and lower for those with low-tech, labour and resource intensive industries (Bottega and Romero, 2021; Bierut and Dybka, 2021; Lee, 2012). Other important elements that play an important role in a country's ability to take advantage of digital technology through improvements in international trade are its institutions (Panchenko *et al.*, 2020; Ciuriak & Ptashkina, 2018). Ha & Thanh (2022), who investigated the effects of digital public service adoption on the value of green commodities trade, discovered that in the European nations with a well-developed institutional system, the impacts of digital public services on the value of green commodities trade were more substantial than in other regions, including developing economies.

There is literature that explored the effect of e-commerce on international trade. Xing (2018) examined the effects of the internet and e-commerce usage on bilateral trade flows using a panel of 21 developing and least-developed countries. Framed by the gravity model, Xing also used 30 OECD countries and discovered that the level of internet penetration and e-commerce adoption had an enormous impact on bilateral trade flows between the regions of the South and regions of the North. Their results are in line with those of Fernandes *et al.* (2019), who found that the increased effect of internet penetration on firm export performance was linked to the establishment of a visible virtual presence.

When it comes to the African region, the literature on the effect of digital technology on international trade is scarce. Wonyra and Tenakoua (2022) employed the system GMM to assess the effect of digitalisation on intra-Africa export using panel data from 53 African countries covering the period 2005 to 2017, with fixed telephone subscriptions, individuals using the internet, secure internet servers and mobile cellular subscriptions as proxies for digitalisation. The study found a positive and significant effect of digitalisation variables on intra-Africa exports. Similarly, Hinson and Adjasi (2009) investigated the effect of internet use on exports in Africa using a panel of fixed effects for 43 African countries for the period 1996 to 2006. The study found a positive relationship between internet use and export growth.

Other studies examined the effect of digital technologies on trade in Africa using the gravity model (Kere & Zongo, 2023; Abendin *et al.*, 2022; Epo & Nguenkwe, 2020). Epo and Nguenkwe (2020) focused their research on the Economic Community of West African States (ECOWAS) from the years 1994 to 2014 while Abendin *et al.* (2022) focused on the same region from 2000-2018. Kere and Zongo (2023) concentrated on the entire Sub-Saharan Africa for the period 2000-2018. To measure digitalisation, Epo and Nguenkwe (2020) employed a composite index using the Principal Component Analysis (PCA), which comprises three indicators (number of internet users per 100 inhabitants, number of fixed-line owners per 100 and number of mobile phone users per 100 inhabitants). Abendin *et al.* (2022) also used a composite measure but with different indicators (digital public service, internet usage, connectivity and digital technology integration). Kere & Zongo (2023), on the other hand, employed the same indicators as Epo and Nguenkwe (2020) but disaggregated them. The results of these studies showed a negative effect of digitalisation on the exporters and a positive effect on the importers.

3 Methodology

3.1 The Structural gravity model of trade

The gravity model has been widely used in international trade analysis. Tinbergen (1962), who first presented the gravity equation for trade analysis, shows that the countries with larger GDPs, or that are closer to each other, have more trade between them. The methodological framework is based on the theoretical underpinnings of the following structural gravity model first developed by Anderson & Wincoop (2003):

$$X_{ij} = \frac{Y_i E_j}{Y} \left(\frac{t_{ij}}{\pi_i p_j} \right)^{1-\sigma} \quad (1)$$

which can be decomposed into two terms, the size term (or the frictionless gravity: $\frac{Y_i E_j}{Y}$) and trade cost term $\left(\left(\frac{t_{ij}}{\Pi_i P_j} \right)^{1-\sigma} \right)$.

The frictionless gravity model gives important insight into world trade patterns (Anderson, 2010). According to this model, the proportion of spending by j (E_j) on goods from i (X_{ij}) is equal to the global proportion of spending on goods from i (Y_i), where Y denotes world spending.

The trade cost term captures the total effects of the trade costs that cause the difference between actual and frictionless trade and has three components. The inward multilateral resistance term P_j (importer j 's ease of market access), the outward multilateral resistance term Π_i (exporter i 's ease of market access) and bilateral trade cost t_{ij} .

Since digital technology has been found to have a lowering effect on trade costs, specifically lower search, replication, transportation, tracking and verification costs (Goldfarb & Tucker, 2019), they can be thought of as negative bilateral trade costs. Anderson & Wincoop (2004) show how the trade costs have been expressed as a function of observables ($t_{ij} = \prod_m (z_{ij}^m)^{\lambda_m}$) such as distance, adjacency, common language and preferential trade membership. This study proposes including digital technology as one of those observables so that the structural gravity model becomes,

$$X_{ij} = \frac{Y_i E_j}{Y} \left(\frac{\prod_{m=1}^M (z_{ij}^m)^{\lambda_m} (digtech_{ij})^{\lambda_{M+1}}}{\Pi_i P_j} \right)^{1-\sigma} \quad (2)$$

where *digtech* is an observable digital technology variable.

For the empirical analysis, the log-linearised version of the structural gravity model in equation (2) is used (Yotov *et al.*, 2016) and an error term (ε_{ijt}) is introduced since the relation holds on average and not for each i, j and t (Santos Silva & Tenreyro, 2006). After the inclusion of the observable digital technology variable, and control variables, the two baseline specifications are,

$$\begin{aligned} \ln Ex_{ijt} = & \mu_1 ExICT_{it-1} + \mu_2 ImportICT_{jt-1} + \beta_1 \ln GDP_{it} + \beta_2 \ln GDP_{jt} + \beta_3 Contiguity_{ij} + \\ & \beta_4 \ln Distance_{ij} + \beta_5 CommonColony_{ij} + \beta_6 CommonLanguage_{ij} + \\ & \beta_7 FTA_{ijt-1} + \beta_8 CU_{ijt-1} + \beta_9 InstitutionalDistance_{ijt-2} + \beta_{10} Covid_{ijt} + \delta_{ij} + \gamma_{it} + \theta_{jt} + \varepsilon_{ijt} \end{aligned} \quad (3)$$

where i is subscript to show the exporting country, j the importing country, and t the time period. $ExportICT_{it-1}$ and $ImportICT_{jt-1}$ represent 1-year lag of ICT composite index variable for the importing and exporting countries, respectively, to assess the digital readiness of countries within the SADC. The lags are introduced to account for the possible bias due to potential endogeneity arising from a reverse causality between digital technology adoption and exports (Visser, 2019; Freund & Weinhold, 2004). This method assumes that it is unlikely that trade in this period would influence the level of digitalisation in the past periods. δ_{ij} are exporter-importer fixed effects; γ_{it} are exporter-time fixed effects; and θ_{jt} are importer-time fixed effects.

$\ln GDP_{it}$ and $\ln GDP_{jt}$ are the natural logarithms of the GDPs of the exporter and importer countries, respectively; $Contiguity_{ij}$ represents the sharing of a border and takes the value one (1) if the two

countries share a common border and zero (0) otherwise; $Distance_{ij}$ represents the distance; $CommonColony_{ij}$ represents having had a common coloniser and takes the value one (1) if the two countries shared a common colonizer and zero (0) otherwise; $CommonLanguage_{ij}$ represents sharing a common official language and takes the value one (1) if the two countries share a common official language and zero (0) otherwise; FTA_{ijt-1} represents the free trade agreements (FTA) and takes the value of one (1) if the importer and exporter are both part of the same free trade agreement and zero (0) otherwise; CU_{ijt-1} represents custom union (CU) and takes the value of one (1) if the importer and exporter are both part of the same customs union and zero (0) otherwise; $InstitutionalDistance_{ijt-2}$ represents the difference in institutional quality on trade (2-year lag) which is the difference in the institutional quality (a composite institutional variable developed using PCA of world governance indicators) of the exporting and the importing countries; and $Covid_{ij}$ represents the period of COVID-19 restrictions.

To further improve on the analysis, the difference in digitalisation is also going to be used as it does not assume symmetry of impediments between importing and exporting countries as taking their absolute values would.

$$\begin{aligned} \ln exports_{ijt} = & \varphi_1 ICTDifference_{ijt-1} + \beta_1 \ln GDP_{it} + \beta_2 \ln GDP_{jt} + \beta_3 Contiguity_{ij} + \\ & \beta_4 \ln Distance_{ij} + \beta_5 CommonColony_{ij} + \beta_6 CommonLanguage_{ij} + \\ & \beta_7 FTA_{ijt-1} + \beta_8 CU_{ijt-1} + \beta_9 InstitutionalDistance_{ijt-2} + \beta_9 Covid_{ijt} + \delta_{ij} + \gamma_{it} + \theta_{jt} + \varepsilon_{ijt} \end{aligned} \quad (4)$$

where $ICTDifference_{ijt-1}$ is the lag of the difference between the ICT composite index of the exporting country and that of the importing country whose purpose is to assess how the difference in adoption of digital technology affects exports within the SADC.

3.2 Estimation strategy

The Fixed Effects estimation of Equations 3 and 4 does not consider the potential bias associated with estimating the log-linearized gravity models. There are two additional sources of bias associated with structural gravity estimation. The first is limited-dependent variable biases associated with zero trade values, and the second source arises from a combination of non-linearity and heteroscedasticity in the model (Martin, 2020). To correct heteroskedasticity and have a natural solution to the zero-trade problem, the PPMLE is used as introduced by Santos Silva & Tenreiro (2006). This model also includes domestic trade. This is supported by Yotov (2012), Bergstrand *et al.* (2015) and Heid *et al.* (2015), who argue that the impact of (bilateral) trade policies is best identified in a model that includes domestic trade flows. Domestic trade is found by subtracting total exports from total production. The share of bilateral trade is found by dividing trade values by world production.

The key difference in the explanatory variables is the interaction variables with the time and border dummy resulting from the introduction of domestic trade. Following Yotov (2012), Bergstrand *et al.* (2015), Heid *et al.* (2015) and Oberhofer & Pfaffermayr (2021), the estimation includes a border dummy and interacts it with a time trend (t) to allow the (international) border effects. The best way to identify the impact of trade policy reform is examine how the outcome variable change after the implementation of the policy reform, and the same sentiment is transferred to this investigation on the

impact of digitalisation. In this specification, digitalisation is expected to lower the border effect. With this in mind, the two specifications of the digitalisation variable (lagged ICT composite index of both the exporter and the importer and the lagged difference between the exporter and importer indices), are then interacted with the border dummy to also highlight its influence fully on international trade.

The institutional variable is specified as was in the log-linear model. Regional trade agreements might be considered as another factor in lessening (international) border impacts. The time-invariant gravity variables are interacted with the border and time trend to allow their effects to change over time, and to capture their effect on trade beyond the borders. The size variables are also included as they were in the log-linear specification. The resulting PPML specification is given by,

$$\begin{aligned} \text{Exports}_{ijt} = \exp(&\mu_1 \text{Border}_{ij} \text{ExportICT}_{ijt-1} + \mu_2 \text{Border}_{ij} \text{ImportICT}_{ijt-1} + \beta_1 \text{Border}_{ijt} + \\ &\beta_2 \text{Border}_{ijt} \text{Contiguity}_{ij} + \beta_3 \text{Border}_{ijt} \text{Distance}_{ij} + \beta_4 \text{Border}_{ijt} \text{CommonColony}_{ij} + \\ &\beta_5 \text{Border}_{ijt} \text{CommonLanguage}_{ij} + \\ &\beta_6 \text{Border}_{ijt} \text{FTA}_{ijt-1} + \beta_7 \text{Border}_{ijt} \text{CU}_{ijt-1} + \beta_8 \text{InstitutionalDistance}_{ijt-2} + \\ &\beta_9 \text{Border}_{ijt} \text{DummyCovid}_{ij} + \beta_{10} \ln \text{GDP}_{it} + \beta_{11} \ln \text{GDP}_{jt} + \delta_{ij} + \gamma_{it} + \theta_{jt}) + \varepsilon_{ijt} \end{aligned} \quad (5)$$

where $\text{Border}_{ij} \text{ExportICT}_{ijt-1}$ represents the effect of the exporter digital technology on international trade; $\text{Border}_{ij} \text{ImportICT}_{ijt-1}$ represents the effect of importer digital technology on international trade; Border_{ijt} represents the change in international trade while neglecting the associated changes in multilateral resistances; $\text{Border}_{ijt} \text{Contiguity}_{ij}$ represents the time-varying effect of sharing a border on international trade; $\text{Border}_{ijt} \text{Distance}_{ij}$ represents the time-varying effect of distance on international trade; $\text{Border}_{ijt} \text{CommonColony}_{ij}$ represents the time-varying effect of having had a common coloniser on international trade; $\text{Border}_{ijt} \text{CommonLanguage}_{ij}$ represents the time-varying effect of sharing a common official language on international trade; $\text{Border}_{ijt} \text{FTA}_{ijt-1}$ represents the time-varying effect of free trade agreements on international trade; $\text{InstitutionalDistance}_{ijt-2}$ represents the effect of institutional quality on trade; and $\text{Border}_{ijt} \text{DummyCovid}_{ij}$ represents the time-varying effect of the COVID-19 restrictions on international trade; γ_{it} are exporter-time fixed effects; δ_{ij} are exporter-importer fixed effects; and θ_{jt} are importer time fixed effects.

Equation 5 is also estimated using the lag of difference between the exporter and importer indices interacted with the border dummy to assess how the difference in adoption of digital enablers affects exports within the SADC, and the resulting specification is given by:

$$\begin{aligned} \text{Exports}_{ijt} = \exp(&\varphi_2 \text{Border}_{ij} \text{ICTDifference}_{ijt-1} + \beta_1 \text{Border}_{ijt} + \\ &\beta_2 \text{Border}_{ijt} \text{Contiguity}_{ij} + \beta_3 \text{Border}_{ijt} \text{Distance}_{ij} + \beta_4 \text{Border}_{ijt} \text{CommonColony}_{ij} + \\ &\beta_5 \text{Border}_{ijt} \text{CommonLanguage}_{ij} + \\ &\beta_6 \text{Border}_{ijt} \text{FTA}_{ijt-1} + \beta_7 \text{Border}_{ijt} \text{CU}_{ijt-1} + \beta_8 \text{InstitutionalDistance}_{ijt-2} + \\ &\beta_9 \text{Border}_{ijt} \text{DummyCovid}_{ij} + \beta_{10} \ln \text{GDP}_{it} + \beta_{11} \ln \text{GDP}_{jt} + \delta_{ij} + \gamma_{it} + \theta_{jt}) + \varepsilon_{ijt} \end{aligned} \quad (6)$$

3.3 Data

The data on bilateral exports was obtained from the International Monetary Fund Direction of Trade Statistics (DOTS) database, COMTRADE and World Bank World Integrated Trade Solution (WITS) database, supplemented by data from individual country information. The data on the explanatory variable of interest is the ICT composite index was sourced from the African Development Bank Group as a component of the African Infrastructure Development Index. The index is built from six indicators: total phone subscriptions (per 100 inhabitants), fixed-line telephone subscriptions (% population), number of internet users (per 100 inhabitants), fixed (wired) broadband internet subscribers (per 100 inhabitants) and international internet bandwidth (Mbps).

Data on the measures of quality of institutions: control of corruption, government effectiveness, political stability and absence of violence, rule of law, regulatory quality, as well as voice and accountability are used to measure institutional quality were sourced from the World Bank's World Governance Indicators (WGI) (Kaufmann *et al.*, 2010). Due to possible high correlation of these government indicators, a composite institutional variable is developed using PCA, based on the framework proposed by Vyas & Kumaranayake (2006). The data Regional Trading Agreements (RTAs) was obtained from Mario Larch's Regional Trade Agreements Database from Egger & Larch (2008). The data on standard gravity variables were sourced from the The CEPII Trade and Production database (TradeProd)²⁰ (Conte *et al.*, 2022). In addition, the size variables, which are the exporter and importer GDP were included, and they were sourced from the World Development Indicators (WDI).

4 Findings and Discussions

4.1. Descriptive Analysis

The summary statistics (presented in Table A1 in the appendix) show that over the period 2011-2021, the mean domestic trade within the region was 31108 million USD. On the other hand, within the SADC region, trade has a mean of 206.99 million USD. The mean share of domestic trade in the world production in the region is 0.004%. The data illustrate a large difference in the economic power of the nations within the SADC region and a larger disparity in terms of participation in the international markets. Intra-regional trade is still relatively low in the SADC region.

The ICT composite index highlights the digital divide that persists even within the SADC region. The mean value of the index in the region is 11.68, indicating very low connectivity and highlighting the ICT infrastructure and skill shortage within the region. Nevertheless, the index ranges from 6.051 to 50.362 with a mean of 18.86 in 2021, which is a large improvement relative to 2011 figures that averaged 4.803, with the index ranging from 0.621 to 18.060. What is evident is that the level of connectivity is improving in the region. However, the most worrisome issue is that the regional digital divide is widening, and some member states are developing faster than others.

4.2 Results and Discussions

Table 1 presents the results of the OLS and the PPMLE specifications. These results show that the improved digital technology in the exporting country significantly enhances export flows by 19% on average while the relationship is not statistically significant for the importing country. Differences in

²⁰ French research Centre in International Economics.

digital technology between trading partners also have a positive and significant effect on export flows. Overall, the results indicate that the improvement in digital technology in the exporting country is greater than that in the importing country; or the difference in their digital technology advancement by one unit increases bilateral trade flows by 6.4% on average from the exporting country to the importing country.

Table 1: Estimation results on ICT and Trade

	Country-Specific ICT indices			The difference in the ICT index		
	Fixed Effects (1)	Fixed Effects (2)	PPMLE (3)	Fixed Effects (4)	Fixed Effects (5)	PPMLE (6)
$ExportICT_{ijt-1}$	0.191*** (0.048)					
$ImportICT_{ijt-1}$	-0.014 (0.016)					
$Border_{ij}ExportICT_{ijt-1}$		0.104*** (0.032)	1.595*** (0.284)			
$Border_{ij}ImportICT_{ijt-1}$		-0.103*** (0.031)	-1.605*** (0.284)			
$ICTDifference_{ijt-1}$				0.064* (0.036)		
$Border_{ijt}ICTDifference_{ijt-1}$					0.010 (0.066)	1.54*** (0.325)
$lnGDP_{it}$	0.126 (0.429)	1.107** (0.452)	7.349*** (1.71)	0.956*** (0.293)	0.885** (0.366)	7.032*** (2.139)
$lnGDP_{jt}$	1.585*** (0.241)	-1.664*** (0.402)	-6.451*** (1.72)	1.946*** (0.293)	0.628 (0.386)	-6.066*** (2.158)
FTA_{ijt-1}	-0.070 (0.425)			-0.070 (0.425)		
$Border_{ijt}FTA_{ijt-1}$		0.002 (0.031)	0.085*** (0.016)		0.002 (0.03)	0.082*** (0.017)
CU_{ijt-1}	-1.718** (0.744)			-2.314** (0.961)		
$Border_{ijt}CU_{ijt-1}$		-0.053* (0.027)	0.026* (0.014)		-0.053* (0.027)	0.023 (0.016)
$InstitutionalDistance_{ijt-2}$	-0.774* (0.459)	-0.206 (0.307)	0.812 (1.204)	-0.402 (0.507)	0.487 (0.716)	0.581 (1.41)

<i>lnDistance_{ij}</i>	-1.468*** (0.439)			-0.561 (0.528)		
<i>Border_{ijt}lnDistance_{ij}</i>		-0.033 (0.026)	0.020 (0.028)		-0.033 (0.025)	0.012 (0.03)
<i>CommonColony_{ij}</i>	-2.837** (1.411)			-3.379*** (0.986)		
<i>Border_{ijt}CommonColony_{ij}</i>		-0.069** (0.033)	-0.060 (0.047)		-0.069** (0.033)	-0.052 (0.043)
<i>CommonLanguage_{ij}</i>	1.902* (1.125)			3.099*** (0.733)		
<i>Border_{ijt}CommonLanguage_{ij}</i>		0.037 (0.035)	-0.067*** (0.021)		0.038 (0.034)	-0.072*** (0.017)
<i>Contiguity_{ij}</i>	1.529*** (0.519)			5.086*** (0.575)		
<i>Border_{ijt}Contiguity_{ij}</i>		0.000 (0.024)	0.011 (0.019)		0.000 (0.024)	0.007 (0.021)
<i>Covid_{ijt}</i>	-6.227*** (2.073)			9.354*** (1.933)		
<i>Border_{ijt}Covid_{ijt}</i>		0.893*** (0.194)	-0.003*** (0.001)		-0.042 (0.053)	-0.003*** (0.001)
<i>Border_{ijt}</i>		0.244 (0.196)	-0.188 (0.226)		0.244 (0.196)	-0.143 (0.242)
<i>_cons</i>	-19.304** (9.699)	16.91 (17.802)	2.258*** (0.323)	-57.445*** (12.084)	-25.554* (13.729)	0.614 (0.486)
<i>Observations</i>	2121	2297	2717	2121	2297	2717
<i>Importer-time Fixed Effects</i>	yes	yes	yes	Yes	yes	yes
<i>Exporter-time Fixed Effects</i>	yes	yes	yes	Yes	yes	yes
<i>Importer-Exporter Fixed Effects</i>	yes	yes	yes	Yes	yes	yes

Standard errors are in parentheses

*** $p < .01$, ** $p < .05$, * $p < .1$

Note: For the dependent variable, specifications 1-3 use ICT Index while 4-6 use the difference in the ICT index. All estimations include importer*time, exporter*time and importer*exporter fixed effects. OLS Standard Errors: Robust standard errors and the PPMLE Standard Errors: Clustered Standard Errors by Importer and Exporter.

For specification 1, only the GDP of the importing country is significant in determining export flows. A percentage change in the importer's GDP increases exports by 1.59%. However, looking at specification 2, both the GDP of the importing and exporting countries have a significant and positive impact on the export flows. The elasticity of exports to both GDPs is positive, 0.956 for the exporting country's GDP and 1.946 for the importing country's GDP. Other factors that have a positive and significant effect on export flows are sharing a common border and speaking a common official language. Export flows are 3.6 times (160 times in specification 2) higher for the exporter-importer pairs that share a common border and 5.7 times higher (21 times higher in specification 2) for country pairs that speak a common official language. The factors that have a negative association with export flows in specifications 1 and 2 are being part of a common monetary union, institutional distance and distance²¹, having had a common coloniser and the restrictions that were brought on by COVID-19. Being a part of a free trade agreement was not found to have a significant effect on the flow of exports in both specifications.

To test the robustness of the OLS results, the PPMLE estimation is also used. The PPMLE results, presented by specifications 3 and 6, show that the improvement in digital technology of the exporting country positively and significantly affects the exports of that country while the improvement in digital technology of the importing country significantly and negatively impacts the imports of that country. The improvement in digital technology that leads to an increase in the ICT index by one unit for the exporting country increases its exports²² by 160%, and the improvement in digital technology that increases an importing country's ICT index by one unit lowers its imports by 160% on average. A greater digitalisation by the exporter relative to the importer also has a positive and significant impact on the export flows. If the difference in digitalisation is such that the difference in the ICT index is one, then the exports will be higher by 154% on average.

A country's level of the ICT development has varying implications on its exports and imports. It shows that more digitalisation in the exporting country has a positive impact on exports while higher digitalisation in the importing country has a negative impact on imports. This implies a positive impact of digitalisation on the trade balance of a country. The result is consistent with the result of Nguyen *et al.* (2023), who found that the increase in the internet and mobile usage improved the intra-African trade balances.

The developments in the digital technology can offer improved connectivity between business partners, suppliers, and distribution networks (Boccia *et al.*, 2022). This better connectivity may result in more trade opportunities, increased information about international markets and a bigger volume of exports. Through e-commerce platforms, online marketplaces, and digital marketing channels, firms can gain access to wider markets, extend their consumer base, and increase their exports (Xing, 2018). Digital tools and technologies can help the exporters to optimise their processes, increase productivity and cut expenses, which can lead to higher exports (OECD, 2004). Regarding imports, digital advancement and access may promote the domestic output of other business services, lowering

²¹ Both these distances are only significant in specification 1.

²² These increases in exports are defined relative to domestic trade. That is the proportion of exports relative to all the country's trade.

import demand (Liu & Nath, 2016). Moreover, the improved digital technologies can help domestic firms to compete with foreign goods, and thus lower the reliance on foreign goods and the demand for imports.

The PPMLE results also show that the GDP of the exporting country has a positive and significant relationship with the export flows while the GDP of the importing country has a negative effect on the exports. A higher GDP signifies greater overall economic output, which frequently translates into greater export potential and volumes. This can explain why the GDP of the exporting country positively affects the country's exports. However, a higher GDP in the importing country may suggest a more robust domestic market with higher consumer demand. In this scenario, a high home bias is likely to lower demand for imports (Morey, 2016). Furthermore, a higher GDP in the importing country can also indicate a better-developed industrial base capable of manufacturing a diverse variety of commodities on its own, lowering its dependence on imports (Udeogu *et al.*, 2021).

Other factors that have a positive and significant relationship with the exports are being part of the FTA and CU. The exporter-importer pairs that are part of the FTA have 8.87% (8.54%) higher exports than those that are not on average, and the pairs that are in the CU have 2.63% higher exports than those that are not on average. A free trade agreement and customs unions eliminate or reduce tariffs, quotas, subsidies and limitations on imports and exports between the countries (Barone, 2022). This explains why they have a positive effect on the flow of exports. The result is consistent with the fact that South Africa, the largest trade partner in the SADC region, trades more with the Southern African Customs Union (SACU) region than the rest of the SADC (Tralac, 2022).

The exports between SADC countries that share a common language have fallen over time by 6.48% (6.95% in specification 6) on average relative to trade between the countries that do not share a common language. The negative effect of the countries sharing an official language may be explained by the fact that the biggest contributor to intra-SADC trade, which is South Africa, has Mozambique as one of its top export destinations and these two countries have different official languages (Tralac, 2022). This, however, could also mean that over time, the countries that share a common language have increased their domestic trade relative to their international trade.

Lastly, the restrictions that came with the COVID-19 pandemic lowered exports by 0.3% on average. The restrictions that came with the COVID-19 pandemic disrupted the global supply chain due to decreased movement, low production falling productive capacity of nations, and limited ability to transport commodities outside the country. All these have disrupted the export flows.

5 Conclusions and Policy Implications

This study investigated the effects of digital technologies on trade within the SADC region using a gravity analysis. The study is an extension of the previous studies on the impacts of digital technologies on intra-African trade. However, it differs from previous studies in that it examined the effect of ICT on total goods using an index, which included more indicators of the ICT development. It also focused on 15 SADC countries from 2011 to 2021. The study first estimated the relationship between digitalisation and intra-SADC trade using the OLS estimator, and for robustness check, it employed the PPMLE. The results showed a positive and significant relationship between digitalisation and intra-regional trade for the exporting country and a negative and significant for the

importing country. Moreover, the results indicated that when the digitalisation of the exporter was higher than that of the importer, this would increase exports between the two trading partners within the region. The study also discovered that the increased GDP in the exporting country had a favourable effect on exports while higher GDP in the importing country led to a decline in imports. Furthermore, free trade agreements and customs unions boosted export flows by removing or lowering barriers to trade. On the other hand, the COVID-19 pandemic impacted the worldwide supply chain, resulting in diminished movement, poor productivity and limited transportation, which caused the export flows to be disrupted.

In conclusion, greater digitalisation and increased productivity can lead to higher trade within the region. Economic well-being of nations can be attributed to how well their balance of payments is managed, and these results indicate that improved digitalisation can positively affect countries' balance of payments by decreasing their reliance on imports. With the improvement in digital technology leading to higher exports and lower imports for countries in the region, the results might suggest that the pathway in which digital technology may best affect trade in the region is through the innovation of new products. The results of the study also suggest that better regional integration can be beneficial to trade within the region.

The investments and policies intended to foster the ICT growth in the exporting country should be given priority by policymakers. This can be accomplished by efforts such as granting favourable tax rates to the ICT firms, encouraging the ICT innovation and research, and assisting in the expansion of the ICT infrastructure. Moreover, to fully benefit from the favourable impact caused by the ICT development on exports, the exporting country must build a skilled labour force. The governments should invest in education and training initiatives that improve knowledge of digital technologies and provide expertise for the ICT sector. Additionally, encouraging innovation and entrepreneurship can aid in the development of new digital products and services that can be exported. The governments could also invest in comprehensive digital trade infrastructure, such as dependable internet access and secure payment platforms for online transactions. This can help with e-commerce and speedier international exchanges in the ICT sector. Furthermore, governments might create specific agencies or programmes to encourage domestic and international digital trade. These initiatives, such as market research, export financing and export promotion activities can provide assistance and resources to the ICT companies wishing to boost their exports. In addition to all these, economic growth could be stimulated by encouraging more diverse exports and the promotion of competitive industries that are less reliant on imports. Active participation in regional integration activities and negotiating favourable trade deals could also help a country improve its export performance.

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Appendix A4: Summary Statistics (2011-2021)

Variable	N	Mean	Std Dev	Min	Max
Bilateral Exports (Million USD)	2,691	2595.499	21182.630	7.000E-06	349393.10
Domestic Trade (Million USD)	208	31108.38	70292.43	94.479	349393.1
International Trade (Million USD)	2483	206.985	620.270	7.000E-06	5047.832
Gross Domestic Product (Million USD)	3,211	42766.72	92192.15	847.398	458201.5
ICT Composite Index	3,211	11.684	13.527	1.009E-02	58.904
Voice of Accountability	3,211	-0.280	0.700	-1.539	0.940
Rule of Law	3,211	-0.440	0.703	-1.870	1.024
Regulatory Quality	3,211	-0.461	0.712	-2.081	1.197
Political Stability	3,211	-0.127	0.779	-2.302	1.111
Government Effectiveness	3,211	-0.525	0.771	-1.810	1.161
Control of Corruption	3,211	-0.369	0.714	-1.575	1.633
Institutions Index (PCA)	3,211	0.045	0.985	-1.662	2.185
Distance	3,211	2063.067	1173.063	8.023	5022.527
Common Colony	3,211	0.316	0.465	0	1
Contiguity	3,211	0.170	0.376	0	1
Common Language	3,211	0.508	0.500	0	1
Regional Trade Agreement	3,211	0.731	0.444	0	1

Currency Union	3,211	0.360	0.480	0	1
Free Trade Area	3,211	0.618	0.486	0	1

Source: Own computations

IV.II The Use of Blockchain Technology in International Commercial Transactions, With Specific Reference to Secured Payments in International Contracts of Sale.

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1. Introduction

1.1 Background

Recent years have seen a tremendous expansion in international trade, mainly due to globalisation (Surugiu & Surugiu, 2015). Such an increase calls for the international trade community to look for ways to increase efficiency in its operations. Recent innovative technologies like blockchain are upending existing patterns in commerce and exerting pressure on the legal status quo. Blockchain technology thus seems to come to aid in international commercial transactions, particularly by modernising payments in international contracts of sale.

The technique behind blockchain technology was initially described in 1991 by a group of researchers, including Stuart Haber and Scott Stornetta (Haber & Stornetta, 1991). This technique was initially designed to timestamp digital documents so they could not be manipulated or backdated. The method went primarily unused until around 2008.

It is generally accepted that Satoshi Nakamoto was responsible for implementing current blockchain technology (Nakamoto, 2008). In 2008, a person or group known as Nakamoto released a paper titled "Bitcoin: A Peer-to-Peer Electronic Cash System," which proposed a direct online payment from one party to another without the involvement of intermediaries. The paper described a cryptographic-based, trust-free electronic payment system. The rise of Bitcoin in 2008 saw the re-emergence of blockchain technology (Benson, 2019). At the time, the only application of blockchain was to authenticate the quantities of each participant in the ledger.

The defining term "blockchain" results from its characterisation as an authenticated block of transactions within a series of transactions (Benson, 2019). A fraction of bitcoin was awarded to the computer that would have been able to solve how much each individual had in their ledger. After verification of the ledger, the first computer would get bitcoin, and the solution to the ledger issue would then be added to the chain of solutions to the ledger (Benson, 2019). Hence a "block of chains."

1.2 Status Quo

The emergence of blockchain technology in the legal arena can be disruptive, particularly in international trade finance and letters of credit, as it can change the traditional functioning of secured payments in international commercial sale transactions. Currently, the most common method of effecting international trade payments is through documentary letters of credit, which include numerous steps, thus leading to delays and complications (Crozet, 2022). Furthermore, international sales contracts are often concluded using the traditional contracting method, which might be long overdue modernising to fit in with the technological revolution the world is headed for. The use of blockchain may aid in modernising payments in international sales contracts (Larson, 2018). Thus, blockchain can be essential in modernising and supplementing letters of credit and other aspects of international commercial transactions.

The objectives of the study are twofold. Firstly, it aims to conduct a comprehensive analysis of the utilization of blockchain technology for the facilitation of cross-border payments. This involves an in-depth examination of how blockchain is currently being employed in the realm of international finance. Secondly, the study seeks to undertake a comparative assessment, pitting the advantages of blockchain-based cross-border payments against the conventional methods that have long been the norm in international trade. By delving into these objectives, the author hopes to gain valuable insights into the potential benefits and drawbacks of blockchain in the context of global financial transactions and its impact on traditional payment systems within the African context.

2. An Overview of Blockchain Technology

2.1 What is blockchain technology?

Blockchain is software that synchronises data recorded in a distributed form amongst peers across all devices and servers (also known as nodes) involved in a specific network. Thus, blockchain can be said to be a subset of distributed ledger technology (Larson, 2018).

2.2 How blockchain technology works

As stated earlier, a blockchain refers to a chain of blocks. These blocks contain digital records that are timestamped. The digital records contain any transactions or data exchanged on the distributed network of computers (Okazaki, 2018). Each block has a cryptographic hash like a fingerprint or a unique ID. The hash identifies a block, and its contents are always distinctive. If there is any alteration within the block, the hash will change. Therefore, the hash is essential in detecting any changes to the blocks.

2.3 Types of Blockchain

There are two significant types of blockchain. The first is a permissionless or public blockchain. A permissionless blockchain is one in which participation in submitting and confirming transactions is open to everyone. The second is a permissioned blockchain. This is private, and it does not allow open participation in either participation or submissions in transaction validation procedures (Solat, 2020).

3. General Advantages of Blockchain Technology

3.1 Immutability

Blockchain technology is ideal for international commercial transactions due to its immutable nature (Reyes, 2017). The idea behind immutability is that once a transaction has been successfully confirmed and added to the blockchain, it becomes difficult to change or remove. This immutability is a fundamental property of blockchain technology (Politou, 2019). It should be noted that there is no complete immutability because there have been a few isolated instances where the blockchain's entries have been effectively reversed. This can be done by manipulating the majority that is needed to alter an entry on the blockchain. However, these instances always leave behind signs of tampering, as the hash of a block changes if one attempts to temper with it, thus also affecting the has of the blocks that follow (Okazaki, 2018). Therefore, rather than being referred to as immutable or tamper-resistant, blockchains are more correctly described as tamper-evident structures (Politou, 2019). Blocks have

an aspect known as proof of work that mitigates tampering with the information in the blocks on the chain. Proof of work is a tool that decelerates the formation of new blocks. Thus, the proof of work mechanism combined with the creative use of hashing gives blockchain technology security.

Blockchain's security has been attributed to its decentralised nature, as it is not managed by a single entity (Idrees, 2021). It would be nearly impossible to successfully alter a blockchain without altering every block in the chain, performing a new proof of work for every block, and seizing control of most of the peer-to-peer network (Majid, 2021).

Furthermore, in contrast to the central registry concept, there is no single point of failure or vulnerability. As a result, distributed ledger data is impervious to manipulation. The security and integrity of data are improved by resistance to censorship and manipulation. Additionally, it saves money that would have been spent creating and maintaining backup databases under the central registry model (Takahashi, 2018).

3.2 Documentary management

It is well known that international commercial transactions involve plenteous documentation due to the decentralised nature of international commercial trade. With numerous documentation comes the potential of multiple phases of correspondence amongst parties involved in the transaction. The use of blockchain technology comes off as an advantage as it offers an efficient way to organise and store documents (Takahashi, 2018).

3.3 Trustless technology

The use of blockchain technology may be helpful in international commercial transactions as it is a trustless technology. The term 'trustless' in this regard refers to the notion that conceivably for the first time, value exchanges across a network system can be monitored, enforced, and validated without the involvement of a central authority figure or trusted third party, like financing institutions in cases of letters of credit. Owing to the programmable character of blockchain technology, smart contracts can be enabled and operate without centralised institutions. Thus, minimal trust is required (Kiviat, 2015). Traders generally do not have mutual trust in international commercial transactions, especially regarding payment issues. The use of financial technology such as blockchain and smart contracts aid in ensuring transparency throughout commercial transactions (Larson, 2018).

3.4 Cost-effective

Blockchain is a technology that is not bound by borders, and it can offer a quicker, less expensive infrastructure for transferring units of value (Kiviat, 2015). It is argued that as a substitute for the frequently expensive and delayed money transfers, there are math-based "cryptocurrencies" like bitcoin, which are based on blockchain technology that can be used (Kiviat, 2015).

Furthermore, blockchain technology is considered disruptive as it does away with intermediaries, thus making it cost-efficient. Intermediaries build confidence and lower risk between the parties involved in the transaction (Basaran & Bagheri, 2020). Conventional payment methods are safe for international transactions but are expensive and cumbersome. Due to the system's extensive network of intermediaries, there are a lot of commissions and transaction fees to be paid. Thus, significantly increasing the costs of trading internationally.

The current payment system used in international commercial transactions necessitates using mediators and intermediaries. To make a payment, a participant must go through several authorisations and intermediaries, including the payment gateway, exchange mode, and issuer, among others. Despite being in charge of upholding the legitimacy of payments, intermediaries have certain shortcomings, like charging for their services and lengthening the duration of transactions (Patel, 2021).

International trading parties can conduct business at a distance, with strangers, without worrying about fraud, and without paying third parties to enforce their agreements with decentralised smart contracts. Therefore, assets and transactional data can be maintained and tracked using blockchain technology without the assistance of traditional intermediaries.

Furthermore, for the implementation of a low-cost global blockchain payment system, banks like Westpac teamed up with Ripple (Towards a 'blockchain' , 2016). Westpac is considered one of the "big four" banks in Australia. Several banks and businesses intend to use blockchain payment systems to facilitate speedy and secure cross-border payments. Hence, it would be advantageous for the international trade and commerce law community not to be left behind with such evolving technology.

3.5 International contract of sale

An international contract of sale is an agreement between a seller and a buyer for the sale of goods. The United Nations Convention on Contracts for the International Sale of Goods (Vienna 1980) (CISG) is the widely used Convention for international contracts of sale. From article 1(1) of the Convention, it can be drawn that an international contract of sale is one in which goods are sold "between parties whose places of business are in different States", "when the States are Contracting States", or "when the rules of private international law lead to the application of the law of a Contracting State." An international contract of sale outlines the parties' respective rights, responsibilities, obligations, and remedies for breach. The parties can either be an importer/buyer or an exporter/seller. Lastly, it is of utmost importance that the contract includes conditions of payment to avoid foreseeable disputes. Parties thus may elect to use a blockchain payment system to effect payment.

3.6 Blockchain-based payment system

Effecting payment in international contracts of sale via blockchain technology is not so much a complicated process. The researcher will use the Stellar Blockchain payment system to demonstrate how the transaction will take place. Stellar has been operating since 2015 (Lokhava, 2019), and it is a blockchain-based payment network that links individuals and financial institutions, enabling quick and inexpensive cross-border payments (Khan, 2019). Thus, the network will link businesses in international commercial transactions to financing institutions more quickly and less expensive. The network uses Lumens (XLM) as its native cryptocurrency to transfer payments. Therefore, Stellar is an open-source network that can enable cross-border payments.

Example:

ABC is a domiciled company and resident and carries out its business in Johannesburg, South Africa. Company DEF is domiciled, resident and carries out its business in Maseru. ABC is the seller, and DEF is the buyer.

ABC and DEF enter into an international contract of sale for liquor. DEF has to make a payment of £50000 to ABC before delivery can be effected. Thus, the performance of the contract is subject to ABC receiving payment for the goods. DEF will send an amount of ZAR50000 from their bank in Johannesburg to ABC's bank in Maseru. The seller's bank in Maseru will receive a transaction request of ZAR50000, which will be approved after confirmation with ABC.

After the bank in Maseru has approved the request, the buyer's bank in Johannesburg will receive the transaction's approval, and ZAR50000 will be deducted from DEF's account. The amount deducted will then be converted to Stellar Lumens (XLM), which will pass to the Stellar network. It should be noted that when the money is deducted from the buyer's account, it will be in the Lesotho Leti LSL. This blockchain-based Stellar network offers a distributed currency exchange that provides the best exchange rate for a particular fiat currency (Khan, 2019). Thus, the XLM will then be converted from the South African Rand to the LSL at the best exchange rate, which would be better than the standard rates offered by the banks. The money now in LSL will be credited to ABC's bank account.

The Maseru and Johannesburg banks act as anchors in this Stellar network. Anchors are essential for converting fiat currency into cryptocurrencies and acting as a link between the parties involved in international commercial transactions and the Stellar network. Generally, financial institutions and banks, like the example given above, act as anchors as they are trustworthy. Therefore, the example lucidly shows how blockchain technology can simplify the payment process. On top of streamlining secured payments, blockchain technology offers several advantages, specifically in international commercial transactions.

4. Advantages of Blockchain Technology in International Contracts Of Sale

4.1 Mizuho case study

On 6 July 2017, Japanese banking group Mizuho and Sompo Japan Nipponkoa Insurance Incorporated completed a cross-border commercial transaction between Japan and Australia, using distributed ledger technology, a blockchain-based network. In contrast to traditional commercial deals, which take many days to complete, a contract involving the Japanese giant Marubeni Corporation and Sompo Japan Nipponkoa Insurance was concluded in under two hours. The buyer from Japan and the seller from Australia were entities of Marubeni. A blockchain-based digital model was used to coordinate the entire trade-related procedure, including issuing the letter of credit to distributing trade paperwork (Mizuho , n.d.).

The platform used to conduct the transaction was IBM's Hyperledger Fabric platform. This is an open enterprise-grade distributed ledger platform with privacy controls that enable only the data one wants to share to be distributed amongst the participants (Mizuho , n.d.).

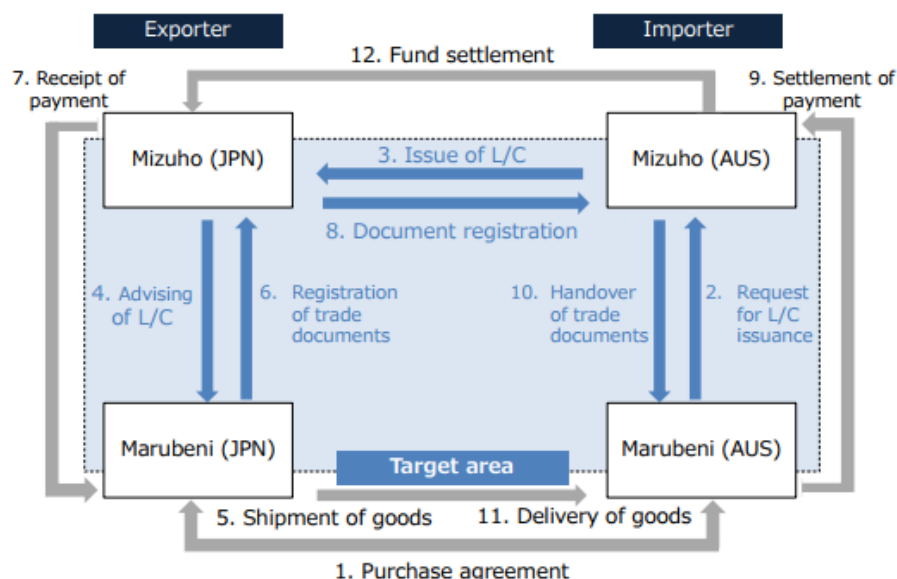
A contract of sale was entered into between Marubeni Japan (seller/exporter) and Marubeni Australia (buyer/importer). Subsequently, the buyer requested a letter of credit issuance from their bank, Mizuho Australia. The buyer's bank issued the letter of credit to the seller's bank in Mizuho, Japan. The seller's bank then advised Marubeni Japan of the letter of credit. Upon this advisement, the goods were then shipped to the buyer. The seller went on to register trade documents and then received a receipt of payment. The exporter had to digitalise the export and shipping documents and then upload

them to the blockchain platform, thus sharing them with the financial institution and other parties involved.

The seller's bank registered the documents with the buyer's bank. Marubeni Australia settled payment with their bank, and the trade documents were handed over to them. After the trade documents were handed over, the goods were delivered to the buyer. Lastly, the buyer's bank settled the funds with the seller's bank (Mizuho, n.d.). This saw the conclusion of the international contract of sale of goods transaction between Marubeni Japan and Marubeni Australia over a blockchain-based digital platform.

Below is the diagram of the transaction from the Mizuho blockchain project.

Diagram of Transaction



The project revealed several benefits. The first benefit was the shorter delivery time for trade documents. This process would typically take several days and was thus reduced to two hours. Secondly, there was reduced labour and other costs, as well as time spent on document creation and transmission through document digitalisation. Lastly, there was increased transparency through the disclosure of transaction information to all parties. Some blockchain tools allow for the generation of smart contracts, which can be used to facilitate, verify, and enforce transactions (Ante, 2020).

4.2 Blockchain technology and smart contracts

It is argued that the most promising aspect of blockchain technology is smart contracts (Evans, 2018). A smart contract is a self-executing digital contract written in code and shared among blockchain community members (Larson, 2018). Thus blockchain technology may provide solution to paper contracts through smart contracts. Smart contracts are thus automated computer procedures programmed to accept input from parties on the blockchain and authenticate or enforce the negotiation or execution of the contract in accordance with established instructions (Evans, 2018).

The decentralised, immutable nature of blockchain that serves as the foundation for smart contracts makes it impossible for them to be changed. Due to the blockchain's need for every network node to

verify every transaction, efforts to hack a single point of entry will be unsuccessful. Thus, smart contracts will allow people to retake control over their digital identities (Evans, 2018).

4.3 How a smart contract will work in an international commercial transaction

Suppose parties ABC (seller, resident and domiciled in Johannesburg) and DEF (buyer, resident and domiciled in Maseru) enter into a contract of sale for liquor. A blockchain-based smart contract will be used by the parties to negotiate even on new terms of the international contract of sale. Such negotiating is done automatically as parties would have listed their respective requirements into the system prior commencement of the trade negotiations. Once the terms have been agreed on, DEF is required to make the payment. This payment is effected via a blockchain network. If payment is received, then delivery of the liquor takes place. Therefore, payment is guaranteed when terms are agreed on.

The smart contract can go as far as including processes of official government controls and trade operations. For example, this smart contract will have a condition stating that once relevant documents like sanitary and phytosanitary certificates, insurance documents and invoices are complied with and verified, then liquor can be cleared by customs.

Furthermore, international commercial transactions do not always have the same carrier transporting the goods from the buyer to seller. In the current example, the liquor will be shipped by a Johannesburg courier X from the Port of Johannesburg, South Africa, to the Port of Durban, South Africa. The liquor will have to be handed over to a South African courier once all customs are cleared. The condition on the smart contract will thus state that if goods have arrived at the port and customs officials have cleared them, then courier Y from Durban is to take goods and deliver them to their final destination in Johannesburg. Parties involved in the transaction will have real-time access to the whole process as they will have representative nodes on the blockchain. Thus, processes from negotiating the contract of sale to delivery at the final destination can be done using a blockchain-based smart contract.

The contractual agreement

Traditional position

A contract of sale has its foundation in the notion of obligations (Klaas, 2014). The seller is obligated to make the goods available, and the buyer is obligated to pay the seller. Other parties, such as the courier, government and financing institutions, are also required to fulfil their obligations. The fulfilment of these obligations is dependent on performance. For example, if the seller does not make the goods available to the courier for shipment, the courier will not be able to perform, thus, no payment from the purchaser. Such an instance may trigger a dispute amongst the parties involved in the international commercial transaction. Therefore, resolution of the conflict would be required.

Use of smart contract

As seen above, the traditional contract of sale is similar to how computer code functions. If the seller provides the goods, then the buyer affects payment. Computer code follows the "if-then" logic. Thus, international contracts of sale drafted in paper form can be replaced by computer systems in the form of blockchains smart contracts that automatically carry out the conditions agreed in the contract of sale.

Traditional contracts usually depend on judges to interpret and clarify each party's obligations (Evans, 2018). It is argued that contracts of sale without the enforcement of the court are "not worth the paper on which they are printed". Obtaining enforcement of an obligation via the court system may be challenging, especially when contracts are international. However, if parties use a smart contract, instructions can be pre-programmed, thus guaranteeing performance from parties to the transaction without using court services (Evans, 2018). Additionally, due to the code-based nature of smart contracts, they are thus accurate, and potential misinterpretation is done away with; hence litigation is minimised.

More so, traditional contracts sometimes require the use of the court system for resolving disputes. As noted, that disputes are inevitable when it comes to international commercial transactions. The use of smart contracts offers a cheaper method of dispute resolution. Smart contracts allow for parties to the international commercial transaction to include automatic remedies for non-performance when drafting the contract. For example, if delivery is not effected by the set date, automatic remedy kicks in. Thus, minimising the likelihood of legal exposure to international trading businesses.

However, the downside of using smart contracts which allow for an automatic penalty or remedy is that international commercial sale transaction relationships are not always clear-cut. There might be many reasonable reasons for the failure of delivery, and a pre-programmed software might not be able to consider them. It should be noted that despite automatic remedies being given by smart contracts, the right to litigate is not taken away from contracting parties. Therefore, while it is true that smart contracts may aid in the reduction of disputes, it is not a complete solution to the incidence of litigation in international contracts.

Adding on, when litigating with international contracting parties, there is often a dispute over jurisdiction. The use of smart contracts in this regard is advantageous as it allows for dispute resolution over an automated web-based platform (Evans, 2018). When resolving disputes with local and foreign courts, eliminating centralised governing authorities allows for the least delays and bureaucratic inefficiencies. (Mania, 2015). Decentralisation of dispute resolution provides better access to justice, equality and fair resolutions. It is common knowledge that parties within a transaction with access to better resources often get favourable outcomes regarding disputes surrounding the contract. Therefore, smaller institutional entities are at a disadvantage (Mania, 2015).

Courts are often clogged with a huge backlog and small businesses cannot afford to prolong disputes. The use of smart contract dispute resolution allows transacting parties to solve an issue within weeks or months as opposed to the court procedures that may take years (Benson, 2019). Dispute resolution via smart contract saves on costs associated with litigation, such as expert fees, attorney fees, and court fees, amongst others. Thus avoiding dealing with court systems leads to efficiency and levelling of playing fields in cross-border transactions.

Moreover, contracting parties to international commercial transactions will be able to maintain their business connection by using the dispute resolution mechanism, which enables parties to work together to address conflicts rather than using an aggressive and hostile legal approach (Evans, 2018). However, it should be noted that the dispute resolution offered by the blockchains' smart contract is

not intended to replace the court system, but rather to assist in lessening the load on courts especially with trial courts and small claims.

4.4 Are smart contracts, contracts?

The first major problem of smart contracts is that they are not actual contracts. A contract of sale generally requires elements of offer, acceptance and consideration (consensus) for it to be legally binding to parties to the contract (Evans, 2018). Smart contracts lack elements of offer, acceptance and the intention of being bound by the terms of the smart contract. One could argue that there was no careful consideration of the offer, thus suggesting the need for human input in considering the offer. Prima facie smart contracts seemingly do not meet the characteristics of a binding contractual agreement. Thus, an issue of enforceability of smart contracts arises from the lens of the conventional definition of a contract.

Furthermore, lawyers have a duty of due diligence when it comes to traditional contracts, and this is seemingly absent with smart contracts. Before forming a traditional contract, lawyers ought to perform due diligence with regard to the structuring of the transaction (Benson, 2019). Traditional due diligence methods must be modified since lawyers must comprehend the open-source blockchain model's offers to confirm that the products correspond to what the blockchain claims they are.

However, it is difficult for international commercial lawyers to ascertain data ownership in a decentralised ledger system. Commercial lawyers can also fail to determine who owns the intellectual property at whichever stage of the blockchain process. These problems have made it more difficult for businesses involved in international contracts of sale to acquire blockchain start-ups and integrate with other businesses that have already done so (Benson, 2019).

Immutability

A question thus arises as to whether smart contracts can qualify as valid agreements. As noted earlier, smart contracts are unchangeable, immutable and rely heavily on the programmer or one responsible for developing the contract. Thus, developers of the smart contract platform apparently have more power than legal practitioners.

A drawback of smart contracts' immutability is that it may not accurately reflect the parties' intentions in an international commercial contract of the sale transaction. Therefore, the contract may be rendered voidable as the parties' true intentions would not have been reflected in the agreement (Evans, 2018).

The immutability of smart contracts means the lack of flexibility in the contract. Business entities need flexibility when partaking in cross-border sale transactions. Due to the concrete nature of smart contracts, they do not consider business ties, and these are important when conducting business. Companies must have the flexibility to alter agreements with suppliers and independent contractors in response to changes in the market (Evans, 2018). Relationships in the business world would be ruined if companies were obligated to submit contracts created by smart contracts. Therefore, this then calls for technology experts and lawyers to work together to come up with means to develop and integrate solutions to facilitate the cancellation and reversal of payments. The advantages of using blockchain-based smart contracts outweigh their disadvantages. Thus, its use in international commercial transactions should be welcomed.

4.5 Blockchain and Letters of Credit

When dealing with an international sale of goods transaction, three main documents are involved in this transaction: the sales contract, the bill of lading and the letter of credit (Benson, 2019). A bill of lading is a document that specifies the party bearing risk for the goods while they are in transit and at which times during the shipping procedure.

A letter of credit commits an issuing bank to pay the agreed-upon sum to the seller on behalf of the buyer upon receipt of the supporting documentation specified in the letter of credit. The International Chamber of Commerce Uniform Customs and Practice for Documentary Credits oversees letters of credit used in international transactions (Larson, 2018). The current functioning of letters of credit is not so favourable. For instance, the seller has to wait for a considerable amount of time before receiving payment because the bank cannot release funds without proper documentation. This documentation often takes time to be delivered, and it could contain errors, thus increasing delays in finalising the international sale. The bank is contractually obliged to pay for the entire or remaining transaction balance if the buyer cannot make a payment on it. Due to obstacles like distance, different state regulations, and the challenge of getting to know each party personally, letters of credit are crucial to international trade. This is because banks often act as financing institutions and are trusted. International traders traditionally use letters of credit to facilitate international commercial transactions. Letters of credit are an essential trade finance instrument, especially for parties that do not trust one another (Larson, 2018). For example, a seller might not be willing to ship goods without the security that the purchaser will pay. Likewise, a purchaser might not want to make payment without confirmation that the seller has shipped the correct goods in proper condition. A letter of credit thus enters the transaction as an haven for trust between the purchaser and seller. Thus, mitigating the risk in the international sale transaction as the bank assumes the responsibility of paying the exporter.

The purchaser is required to provide proof showing that the goods have been shipped and that they meet the standards highlighted in the letter of credit to effect payment from the bank.

A letter of credit has been seen to be equally favourable for all parties within the transaction. Although payment may be specified against a time draft, in most cases, the purchaser is often a risk as the seller is generally paid before goods reach the purchaser (Larson, 2018). Therefore, adopting blockchain technology in dealing with credit letters may solve this problem.

4.6 How Letters of Credit Work

Letters of credit transaction consist of three parties. The first party is the buyer, also known as the applicant, as they apply to the bank for the letter of credit. The second party is the seller, also known as the beneficiary, as they benefit from the credit arrangement with the financing institution. The third party is the bank, the financial institution issuing the letter of credit (Benson, 2019). To assess whether blockchain technology is useful in the letters of credit transactions context, there must be a breakdown of the steps in this transaction.

4.6.1 Stage 1- Issuance

A letter of credit starts with an application to the issuer by the applicant (buyer). The applicant formally applies to the financial institution, including the applicant and beneficiary's desired terms to

be included in the letter of credit. Basic details like the amount of the letter of credit and the paperwork the beneficiary must submit to initiate payment against the letter of credit must be provided during this stage (Larson, 2018). Several documents are often required for the letter of credit, some of which are; a bill of lading, insurance certificate, certificate of inspection, certificate of origin and a commercial invoice, amongst others. It is lucid that this initial application requires several details. Hence accuracy is of utmost importance to prevent future disputes.

After receiving the application for the letter of credit, the issuer has the task of drafting the letter of credit. Nowadays, de-materialising this stage of the letter of credit is a common practice (Takahashi, 2018).

Advantages of Using Blockchain During Stage 1

The current electronic method used in this stage often takes the letter of credit several days to arrive at the exporter from the date of its issuance. However, it is argued that by sharing information across a blockchain platform, parties involved in the sales transaction could browse the information immediately.

Takahashi is sceptical of the above advantage assertion. Takahashi believes that other forms of electronic communication can also be as instant as blockchain technology. Thus, the assertion of swift notification through blockchain is not as real as it is presented to be.

4.6.2 Stage 2- Documentary Compliance Presentation

Traditional practice

The issuer must receive all the trade documentation as provided for in the letter of credit from the "presenter", frequently the beneficiary, at the same time and before the letter of credit expires. The issuer assesses whether the document is prima facie in accordance with the letter of credit's provisions. The UCP refers to this as the "strict compliance" principle in article 16(a). The issuer has a finite, "reasonable" period, which is not to exceed five business days under the UCP, after obtaining the necessary documentation from the beneficiary to assess compliance or noncompliance and notify the presenter.

The amount of documentation the issuer must review is one of several factors determining what is reasonable. If any differences exist between the documents and the letter of credit requirements, the issuer either "honours" the presentation of compliant documents or notifies the presenter (Larson, 2018).

Unlike the first stage, de-materialisation is not widely accepted in the topical practice of this stage. Although electronic presentations take place every now and then, paper presentations are still prevalent (Takahashi, 2018).

Advantages of using Blockchain Technology

The distributed ledger technology feature of blockchain appears to be advantageous in the presentation of documents. Article 17(a) of the UCP 600 provides that "at least one original of each document stipulated in the credit must be presented", the ledgers' tamper resistance nature will aid in satisfying this condition. To fulfil the condition in Article 17(a) of the UCP, one has to present a single electronic record as provided by the eUCP, seemingly adding nothing. Koji proposes that a better interpretation of the requirement in Art 17(a) would be that the condition is considered to be met where there is a trustworthy guarantee of the integrity of the data.

However, as much as blockchain technology provides the advantage of a distributed ledger, it appears to be still lacking, as false information can still be fed into the ledger. It should be stressed that issuing falsified documents, as opposed to manipulating documents after they have been issued, constitutes the most severe type of fraud in letters of credit (Takahashi, 2018).

4.6.3 Stage 4- Payment

Traditional practice

It is acknowledged that examination of documents is the third stage, however, the fourth stage will be analysed first for easier analysis. Whether a letter of credit allows for a sight draft, a time draft, or a deferred payment obligation, will impact when the beneficiary is paid (Larson, 2018). Most letters of credit allow for sight drafts, probably because the beneficiary prefers early payment. Time drafts and deferred payment obligations often delay payment to the beneficiary. Payment under a letter of credit is typically made via an electronic transfer if, generally, the parties to a sales contract pick a fiat currency as the mode of payment for their contract (Larson, 2018).

Advantages of using blockchain technology

Adopting blockchain technology at the payment stage will be of no value if payment is done using a fiat currency as this is often effected by the use of an electric transfer.

However, blockchain technology may be useful in this stage if parties to an international contract of sale select a cryptocurrency to be used as the method for payment. If parties to the sales transaction decide to use a letter of credit, a bank would have to act as an intermediary because the buyer cannot directly pay the seller. A question to be thus considered is whether the implementation of blockchain technology may depict payment via a letter of credit transaction to be a trustless method. It is highly unlikely that the letter of credit transaction may be rendered trustless (Benson, 2019). However, the question may be answered in the affirmative if the stage of examination of documents may be automated. A smart contract or a computer code on a blockchain may be used, and this may be set to work by activating payment without requiring manual authorisation by the bank. Therefore, it has to be investigated whether the examination stage of documents may be automated (Takahashi, 2018).

4.6.4 Stage 3- Document Examination

Traditional practice

Examination of documents is done with the objective of determining whether they conform with the terms of the letter of credit. Examination of documents might require a value judgment. Thus, automation may pose a challenge. Unless and until significant developments in artificial intelligence, it would be nearly impossible to automate inspection under Article 14(e) of the UCP 600 without foreseeing every conceivable description of every conceivable good. Hence a conclusion can be drawn that this stage of document examination cannot practically be automated.

The use of blockchain may aid in modernising payments in international sales contracts. Thus, blockchain can be essential in modernising letters of credit (Larson, 2018). Blockchain provides a simple way to store, organise, and verify documents because international transactions typically require many papers and maybe multiple stages of correspondence as seen with the stages of a letter of credit. Additionally, blockchain can be combined with smart contracts to enhance automation in international commercial transactions.

4.7 Blockchain and supply chain management

Blockchain technology may be advantageous in international commercial transactions as a tool for supply chain management (Takahashi, 2018). The coordination of companies that market goods or services is generally referred to as "supply chain," a phrase with a solid reputation in the literature (Lambert, 1998). The supply chain includes producers, suppliers, carriers, warehouses, wholesalers, retailers, intermediaries, and customers. Goods that are the subject matter of international contracts of sale go through several subsequent transactions on the business-to-business market as it develops from unprocessed states to finished products. To control the flow of data, goods, and services across a network of consumers, businesses, and supply chain partners, the discipline of supply chain management (SCM) was established. Supply chain management was first introduced in the 1980s, and since then, it has experienced a lot of development.

The customs and regulatory officials in the countries of origin and destination, brokers, financial institutions, insurers, and couriers are just a few of the other parties involved in international commercial sale transactions in addition to the buyer and seller. Numerous exchanges of first- and second-hand information take place between those parties. This opens up a wide range of possibilities for using a blockchain to initiate and track invoicing, customs compliance and bills of lading.

Blockchain-based record keeping enables parties to track documents at every stage of the supply chain, from the start, when origin determines eligibility for free trade agreements and other preferential systems, to the end, when it can be used to prove adherence to export controls and sanction regimes and the final use of the products.

A representative node for each exporter, customs, importer, insurer, and importer bank is linked to a private blockchain that duplicates transactional data as it transpires on the network. The ledgers across all nodes are synchronised at all times. A shipment of assets must have approval from numerous legal entities, trucking companies, port authorities, customs, and rail companies before it may traverse international boundaries. They can sign their approvals on the blockchain, informing all parties involved in the transaction that the goods have arrived (Takahashi, 2018).

The supply chain nature of cross-border transactions of sale taps into the distributed ledger technology aspect of blockchain. Therefore, the distributed ledger characteristic of blockchain technology will have certain benefits as a supply chain management tool. Distributed ledgers improve the visibility and traceability of goods by enabling the sharing of pertinent information among the stakeholders (Takahashi, 2018).

4.8 Blockchain and trade financing

The use of blockchain technology in international commercial transactions is of advantage when it comes to trade finance. Trade finance is the term for financial activities involving global trade (Patel, 2021). Trade finance battles with the overwhelming volume of documentation, including invoices, bills, credits, and payment records. These processes take a lot of time to complete because multiple files of the same paperwork are needed for various purposes. Any manual inaccuracies result in a complete breakdown of the documentation.

With the implementation of blockchain payment systems, paperwork for trade finance can be easier to manage because no manual work would be needed to keep track of payment information, invoices, and bills; everyone can access a single document because blockchain payment systems function as

distributed ledgers (Larson, 2018). There will be minimal chances of manual errors because the blockchain would be the exclusive repository for all payments made through the blockchain payment system.

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IV.III Trade in Services and Sub-Sahara African countries participation in Global Value Chains: Do modern and traditional services matter?

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Abstract

The objective of this study is to empirically investigate the effects of the main dimensions of commercial services on the participation of sub-Sahara African (SSA) countries in GVCs. We mobilized data from a panel of 37 countries in SSA over the period 1996 to 2018. By using the two-step Generalized Method of Moments (GMM), we find that exports and imports of commercial services in their main aspects foster the participation of SSA countries into GVCs through backward and forward integration of GVCs. After merging services, the results suggest also that traditional and modern services drive the participation of SSA countries into GVCs. Finally, the analysis of sensitivity of the coefficients reveals that imports of services exert more favorable effects than exports of services. SSA countries need to develop policies that allow services to be identified as a strategy for increasing their participation in GVCs.

Keywords: Trade in services, global value chains, domestic value-added, foreign value-added, GMM, Sub-Saharan Africa **Classification:** F14; F15; F23

1. Introduction

Multilateralism has allowed for an unprecedented dramatic growth in international trade. This rapid growth in trade is accompanied by a shift from centralised systems to new modes of goods production involving multiple actors in the processes. According to [Johnson \(2018\)](#), in recent decades, the emergence of global supply chains has changed the game. Globalisation is prompting companies to restructure their operations internationally by outsourcing and offshoring their activities. This has given rise to a particular model of international production: production sites relocated to lowcost locations are linked by a new mode of trade based on fragmentation ([Ernst and Kim, 2002](#)). This fragmentation of supply chains and production and distribution of products in the global circuit is called Global Value Chains ([Heuser and Mattoo, 2017](#)). Global Value Chains (GVCs) are defined by [Heuser and Mattoo \(2017\)](#) as the set of activities required to bring a product from conception, through design, raw materials and intermediate inputs, to marketing, distribution and deployment to the final consumer. However, they refer to the whole process of producing a final good where the different stages of the production process are located in different countries. Participation in MVCs is generally seen as an important way for developing countries to access new markets and diversify their exports, add value to local industries and increase employment ([Keijser et al., 2021](#)).

Services are quite important in international trade since they are used as inputs in production and facilitate distribution. As a result, the literature is increasingly interested in the analysis of the role of services in the real sector. Also, at the front of the phenomenon of international division of the stages of production of goods, there is a growing body of work on the role of commercial services in the proliferation of GVCs. The structuring of GVCs shows that services and manufacturing are closely linked, as the production of any good starts with R&D and design services. The notable growth of services in international trade and their involvement in the international fragmentation of production has led to a growing interest in the literature ([Jones and Kierzkowski, 2018](#); [APEC, 2015](#); [Heuser and Mattoo, 2017](#)) in theoretical and empirical analyses of the nature of the relationship. In some respects, services play a similar role to goods. Services can be the subject of Value Chains and also facilitate the emergence of GVCs. Service value chains are in fact the supply of services which may involve several stakeholders or even countries in the process. However, to the extent that services facilitate the emergence of GVCs, they can be seen as elements of GVC. This paper focuses on the role of trade in services in the emergence of GVCs. Recent statistics ([UNCTAD-Eora, 2022](#)) show that although Africa remains a weak link in GVCs, during the recent years its participation has increased significantly.

Despite the extensive literature on the role of services in GVCs, empirical evidence on the case of sub-Saharan African countries' participation is scarce. Unfortunately, the work on sub-Saharan countries has not been able to take into account all aspects of commercial services in the analysis of GVCs. In particular, despite the important role of tourism in GVCs, [Okah Efogo \(2020\)](#) in her work did not specifically consider the effects of some aspects of commercial services such as tourism, construction services and creative services on SSA countries' participation in GVCs. However, SSA countries are increasingly present in a significant way in GVCs and in international trade in all aspects of trade services. The participation of SSA countries in GVCs has increased from USD 25 billion in

1996 to USD 120 billion in 2018 in terms of value added. Trade in services in the region is on an upward trend, averaging 18.57% of GDP in SSA between 1996 and 2019.

To this end, the objective of this paper is to assess the effects of trade in services on the participation of SSA countries in GVCs. This study contributes to the literature on trade in services and GVCs in several ways. First, it adds to the theoretical debate as well as to the empirical evidence on the relationship between trade in services and participation in GVCs, especially by focusing on SSA countries. Secondly, it is one of the few studies that try to take into account tourism as an integral part of trade services in the analysis of GVCs. The results allow for policy recommendations to be made in order to broaden the scope of possibilities for SSA countries to diversify their economies but increase their participation in international trade. The rest of the chapter is structured as follows. Section two (2) presents the literature review, section three presents an analysis of the situation of GVCs and international trade in services in the form of stylized facts. The fourth section presents the methodology adopted and the data of the study. The presentation of the results is done in section five and the conclusion in section six.

2. Literature Review

The debate on GVCs is the result of the evolution of the debate on international trade, especially under the impetus of intra-industry trade of the New Trade Theory. Indeed, the first premise was undermined in the 1970s and 1980s when the New Trade Theory merged. Krugman is considered to be the pioneer of the New Trade Theory, which was later generalised by [Helpman and Krugman \(1985\)](#). The main feature of this theory is the theoretical possibility of considering a production technology with increasing returns to scale (associated with variety preference), which underpins the analytical frameworks of international trade under imperfect competition. Models have provided a plausible explanation for the dominance of intra-industry trade between countries with similar technology and resource endowments, a phenomenon that cannot be explained by the orthodox notion of comparative advantage ([Inomata, 2017](#)).

[Inomata \(2017\)](#) sees the literature on GVCs as a third wave of reconstruction of classical theory that is under development. The firm-level micro-data logic developed by [Bernard et al. \(1995\)](#) with the support of the new trade theory allowed the emergence of the firm heterogeneity view supported by [Melitz \(2003\)](#). At the same time, [Jones and Kierzkowski \(2018\)](#), questioning the role of services in the process of expansion and fragmentation, laid the foundations for the emergence of work on intermediate products ([Feenstra and Hanson, 1996](#); [Chanda, 2011](#)), which led to the trade in tasks advocated by [Grossman and Rossi-Hansberg \(2008\)](#). Also the work of [Bosma et al. \(2005\)](#) on the length of supply chains with the support of the work of [Antras and Helpman \(2004\)](#) on the chains of firms in the governance of global value chains form the basis of the idea of sequentiality of GVCs developed by [Antra's et al. \(2012\)](#).

[Heuser and Mattoo \(2017\)](#) define a GVC as the set of activities required to bring a product from conception, through design, raw materials and intermediate inputs, marketing, distribution and support to the final consumer. They argue that the most detailed analysis of the role of services in the value chain, based on the new global inputoutput tables and value-added trade databases, only covers situations where services are traded in a similar way to goods. However, services deserve special

attention for four reasons, related to how they are traded, how they affect downstream sectors, how they are regulated and how international cooperation can contribute to the integration of national markets.

There are two ways in the literature of assessing the contribution or participa-

tion in GVCs (Escaith and Inomata, 2013; Escaith, 2014; Inomata, 2017; Okah Efogo, 2020). The first, called backward integration, refers to countries or firms exporting or importing raw materials or intermediary products as inputs to heavy industries. The second, called downstream integration, refers to countries or firms that export processed intermediate products or final goods and services through international distribution networks. Initially introduced by Escaith and Inomata (2013), this two-dimensional view of GVCs participation is subsequently taken up by Johnson (2014); Inomata (2017); Okah Efogo (2020).

According to Arndt and Kierzkowski (2001), one reason for considering some services in GVCs separately from goods is their role in the emergence of GVCs. They argue that the international fragmentation of production is partly due to developments in transport, logistics and information and communication technology services. In particular, cost reductions and improvements in these services have enabled companies to manage geographically dispersed processes. However, he remains sceptical because for them, even if the anecdotal evidence is convincing, there is a serious gap in the literature, namely the lack of rigorous empirical evidence on how better access to these connecting services across space and time facilitates the emergence of global value chains. De Marchi et al. (2018), suggest a systematic review of the literature on developing country GVCs to investigate the learning channels used by local firms within (at the firm level and at the collective level) and outside (e.g. external sources of learning) of these value chains. According to Johnson (2014), services affect trade and the global economy in two ways. The first channel is based on exports of services directly to partner countries. The second channel, which he describes as indirect trade, is that services are also incorporated into the manufacture of a number of parts, intermediate products or final goods.

The fluidity of information due to the rapid growth of ICT allows for closer ties between the various stakeholder in international trade, but above all significantly reduces the costs associated with cross-border trade. Nowadays, if the fragmentation of production on a global scale is a reality under the prism of multilateralism, it's partly due to the reduction of transaction and transport costs caused by the ICT development. ICTs are now at the heart of MVCs and ICT services are considered an integral part of both the upstream and downstream chains (Arndt and Kierzkowski, 2001). Digitalization that is result of of the rapid development of ICT, has transformed the world into an imaginary village, making it easier and faster to trade through dematerialisation and the reduction of transaction costs. Trade in ICT services is understood as any exchange of information services, computer support, computer repair, customer services by telephone, internet and computer services provision. As a result, the use of ICT services has structurally changed the way individuals and firms do business, increasing their productivity (Luong and Nguyen, 2021).

Keijser et al. (2021), using data collected from suppliers in the IT-based services industry in South Africa, examine and compare the role of involvement in these different types of value chains in driving supplier learning in the context of the IT-based services industry. Through multivariate analysis, they

find that service providers in global value chains learn through interactions with their client firms. However, participation in GVCs is not the only opportunity for client learning and capacity building. [Keijser et al. \(2021\)](#) also observe learning in local and regional value chains. Learning is generally and strongly reinforced by trust-based governance of the customer-supplier relationship, while in GVCs control-based governance additionally promotes IT learning.

Empirical findings on trade in services and global value chains in the literature can be explored through some authors ([Heuser and Mattoo, 2017](#); [Miroudot and Cadestin, 2017](#); [Okah Efogo, 2020](#); [Xing, 2020](#); [Arau'jo et al., 2021](#); [Keijser et al., 2021](#)). [Xing \(2020\)](#), finds that the value added associated with intellectual property and services embedded in physical goods is not recorded as an export in the United States of America (USA). He uses the case of Apple, the largest US consumer products company and a typical fabless manufacturer, to illustrate the inability of conventional trade statistics to capture the real export capacity of the US in the era of global value chains. According to his analysis, if the value added of Apple's intellectual property and services embedded in all Apple products sold to foreign consumers were counted as US exports, total US exports in 2015 would increase by 3.4% and its trade deficit would decrease by 7.0%. In terms of bilateral trade, the examined value added would increase US exports to China and Japan by 16.6% and 8.7% respectively, and reduce its trade deficit with these two countries by 5.2% and 7.8% accordingly ([Xing, 2020](#)).

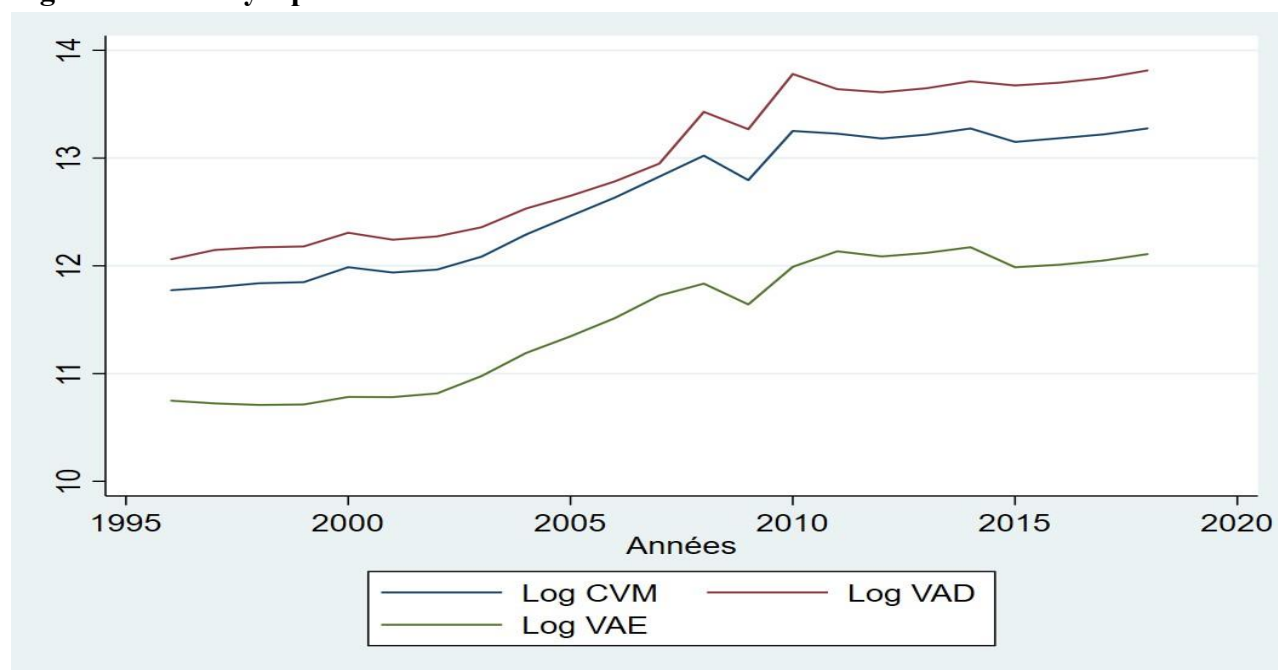
[Arau'jo et al. \(2021\)](#), by calculating backward and forward indicators of global and regional integration and fragmentation of GVCs over the period 1990 to 2015, examine the role played by the Brazilian economy in GVCs with reference to global and regional contexts. Their main results indicate that Brazilian participation in GVCs increased over this period and became more internationally fragmented, mainly in global terms, but that its regional insertion increased more than its global insertion. [Arau'jo et al. \(2021\)](#) conclude that in the global context, Brazil plays the role of an input supplier (mostly services), while in the regional context it serves as a main production centre. [Konishi \(2019\)](#) in accordance with the findings of [Johnson \(2014\)](#) points out acutely when examining the share of exports of goods and services in world gross exports, the share of manufactured and service exports was 67 per cent and 20 per cent respectively. On the other hand, using the World Input-Output Database (WIOD), [Johnson \(2014\)](#) finds that the recalculated export ratio in terms of value-added trade for services exports was 41 per cent, larger than the share of goods exports (39%).

[Okah Efogo \(2020\)](#), using a comparative approach between flows of commercial services aspects and GVCs positions, uses data from a panel of 36 sub-Saharan African countries from 2000 to 2017. Her results show a linear and positive relationship between trade in services and GVCs participation in SSA. She also finds that services exports have a smaller effect than imports of services, according to the position of SSA countries in GVCs. Third, some services have a positive effect on upstream and downstream participation in GVCs, while others have a one-sided effect. However, tourism is not considered in [Okah Efogo \(2020\)](#) work despite the important role of tourism in GVCs, and in African economies. Also, the disaggregation of services in her work does not highlight construction services and creative services. Therefore, this paper attempts to shed more light on the role of trade in services in SSA countries participation in GVCs.

3. Stylized facts on Trade in Services and GVCs

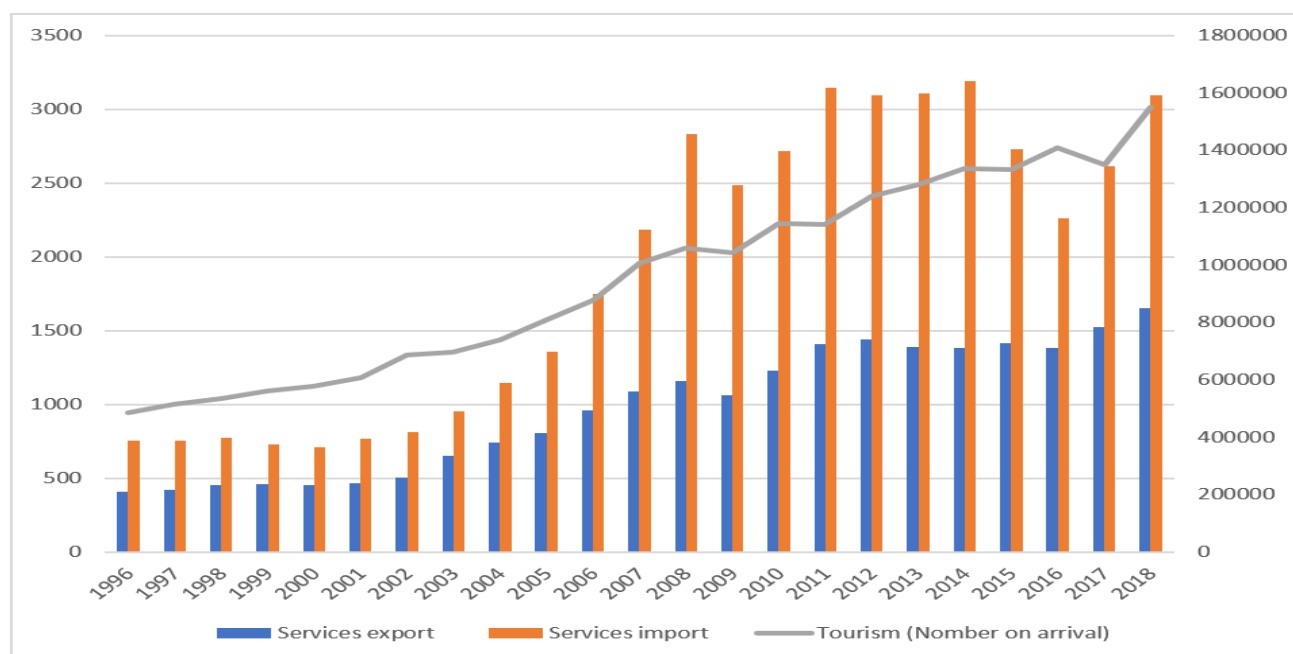
Figure 1 presents the annual evolution of the three modes of participation in GVCs from UNCTAD-Eora data. The figure highlights trade in Domestic Value Added (DVA), Foreign Value Added (FVA) and the GVCs which captures the intensity of a country's overall integration in GVCs. The graph clearly shows the importance of domestic value added (DVA) over the period 1996 to 2018 in SSA. This implies that African countries south of the Sahara have more downstream participation in global value chains (Johnson, 2014; Koopman et al., 2014; Okah Efogo, 2020).

Figure 1: Country's performance in trade in services in SSA



Source: Author, data (UNCTAD-Eora, 2022)

Figure 1 illustrates the dynamics of trade in services according to the international classification of the Balance of Payments Manual Five (BPM5) and BPM6, as well as the dynamics of the tourism sector in SSA. Indeed, it is observed that the services sector is dominated by inflows rather than outflows. In other words, imports of services are more important than exports in SSA between 1996 and 2018. Over the period, imports averaged US\$1910 million with an average annual growth rate of 7.49% compared to US\$970 million and an average annual growth rate of 6.90% over the same period. Figure 2 shows the evolution of exports of the different dimensions of services in SSA over the period 1996 - 2018. It can be seen that over the period, travel services occupy first place in terms of exports, followed by transport services. In third place are business services, which are generally composed of professional services (specialised services and management consulting services), R&D (research and development) services and technical, trade-related and other business services. Indeed, exports of travel services over the period represent on average about US\$470 million with an average annual growth rate of 7.47% while exports of transport and other commercial services represent respectively US\$225.87 million and US\$170.19 million with respectively an annual growth rate of 6.28% and 8.46% over the same period. Financial and insurance



Source: Author, data (UNCTAD-Eora, 2022)

services are also experiencing significant growth with an average annual growth rate of 22.17% and 4.47% respectively.

4. Data and Methodology

The data used in this study are of a secondary nature from various sources (see table 1). The study is based on a non-cylindrical panel of 37 countries in Sub-Saharan Africa between 1996 and 2018. The choice of 37 countries is linked to the unavailability of data for the other countries. The year 1996 is chosen as the starting year because data on institutional variables such as governance are only available from 1996 and the year 2018 as the upper bound is related to the fact that data on global value chains, domestic and foreign value chains are only available until 2018. Data on trade in services are collected from the UNCTAD database.

UNCTAD's tables provide two separate datasets on trade in services, taking into account the evolution of the way trade in services is collected and calculated. The first dataset presents yearly international trade in services statistics by major aspect of services for individual countries, geographical regions and economic groupings. The data presented are the result of the joint work of the WTO and UNCTAD, and are published simultaneously by both organisations. The statistics presented in the first table correspond to the concepts and definitions of the fifth edition of the IMF Balance of Payments Manual (BPM5) published in 1993. The BPM5 classifies services over the period 1980 - 2013 as follow: (1) all services, (2) transport, (3) travel, (4) other services, (5) all commercial services, and (6) other commercial services.

In contrast, the classification of services in the second sub dataset refers to the concepts and definitions of the sixth edition of the IMF Balance of Payments and International Investment Position Manual (BPM6) published in 2009. While the categorisation of services is limited to six (06) broad categories of services according to the BPM5 classification, the BPM6 classification of services includes eighteen (18) categories and sub-categories of services by subdividing the first six categories

according to BPM5. In order to have a fairly large database with a wide range of categorised services, we have reprocessed the data from the two tables. Indeed, given that the classification from the BPM6 gives a wider range of services than the one based on the BPM5, we proceeded to regroup by summing some sub-categories of services. This allowed us not only to combine the two databases but also to extend the period from 1996 to 2018.

The data on global value chains (GVCs) come from the joint UNCTAD-Eora database. The UNCTAD-Eora database provides global coverage (189 countries and a "Rest of the World" region) and a time series from 1990 to 2018 of key GVCs indicators: foreign value added (FVA), domestic value added (DVA) and indirect value added (DVX)²³.

Data on the other control variables are mainly taken from the World Bank's WDI (2021) and WGI (2021) database. The table below summarises the definition of the variables, the sources and the expected signs.

4.1 Measuring participation in Global Value Chains (GVCs)

In the literature, there are two ways of assessing the contribution or participation in global value chains (Escaith and Inomata, 2013; Escaith, 2014; Inomata, 2017; Okah Efogo, 2020). The first, called backward integration, involves countries or firms exporting or importing raw materials or intermediate products used as inputs in heavy industries. The second, called downstream integration, refers to countries or firms that export processed intermediate products or final goods and services through international distribution networks. Initially introduced by Escaith and Inomata (2013), this two-dimensional conception of participation in MVCs is subsequently taken up by Inomata (2017) and by Okah Efogo (2020).

Participation in GVCs is captured by the combination of foreign value added (FVA) and indirect value added (DVX) inspired by the work of Aslam et al. (2017), Okah Efogo (2020) and Koopman et al. (2014). Foreign value added (FVA) is a measure of backward integration that corresponds to the imported intermediate inputs content of exports for each product of a county (Okah Efogo, 2020). FVA is described as follows:

$$FVA = (IntermediateInputImported) \times \frac{Export}{GrossOutput} \quad (1)$$

According to Aslam et al. (2017); Koopman et al. (2014); Okah Efogo (2020), domestic value added is a broader measure of downstream integration which is the domestic value added in a country's exports, calculated using the intermediate goods demand matrix and the final demand matrix. Indirect value added (DVX) calculated for each country *i* on all products *k* and destinations *j* as (Aslam et al., 2017; Koopman et al., 2014):

²³ Results for 1990 to 2017 are generated from the EORA Multi-Regional Input-Output Tables (MRIOs). The results for 2016-2017 were provisional "beta" results and have been revised in early 2018. The results for 2018 are forecast based on the IMF's World Economic Outlook.

Table 1: Effects of services exports on participation in GVC

Variables	Name of the variable and measure	Expected sign	Sources
Global Value Chain	CVM		UNCTAD-EORA-TiVA (2021)
Domestic Value Added	DVA		UNCTAD-EORA-TiVA (2021)
Foreign Value Added	FVA		UNCTAD-EORA-TiVA (2021)
Services Exports	TiS IMP (in Millions US)	+	CNUCED (MBP5
MBP6)			
Services Imports	TiS EXP (in Millions US)	+	CNUCED (MBP5
MBP6)			
Desegregated of services dimensions (Export – Import)	-	+	CNUCED (MBP5
MBP6)			
Tourism	Total of tourists on arrival (TOURISM)	+	WDI (2021)
Trade cost	weighted average applied tariff on import (TRADCOST)	-	WDI (2021)
Trade openness	(X+M) /GDP*100 (OPENESS)	+	WDI (2021)
Technology	Share of internet users (INTERNET)	+	WDI (2021)
Economy size	Population (POP)	+	WDI (2021)
Foreign Direct Investments	FDI	+	WDI (2021)
Share of Manufacture	Manufacturing value added (MANUFVA)	+	WDI (2021)
Demand	Real GDP per capita (GDPCA)	+	WDI (2021)
Export diversification	Export concentration index HHI	-	UNCTAD
Governance	Corruption	-	WGI (2021)
	Ratio Capital Stock Current PPPs (mil. 2017US)/Totalemploy(in Mil.) (Capital/Labour)	+	Author's calculation with World Pen Table data
Physical capital	Gross Fixed Capital Formation (GFCF)	+	WDI (2021)
Human Capital	Labour productivity (LabourProduct)	+	Author's calculation with data of WDI (2021) and World Pen Table
	Education index (HC)	+	World Pen Table
Financial development	Credit to private sector (CREDITPRIV)	+	WDI (2021)

Forward participation	Lag in first difference of Foreign Value Added, FVAit-1	UNCTAD-EORA-TiVA (2021)
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Source: Author

Note: The weighted average applied tariff is the average of the actual applied rates weighted by the import shares of products corresponding to each partner country. The data are classified using the Harmonised System of Trade at the six or eight digit level. Tariff line data has been mapped to the Standard International Trade Classification (SITC) Revision 3 codes to define product groups and import weights. Where possible, specific rates were converted to their ad valorem equivalents and included in the calculation of weighted average tariffs. Import weights were calculated using the United Nations Statistics Division's Comtrade (Commodity Trade) database. The actual applied tariff rates at the six- and eight-digit product level are averaged for the products in each product group. Where the actual applied rate is not available, the most favoured nation rate is used instead.

$$DVX = \left(\sum_k^K \sum_j^J \text{ExportInIntermediateProducts}_{ijk} \right) x \frac{\text{Export}}{\text{IndustryGrossOutput}} \quad (2)$$

Thus, the GVC participation index captures the intensity of a country's global integration in GVC, measured for country i for year t (Koopman et al., 2014; Aslam et al., 2017). It is defined as follows:

$$GVC_{it} = \left(\frac{FVE + DVX_{it}}{\text{GrossExport}_{it}} \right)_{jk} \quad (3)$$

4.2 Specification of models

The empirical literature on value chains is quite rich and exhibits several models (linear and non-linear). The second Hypothesis 2 of the thesis on the relationship between trade in services and the participation of Sub-Saharan countries in global value chains will be tested using a linear model. The model adopted is based on the empirical work of Okah Efogo (2020); Okah Efogo et al. (2021) and Miroudot and Cadestin (2017). Okah Efogo (2020) in his work believes that the theoretical foundations of current GVC models can be found in the pioneering work on value chains (Dixit and Grossman, 1982; Sanyal, 1983). Empirically, the relationship between the dimensions of trade in services and participation in GVC of SSA countries can be translated as follows:

$$\ln GVC_{it} = \alpha_0 + \alpha_1 \ln GVC_{it-1} + \alpha_2 T_i S_{it} + \alpha_3 Y_{it} + \gamma_t + \delta_t + \varepsilon_{it} \quad (4)$$

$$\ln FVA_{it} = \varphi_0 + \varphi_1 \ln FVA_{it-1} + \varphi_2 T_i S_{it} + \varphi_3 W_{it} + \gamma_t + \delta_t + \varepsilon_{it} \quad (5)$$

$$\ln DVA_{it} = \beta_0 + \beta_1 \ln DVA_{it-1} + \beta_2 T_i S_{it} + \beta_3 Z_{it} + \gamma_t + \delta_t + \varepsilon_{it} \quad (6)$$

Where GVC_{it} , FVA_{it} , DVA_{it} represent respectively, the participation in Global Value Chains, Foreign Value as well as Domestic Value exchanges of country i in period t. $T_i S_{it}$ represents the trade in services of country i in period t and can be decomposed into several dimensions. Y_{it} , W_{it} and Z_{it} represent sets of control variables. γ_{it} and δ_{it} capture respectively individual country and time effects. Description and justification of the study variables.

The variables in the analysis include dependent and independent variables. The dependent variables are, among others, Domestic Value Added (DVA), Foreign Value Added (FVA) and the index of participation in global value chains (GVC). The variables of interest are the dimensions of services exports to SSA and the dimensions of services imports to SSA. The degree and depth of a country's participation in GVC is assessed by the three dimensions that we select in this study. First, participation in foreign value-added trade, which captures the country's imports of intermediate products with foreign content that go into the production of domestic final goods. This quantity measures the share of foreign contribution in the production of goods within the country for export or for local consumption. This variable is crucial as it measures the degree of backward participation in global value chains.

Secondly, participation in domestic value added trade (DVA) which captures the domestic value added incorporated in finished products or intermediate products for export. It measures, in fact, the intensity of forward participation in global value chains. In this study, particular emphasis is placed on this variable for several reasons. The system of accounting for trade in value added is often distorted by the double counting of certain value added components in official trade statistics (Koopman et al., 2014). To this end, Koopman et al. (2014) propose a way to eliminate the double counting distortion by focusing on domestic value added (DVA) in exports. Since a country's domestic value added describes the characteristics of a country's production (total domestic factor content in exports), it does not depend on where exports are absorbed. Third, the overall index of participation in global value chains (GVC) which is a combination of foreign value added and indirect value added. The explanatory variables of interest comprise the aspects of services exports and imports in SSA over 1996 - 2018. These aspects include transport services, travel services, construction services, insurance services, financial services, licensing services, ICT services, other business services and creative services.

4.3 Descriptive statistics and correlation between variables studied

This section is devoted to presenting the descriptive statistics in order to get an idea of the compressed information on the variables and the nature of the relationship between our variables of interest and the dependent variables. Table 6 summarises the descriptive statistics of the study variables in this chapter. It provides information on the variables, the number of observations, the mean, the standard deviations, the minimum and the maximum of each variable in the study.

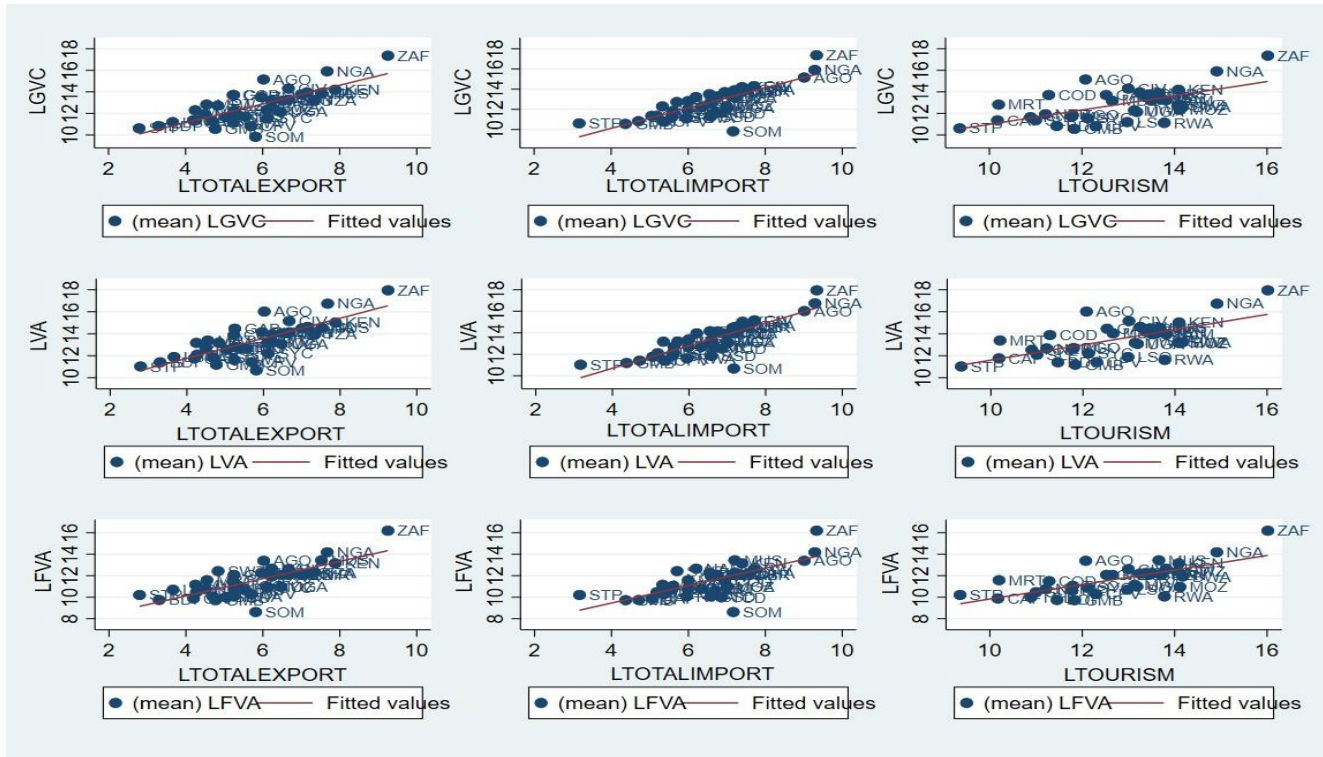
Table 2: Descriptive statistics of the studied variables in the analysis of GVC participation

Variables	Observations	Mean	Stard deviation	Minimum	Maximum
GVC (Log)	851	12.62	1.688	9.568	18.028
DVA (Log)	851	12.986	2.175	.61	18.363
FVA (Log)	851	11.486	1.584	8.072	16.883
Services Total Export	794	5.739	1.549	1.38	9.778
Services Total Import	792	6.492	1.437	2.342	10.338
Transport Services)	728	3.725	2.227	-3.324	8.114
Travel Services	733	4.653	1.898	-2.323	9.21
Construction Services export	318	1.664	1.858	-5.809	5.827

Insurance Services export	598	1.21	2.269	-6.908	6.299
Financial services export	482	1.316	2.499	-6.908	6.88
Licences services export (Log)	348	-.449	2.973	-9.011	5.453
ICT services export	611	2.82	1.788	-3.297	6.628
Business services export	666	3.25	2.235	-4.017	8.539
Creative services export	325	-.111	2.665	-6.908	5.524
Transport services import	750	5.505	1.426	1.538	9.184
Travel services import	735	4.516	1.733	-4.4	9.188
Construction services import	475	2.511	2.251	-6.215	8.979
Insurance services import	705	3.079	1.77	-5.809	7.312
Financial services import	536	1.814	2.124	-6.215	7.124
Licences services import	531	1.29	2.445	-6.215	7.661
ICT services import	618	2.813	1.808	-4.4	7.343
Business services import	709	4.617	2.029	-3.65	9.45
Creative services import	401	.432	2.331	-6.908	5.709
Tourism (Number on arrival)	652	12.738	1.541	7.972	16.532
Population	851	15.745	1.598	11.244	19.093
GDP /Capita	810	6.86	1.115	4.631	9.704
Ratio capital-labour K/L	805	10.053	1.22	7.618	12.743
Labour Productivity	796	21.718	1.156	19.41	24.367
Herfindal Hirschman index	835	.445	.207	.099	.961
Internet users	794	8.226	12.872	0	70.1
Trade cost	528	9.336	5.344	.33	32.6
Human capital index (based on years of schooling)	713	1.745	.416	1.093	2.912
Controlling corruption	756	-.545	.664	-1.869	1.217
Gross fixed capital formation	717	21.111	8.463	-2.424	59.723
Manufacturing (VA % du PIB)	754	10.705	6.259	.233	39.913
Natural resource rents (% of GDP)	804	10.197	9.93	.001	62.697
Credit to private sector (% of GDP)	784	18.625	17.666	.449	106.26
Trade openness (% of GDP)	754	73.623	38.269	20.723	311.354
FDI(% of GDP)	806	4.577	8.299	-6.37	103.337

Source: Authors

Figure 3 shows the correlation between imports, exports of services and participation in global value chains. The graph shows a strong positive correlation between imports, services exports and trade in domestic value added (DVA), foreign value added (FVA) and participation in global value chains (GVC). At first glance, this pattern suggests that exports and imports lead to a strong increase in the participation of sub-Saharan countries in GVC. However, since correlation does not necessarily imply causation, these graphical relationships would need to be confirmed or unconfirmed by a rigorous and empirical regression. Furthermore, Table 3 adds to figure 3 by showing a strong correlation between the variables of interest. The table shows strong correlation between the independent variables of interest, namely imports and exports of services in SSA from 1996 to 2018.

Figure 3: Correlation between GVC, FVA, DVA and trade in services


Source: Author's construction, data from [UNCTADStat \(2022\)](#) and [UNCTAD-Eora \(2022\)](#)

Table 3: Correlation between study variables on GVC participation

Variables	LGVC	LFVA	LDVA	Log Total Services Exp	Log Total Services Imp	Log Tourism
LGVC	1.000	0.951*	0.858*	0.772*	0.862*	0.691*
LFVA	0.951*	1.000	0.760*	0.784*	0.784*	0.763*
LDVA	0.858*	0.760*	1.000	0.782*	0.887*	0.682*
Log Total Services Exp	0.772*	0.784*	0.782*	1.000	0.820*	0.757*
Log Total Services Imp	0.862*	0.784*	0.887*	0.820*	1.000	0.652*
Log Tourism	0.691*	0.763*	0.682*	0.757*	0.652*	1.000

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

4.5 Correlation between variables in the GVC participation study

Diagnostic tests for the study variables include the Wald test for residual homoscedasticity, the Wooldridge test for autocorrelation in panel data and the Pesaran - Yamagata test ([Pesaran and Yamagata, 2008](#)) for model slope homogeneity. The significance of all diagnostic tests at 1% implies in table 4, that the null hypotheses of homogeneity of residuals, absence of autocorrelation of residuals and homogeneity of slopes are rejected. Thus, since the residuals are correlated and heteroscedastic, the technique of estimating the parameters of our models must be able to deal with these problems, which, if not resolved, may result in biased estimates.

Table 4: Results of the Wald, Pesaran Yamagata and Wooldridge tests of GVC participation analysis

Tests	Wald test for heteroskedasticity			Test for slopes' homogeneity			Wooldridge test for autocorrelation in panel data		
Equation	LCVM	LVAD	VAE	LCVM	LVAD	LVAE	LCVM	LVAD	LVAE
Openness services	18558.35 (0.0000)	69326.37 (0.0000)	21857.60 (0.0000)	25.221 (0.0000)	23.493 (0.0000)	25.465 (0.0000)	78.866 (0.0000)	34.739 (0.0000)	235.515 (0.0000)
Log Total services exp	5116.57 (0.0000)	98954.47 (0.0000)	8653.35 (0.0000)	27.479 (0.0000)	27.671 (0.0000)	19.846 (0.0000)	115.313 (0.0000)	38.837 (0.0000)	216.620 (0.0000)
Log Total services imp	9561.76 (0.0000)	12979.60 (0.0000)	17503.82 (0.0000)	20.899 (0.0000)	20.950 (0.0000)	26.649 (0.0000)	66.875 (0.0000)	30.743 (0.0000)	224.375 (0.0000)
Log Tourism	15002.66 (0.0000)	30992.52 (0.0000)	20699.05 (0.0000)	20.407 (0.0000)	20.330 (0.0000)	22.601 (0.0000)	82.069 (0.0000)	25.167 (0.0000)	337.691 (0.0000)
Log Transport services exp	5186.84 (0.0000)	1674.89 (0.0000)	5550.82 (0.0000)	20.126 (0.0000)	22.765 (0.0000)	20.707 (0.0000)	96.425 (0.0000)	27.085 (0.0000)	177.006 (0.0000)
Log Travel services exp	2401.16 (0.0000)	2435.16 (0.0000)	5361.13 (0.0000)	21.192 (0.0000)	22.742 (0.0000)	22.779 (0.0000)	106.452 (0.0000)	29.456 (0.0000)	449.998 (0.0000)
Log Construction services exp	64046.53 (0.0000)	4.2e+31 (0.0000)	12316.49 (0.0000)	- -	- -	- -	72.351 (0.0000)	37.339 (0.0000)	93.852 (0.0000)
Log Insurance services exp	1.0e+06 (0.0000)	34564.02 (0.0000)	55532.42 (0.0000)	11.896 (0.0000)	12.786 (0.0000)	12.621 (0.0000)	212.072 (0.0000)	64.054 (0.0000)	310.089 (0.0000)
Log Financial services exp	6.5e+30 (0.0000)	2.7e+30 (0.0000)	5.5e+30 (0.0000)	11.929 (0.0000)	13.409 (0.0000)	12.486 (0.0000)	146.552 (0.0000)	36.300 (0.0000)	236.493 (0.0000)
Log licences services exp	4.7e+05 (0.0000)	4.7e+05 (0.0000)	3.1e+08 (0.0000)	- -	- -	- -	29.606 (0.0000)	8.257 (0.0000)	60.401 (0.0000)
Log ICT services exp	2.9e+05 (0.0000)	17457.48 (0.0000)	69006.43 (0.0000)	- -	- -	- -	158.235 (0.0000)	28.605 (0.0000)	356.085 (0.0000)
Log Business services exp	52819.58 (0.0000)	1.2e+05 (0.0000)	10023.19 (0.0000)	24.607 (0.0000)	24.668 (0.0000)	25.021 (0.0000)	115.554 (0.0000)	30.342 (0.0000)	330.250 (0.0000)
Log creative services exp	9.5e+29 (0.0000)	4.3e+29 (0.0000)	6.0e+29 (0.0000)	- -	- -	- -	53.372 (0.0000)	26.548 (0.0000)	117.520 (0.0000)
Log Transport services imp	2346.14 (0.0000)	2963.21 (0.0000)	7847.02 (0.0000)	26.818 (0.0000)	27.190 (0.0000)	23.766 (0.0000)	89.168 (0.0000)	32.225 (0.0000)	196.595 (0.0000)
Log Travel services imp	2452.37 (0.0000)	2095.65 (0.0000)	3120.30 (0.0000)	19.614 (0.0000)	19.049 (0.0000)	20.152 (0.0000)	79.482 (0.0000)	30.197 (0.0000)	285.196 (0.0000)
Log construction services imp	53867.48 (0.0000)	7.7e+29 (0.0000)	97211.19 (0.0000)	- -	- -	- -	96.678 (0.0000)	19.384 (0.0000)	20.212 (0.0000)
	22894.31	26900.38	4.3e+05	27.459	26.637	28.373	80.903	29.797	241.369

Log Insurance services imp	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Log Financial services imp	3.3e+32 (0.0000)	1.8e+05 (0.0000)	2.9e+33 (0.0000)	8.469 (0.0000)	9.421 (0.0000)	8.961 (0.0000)	142.007 (0.0000)	37.528 (0.0000)	323.275 (0.0000)
Log Licences services imp	1109.63 (0.0000)	6.9e+30 (0.0000)	4069.66 (0.0000)	- (0.0000)	- (0.0000)	- (0.0000)	122.089 (0.0000)	21.473 (0.0000)	134.754 (0.0000)
Log ICT services imp	4.4e+07 (0.0000)	73527.96 (0.0000)	1.4e+05 (0.0000)	- (0.0000)	- (0.0000)	- (0.0000)	73.288 (0.0000)	25.268 (0.0000)	249.211 (0.0000)
Log Business services imp	38940.96 (0.0000)	2.9e+05 (0.0000)	1.2e+05 (0.0000)	17.588 (0.0000)	21.021 (0.0000)	16.806 (0.0000)	92.334 (0.0000)	31.181 (0.0000)	311.023 (0.0000)
Log Creative services imp	5.7e+30 (0.0000)	1.5e+30 (0.0000)	21128.08 (0.0000)	- (0.0000)	- (0.0000)	- (0.0000)	25.324 (0.0000)	20.021 (0.0000)	116.184 (0.0000)
<p>Note: W = Within effect, BS = Between Static effect and BD = Between Dynamic effect. Modified Wald test for groupwise heteroscedasticity of cross-sectional (panel) time series, H0: $\sigma(i)^2 = \sigma^2$ for all i. Wooldridge test for autocorrelation in panel data, H0: no first order autocorrelation. Test for slope heterogeneity (Pesaran, Yamagata. 2008), H0: slope coefficients are homogeneous. Author's calculations, CUNDED (2022) and UNCTAD-Eora (2022)</p>									

Table 5 gives the results of the tests for cross-sectional dependence of individuals in the panel. [Pesaran \(2015\)](#) tests for the presence of cross-sectional dependence of individuals in the panel. [Ditzen \(2021\)](#) suggests that before estimating a model involving long-run effects, it is necessary to assess whether the variables inhibit cross-sectional dependence. For [Patton \(2013\)](#) panel data may be subject to pervasive cross-sectional dependence, whereby all units in the same cross-section are correlated. For him, this phenomenon is generally attributed to the effect of some unobserved common factors, common to all units and affecting each of them, although perhaps in different ways. The results show that the CD test rejects the null hypothesis of low cross-sectional dependence of errors. In this case, [Pesaran \(2015\)](#) suggests that the presence of high cross-sectional dependence of the residuals requires the use of estimation techniques that take cross-sectional dependence into account.

Table 5: Results of the cross-sectional dependence test

Variable	CD	p-value	Nombre de groupe	T
LCVM	114.858	0.000	37	23
LVAD	107.165	0.000	37	23
LVAE	105.858	0.000	37	23
Log Total services Exports	71.207	0.000	30	23
Log Total services Imports	72.882	0.000	28	23
Log Tourisme	69.900	0.000	26	8
Log Services Transport Exp	25.397	0.000	23	23
Log Services Voyage Exp	45.372	0.000	24	23

Log Services Assurance Exp	8.268	0.000	15	21
Log Services TIC Exp	48.858	0.000	15	6
Log Services aux entreprises Exp	11.959	0.000	20	23
Log Services Transport Imp	56.963	0.000	25	23
Log Services voyage Imp	37.812	0.000	23	23
Log Services Assurance Imp	35.367	0.000	21	23
Log Services Financiers Imp	25.567	0.000	10	15
Log Services TIC Imp	54.163	0.000	13	19
Log Services aux entreprises Imp	42.622	0.000	24	23

Author's calculations, data from UNCTAD (2022) and UNCTAD-Eora (2022)

4.6 Estimation strategy

The estimates are based on three linear models. The period of our study is from 1996 to 2018. We have static panels for models (4), (5) and (6) due to the fact that the number of countries ($n = 36$) is greater than the period under consideration ($T = 23$). Several estimators can be used to estimate our models, including the fixed-effects (FE) estimator, the first-difference (FD) estimator and the random-effects (RE) estimator. However, the literature establishes that in the presence of autocorrelation, heteroskedasticity, country dependence and endogeneity, the use of these estimators causes a bias. On the other hand, OLS panel estimation can also give biased estimates due to the violation of certain assumptions such as autocorrelation of errors, heteroscedasticity of errors, and endogeneity of certain variables. When the explanatory variables are correlated with each other, the OLS and within estimators are inconsistent.

Furthermore, when endogeneity is confirmed between the variables of the model, the Generalized Method of Moments (GMM) or instrumental variables method (TwoStage Least Squares - 2SLS) is recommended. Endogeneity can be detected in two ways, either by endogeneity testing or by rigorous theoretical justification. Theoretically, there is evidence of endogeneity between FDI and participation in GVC. Indeed, the higher a country's FDI penetration, the higher its participation in GVC, and conversely, the higher a country's participation in MVCs, the more likely it is to benefit from FDI (Okah Efogo, 2020; Okah Efogo et al., 2021). A country that actively participates in GVC is likely to develop a vibrant services sector that is needed to support manufacturing, and the development of domestic services leads the country to increase its services exports. Conversely, a country's active participation in trade in services is a source of innovation and technology transfer which are necessary for the emergence and development of a manufacturing industry capable of increasing the country's participation in GVC. Similarly, trade policies that favour the decompartmentalisation of the national economy (trade openness) lead to greater participation in GVC (Miroudot and Cadestin, 2017; Araujo et al., 2021; Keijser et al., 2021). Endogeneity is observable between the first-order lags of the dependent variables and the latter. Therefore, the two-step system Generalized Method of Moments (GMM) will be used as estimators of the model parameters. The robustness of the results will be verified by the subsequent use of the 2SLS method.

Baseline results

In this section we present and interpret the results of the different parameter estimates of our models. First, we present and interpret the effects of services exports on backward and forward GVC integration and the effects of services exports on total GVC participation. In a second step, we present and interpret the effects of services imports on backward and forward integration in GVC and the induced effects of services imports on total participation in GVC of SSA countries.

Several estimates are made possible by using two-step system GMM, the results of which are presented in tables 6 to 8. Econometrically all our results are valid, so in the majority the results corroborate economic theory. Virtually all our independent variables of interest show the expected signs according to the economic theory. Also, most of our independent variables of interest show the expected signs according to the economic theory. The test for over-identification performed with Hansen's test has probabilities (p-values) that are insignificant or higher than 10%, which implies that all our instruments are valid. Also, the fact that the AR1s are significant and the AR2s insignificant in all our models implies that there is no second order autocorrelation of the residuals of the error terms. Indeed, Arellano and Bond's second-order autocorrelation tests do not reject the null hypothesis of no second-order autocorrelation of the error terms (AR2) at the 10% threshold.

The magnitudes measuring domestic value added (DVA) and foreign value added (FVA) measure the upstream and downstream integration in GVC respectively. Also, the dimension of participation in GVC measures the degree of participation of countries in GVC. Thus, the dimensions of exports and imports of services with a positive sign imply a favourable effect of the latter on GVC. A negative sign of the parameters of the independent variables implies an unfavourable effect on participation in GVC. We are in the presence of log-log models, so the interpretation of the results of the coefficients will be done in the logic of the elasticities.

Effects of services exports on backward and forward integration into GVC in SSA

This subsection presents and gives an analytical interpretation of the results of our empirical model estimations with a focus on the effects of services exports on participation in GVC, backward and forward integration in GVC. The results in Tables 6, 7 and 8 show that total services exports in SSA contribute positively to the participation of sub-Saharan countries in GVC backward (DVA) and forward (FVA) integration of GVC given the positive and significant signs at 5% and 1% respectively. Also, it is important to note that total services exports have a greater effect on participation in GVC. Indeed, for a total variation of 1% in total services exports, this leads to an increase of 0.235%, 0.147% and 0.195% respectively on the participation in GVC, upstream integration (DVA) and downstream integration (FVA) of Sub-Saharan countries in MVCs. These results confirm the work of [Okah Efogo \(2020\)](#) and [Miroudot and Cadestin \(2017\)](#) who also find that services are an important way for developing countries to increase their participation in GVC.

Also, tourism through the number of inbound visitors, which to some extent is considered as the tourism exports of an economy, favours the participation of sub-Saharan African countries in GVC, backward integration but with insignificant effects on forward integration. The positive sign and significance of the tourism variable parameter at 10% in both specifications (GVC and DVA) imply that a 1% change in total inbound visitors leads to a 0.226% unit increase in SSA countries' participation in GVC and 0.318% unit in backward integration. These results corroborate the

empirical literature on the positive effects of tourism sector development on GVC participation (Jensen and Kletzer, 2010; Leja´rraga and Walkenhorst, 2013; Konishi, 2019; Rom˜ao, 2020). Tourism through the demand channel stimulates domestic production. Indeed, any increase in the number of visitors to an economy also increases tourist spending which puts pressure on domestic production (Leja´rraga and Walkenhorst, 2013; Rom˜ao, 2020).

Tables 10, 11 and 12 show that exports of transport and travel services are the dimensions of service trade that promote participation in GVC in SSA. Exports of transport services have positive and significant effects at 10% on backward and forward integration in GVC in SSA. For a 1% change in transport services for export, this results in an increase of 0.0381% and 0.0308% respectively in the upstream and downstream integration of sub-Saharan countries in GVC. Thus, Tables 10 and 12 show that exports of travel services contribute positively and significantly to the integration of SSA countries into GVC.

When exports of travel services increase by 1%, this leads to an increase in backward and forward participation in GVC of 0.0780% and 0.207% respectively. Travel services take into account goods purchased by travellers at the heart of their journey to a country or in transit through a country, when demand from this category increases this causes spillover effects on the country’s output. When a country has a large airport infrastructure and a fairly large and diversified tourism offer, that country is predisposed to receive more visitors and therefore may see its exports of travel services increase. This increase in demand for goods related to travel and tourism is accompanied by a strong preference for product diversity and this leads to an increase in domestic production, diversification of exports and, in addition, participation in GVC. Moreover, transport services are involved in all stages of product production and distribution (Casas, 1983; Jiang and Zhang, 2020; Okah Efogo, 2020). Jiang and Zhang (2020) show that the participation of countries in the international production system is such that developing countries are more involved in low value-added services such as transport and storage services.

Exports of insurance services contribute positively to both backward and forward integration of GVC as the parameters are positive and significant at the 10% level. Every 1% increase in exports of insurance services leads to a 0.153% increase in backward integration and a 0.130% increase in forward integration to GVC in SSA respectively. Exports of financial services also lead to an increase in the downstream integration of sub-Saharan countries to GVC. Indeed, a 1% increase in financial services exports to SSA leads to a 0.0942% increase in downstream integration in SSA. These results are closely in line with the work of Jiang and Zhang (2020) and Okah Efogo (2020).

Exports of licensing services exert positive and significant effects at 5% on downstream integration to GVC while exports of ICT services exert positive and significant effects at 10% and 1% respectively on upstream and downstream integration to GVC in SSA. Indeed, according to the results, a 1% increase in exports of licensing services leads to a 0.0942% increase in downstream participation in GVC. Also, a 1% change in exports of ICT services in SSA leads to a 0.0774% increase in upstream participation and a 0.107% increase in downstream participation in GVC in SSA, respectively. ICT services enter production processes as major inputs, and their degree of

incorporation determines firm performance and productivity (Biryukova and Matiukhina, 2019; Leo'n et al., 2016; Luong and Nguyen, 2021; Pradhan et al., 2018). These results consolidate the work of Le'on et al. (2016) who find that diversified firms have a higher level of ICT use and that this resource positively affects the degree of international diversification and the degree of relationship of firms.

Exports of business services make a positive contribution to upstream and downstream integration in GVC. When exports of business services increase by 1%, this results in a 0.0236% increase in the upstream participation of sub-Saharan countries in GVC, while it leads to a 0.0326% increase in the downstream participation of GVC. Business services include research and development services, specialised services and management consultancy services, and technical, trade-related and other business services. These services support production, and their use makes companies efficient and productive. An increase in a country's exports not only expresses the country's ability to produce high-quality services, but above all helps the country to enter into the international production chains (Jiang and Zhang, 2020; Chen and Shen, 2021).

The other explanatory variables also show the expected signs in accordance with economic theory. Indeed, trade openness, credit to the private sector, the capital to labour ratio, the size of the country (population) and manufacturing output show positive and significant signs in both directions of trade in services (export and import) in the majority of the estimated models. The positive effect of these variables on the participation of SSA countries in GVC is consistent with the literature (APEC, 2015; Miroudot and Cadestin, 2017; Konishi, 2019; Okah Efogo, 2020; Keijser et al., 2021). However, variables such as corruption, gross fixed capital formation and FDI show negative and significant signs indicating a negative relationship between these variables and participation in GVC.

Effects of services imports on SSA countries backward and forward integration and participation in GVC

Tables 9, 10 and 11 show that total imports of services exert a positive and significant effect at 5% and 10% respectively on participation in GVC, backward and forward integration in GVC in SSA. The results show that a 1% increase in total imports of services in SSA leads to a 0.776% increase in participation in GVC, a 0.626% increase in upstream integration and a 0.727% increase in downstream integration of sub-Saharan countries in GVC. These results show that imports of services exert more induced effects on participation in GVC, backward and forward integration than exports of services in SSA.

Imports of transport and travel services make a positive contribution to backward and forward integration and participation in GVC. This is explained by the fact that we have positive and significant elasticities at 1%, 5% and 10% respectively. When imports of transport services increase by 1%, this generates a 0.582% increase in participation in GVC, a 0.264% increase in backward integration and a 0.454% increase in forward integration of sub-Saharan countries in GVC. When there is a positive variation of 1% in imports of travel services, this leads to a positive variation in participation in GVC of the order of 0.195%, there is also an increase of 0.102% in backward participation, and an increase of 0.134% in forward participation. These elasticities are larger than those found by Okah Efogo (2020). One of the reasons for these results is the fact that SSA countries are net importers of transport services. These results confirm economic theory and previous work

(Casas, 1983) that has empirically analysed the relationship between transport trade and participation in GVC.

Imports of construction services show a positive and significant elasticity at 10%, implying that imports of construction services contribute positively to backward integration to GVC in SSA. The results show that a 1% increase in imports of construction services leads to a 0.0534% increase in backward integration into GVC. In other words, given that backward integration is measured by the country's ability to generate domestic value added that is incorporated into the country's exports, then imports of construction services help the implementation of industries as well as their productivity thus further helping the growth of backward integration.

Tables 13, 14 and 15 show that imports of insurance and financial services contribute positively to backward and forward integration and to participation in GVC. The coefficients are positive and significant at 1% and 10% respectively. When imports of insurance services increase by 1%, this results in a positive variation of 0.000634% for participation in GVC, a positive variation of 0.0512% for upstream integration and a positive variation of 0.0877% for forward integration in GVC. When imports of financial services increase by 1%, this also results in an increase of 0.0288%, 0.0479% and 0.0443% respectively in participation in GVC, backward integration and forward integration. Financial and insurance services are major factors in the production of goods and services, providing producers with funds for production and also insurance for equipment, production processes and the distribution of goods and services (Foley and Manova, 2015; Bose et al., 2020).

Imports of licensing services and ICT have a positive effect on participation in GVC and on upstream and downstream integration. The results show that a 1% increase in imports of licence services leads to a 0.000314% increase in participation in GVC, a 0.0512% increase in upstream integration and a 0.0504% increase in downstream integration in sub-Saharan countries. The use of licences enables companies to obtain intellectual property rights to reproduce goods and services, and importing them can not only be a way for developing countries to catch up technologically, but can also boost company productivity ((Nguyen et al., 2020). These results are in line with Nguyen et al. (2020) who, referring to Sweet and Eterovic (2019), find that patents that are directly linked to innovation and new knowledge in the productive capacities of the economy have an influence on the economic complexity of a country, which leads to greater participation in GVC.

A positive variation of 1% in imports of ICT services leads to a respective growth of 0.255% in participation in GVC, of 0.126% in upstream integration and an increase of 0.195% in downstream integration in GVC. These results do not contradict those of Okah Efogo (2020) and also confirm economic theory. ICTs have become essential factors in the productivity of production companies. The ICT factor is involved in all aspects of the production and distribution of goods and services. For example, León et al. (2016) find that it is clear that technological development leads to an increase in productivity by reducing costs, which allows companies to increase the quality and production of new products. These authors, following the theory of heterogeneous firms, find that the degree of incorporation of ICT services into production processes determines the levels of product and market diversification of firms in a given economy.

Table 6: Effects of services exports on participation in GVC

VARIABLES	Dependent variable: GVC											
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
L.LGVC	0.509*** (0.178)	0.701*** (0.160)	0.774*** (0.128)	0.569*** (0.200)	-0.585 (0.432)	0.425** (0.200)	0.628*** (0.188)	-0.0590 (0.210)	0.644*** (0.231)	0.380* (0.207)	0.471** (0.226)	0.603** (0.237)
CORRUPTION	-0.167 (0.102)	-0.151 (0.108)	-0.0261 (0.0786)	-0.221** (0.0899)	-0.621** (0.250)	-0.233** (0.115)	-0.150 (0.101)	-0.229 (0.163)	-0.165 (0.144)	-0.166 (0.130)	-0.128 (0.163)	-0.217 (0.152)
HHI	0.478 (0.792)	1.046*** (0.405)	0.795* (0.436)	-0.00895 (0.399)	-1.320 (1.383)	0.668* (0.398)	0.149 (0.741)	-0.489* (0.269)	0.611 (0.667)	0.587 (0.748)	-0.362 (0.667)	0.306 (0.394)
HC	0.0600 (0.130)	0.0982 (0.212)	0.0691 (0.107)	0.118 (0.0991)	0.134 (0.331)	0.115 (0.232)	0.343** (0.173)	-0.166 (0.219)	0.250 (0.296)	-0.0487 (0.244)	-0.0749 (0.0998)	0.0158 (0.211)
NATRESOURCE	0.00148 (0.00705)	0.00861 (0.00624)	0.00942* (0.00536)	0.0175*** (0.00617)	0.0123 (0.00998)	-0.00402 (0.00526)	0.00451 (0.00718)	-0.00274 (0.0136)	0.00492 (0.0145)	0.00865 (0.00620)	0.00354 (0.00598)	0.00878 (0.00662)
CREDITPRIV	0.00932* (0.00533)	0.00715 (0.00453)	0.00518 (0.00316)	0.00406 (0.00374)	0.0168* (0.00926)	0.0125** (0.00631)	0.00745* (0.00394)	0.0113*** (0.00413)	0.0177** (0.00778)	0.0142* (0.00772)	0.00522 (0.00537)	0.00581** (0.00292)
LPOP	0.525*** (0.183)	0.0153 (0.207)	0.103 (0.135)	0.299 (0.248)	1.790*** (0.486)	0.574** (0.234)	0.258 (0.272)	1.381*** (0.227)	0.408* (0.217)	0.651*** (0.231)	0.635*** (0.211)	0.256 (0.259)
LGDPCA	0.190 (0.453)	-0.607 (0.455)	-0.181 (0.311)	0.116 (0.395)	1.261 (1.199)	0.0426 (0.506)	-0.354 (0.626)	1.318** (0.516)	-2.150 (1.724)	-0.474 (0.671)	0.235 (0.866)	0.379 (0.528)
FDI	0.00263 (0.00548)	0.00232 (0.00461)	-0.00567 (0.00659)	-0.000253 (0.00593)	-0.0152 (0.0173)	0.00114 (0.00393)	0.00746 (0.00556)	-0.00802 (0.00994)	- (0.0115)	-0.00210 (0.00533)	-0.0155** (0.00748)	-0.00657 (0.0116)
INTERNETUSER	-0.000243 (0.00140)	-8.82e-05 (0.00198)	0.000659 (0.00143)	-0.00144 (0.00114)	-0.00194 (0.00664)	7.78e-06 (0.00204)	-0.00104 (0.00137)	5.75e-06 (0.00278)	0.00187 (0.00289)	0.00325 (0.00291)	0.00299 (0.00370)	-0.00465* (0.00259)
MANUFVA	0.0112 (0.00942)	0.0188*** (0.00656)	0.0191*** (0.00725)	0.0186** (0.00789)	0.0212 (0.0156)	0.0177 (0.0112)	0.0257** (0.0102)	0.00836 (0.0189)	-0.00256 (0.0146)	0.00762 (0.0129)	0.00327 (0.0154)	0.00852 (0.00912)
OPENESS	0.00658*** (0.00251)	-0.00514 (0.00433)	-0.00124 (0.00204)	-0.000402 (0.00334)	0.0142* (0.00859)	0.00450 (0.00480)	-0.00603 (0.00394)	0.0231*** (0.00865)	0.00443 (0.00604)	0.00799* (0.00423)	0.0124*** (0.00306)	0.000777 (0.00318)
GFCF	-0.0118** (0.00516)	0.00170 (0.00619)	-0.000760 (0.00409)	-0.00842 (0.00673)	- (0.0174)	-0.0102* (0.00595)	0.00348 (0.0102)	- (0.0105)	0.00804 (0.0178)	- (0.00537)	-0.0110 (0.00721)	-0.00692 (0.00710)
TRADCOST	0.00716 (0.00608)	-0.0146 (0.00999)	-0.00843 (0.00606)	-0.00361 (0.00784)	0.00692 (0.0229)	0.00503 (0.0112)	-0.00240 (0.00829)	0.0177 (0.0285)	0.00669 (0.0179)	0.00841 (0.0108)	0.0119 (0.0144)	-0.00430 (0.00786)
LLABORPROC	0.210 (0.362)	0.530 (0.381)	0.160 (0.247)	0.113 (0.249)	0.356 (1.008)	0.316 (0.485)	0.650 (0.406)	-0.540 (0.387)	2.037 (1.462)	0.798 (0.614)	0.157 (0.633)	-0.214 (0.317)

LRATIO KL	0.112 (0.0983)	0.104 (0.0818)	0.101 (0.0983)	0.179 (0.112)	0.438 (0.381)	0.194** (0.0835)	0.00446 (0.0762)	0.545*** (0.131)	0.150 (0.148)	0.266* (0.139)	0.230* (0.119)	0.182 (0.117)
Log Total Services Exp		0.235** (0.104)										
Log Transport Export			0.0787*** (0.0290)									
Log Travel Export				0.141** (0.0662)								
Log Construction Exp					0.00707 (0.0410)							
Log Insurance Export						0.0187 (0.0118)						
Log Finance Export							0.00874 (0.0532)					
Log Licence Export								0.00222 (0.0148)				
Log ICT Export									0.00194 (0.0288)			
Log Business Services Exp										0.0356 (0.0668)		
Log Creative services Export											0.000187 (0.00124)	
Log Tourism												0.226* (0.136)
Constant	-10.00** (4.993)	-6.738 (6.162)	-2.863 (3.638)	-5.422 (4.019)	-29.98** (13.08)	-11.98 (8.067)	-11.88** (5.482)	-11.99** (5.617)	-34.42* (19.47)	-20.32* (10.68)	-11.32 (8.801)	-2.010 (3.514)
Time effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	374	368	351	351	182	321	275	200	318	326	236	322
Number of countries, n	29	29	28	28	22	28	24	22	28	29	25	27
Nb. of instruments, i	21	24	26	26	22	24	24	21	21	26	23	25
Instruments ratio, n/i	1.38	1.21	1.08	1.08	1.00	1.17	1.00	1.05	1.33	1.12	1.09	1.08
AR1 p-value	0.000147	8.14e-05	0.000150	0.00158	0.310	0.00271	0.000256	0.934	0.000933	0.00936	0.0114	0.00157
AR2 p-value	0.0719	0.343	0.308	0.606	0.564	0.0745	0.452	0.132	0.302	0.254	0.982	0.246

Sargan p-value	0.192	0.489	0.637	0.489	6.01e-07	5.01e-06	0.499	0.415	0.0476	0.00931	0.312	0.358
Hansen p-value	0.315	0.690	0.696	0.389	0.124	0.100	0.516	0.797	0.211	0.257	0.424	0.516

Note: Numbers in parentheses represent robust standard errors of estimated coefficients;

*, **, *** represent significance at 10%, 5%, and 1% respectively

Source: Authors

Table 7: Effects of services exports on SSA counties backward (DVA) integration in GVC

VARIABLE S	2SLS-Regression, dependent variable : DVA											
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
L.LDVA	0.346 (0.290)	1.046*** (0.101)	1.211*** (0.246)	0.533*** (0.191)	-0.172 (0.535)	0.703*** (0.181)	0.556*** (0.174)	0.460 (0.330)	1.232*** (0.245)	1.013*** (0.111)	0.521* (0.297)	0.964*** (0.119)
CORRUPTION	-0.320 (0.212)	0.0991* (0.0558)	0.163 (0.132)	-0.323** (0.144)	-0.626** (0.287)	-0.0147 (0.101)	-0.241 (0.159)	-0.114 (0.145)	0.168 (0.149)	0.0382 (0.0525)	0.0995 (0.123)	-0.188 (0.147)
HHI	0.126 (0.574)	-0.0150 (0.291)	0.269 (0.353)	1.485** (0.675)	-0.556 (0.581)	0.394 (0.315)	-0.308 (0.269)	0.0431 (0.268)	0.218 (0.272)	0.0183 (0.0616)	0.209 (0.372)	-0.176* (0.0960)
HC	0.0453 (0.198)	-0.1000 (0.0690)	-0.0708 (0.0685)	0.211 (0.131)	-0.0925 (0.289)	-0.0548 (0.200)	0.183 (0.149)	-0.220 (0.263)	0.0625 (0.0548)	-0.0178 (0.0346)	0.185 (0.161)	-0.171 (0.187)
NATRESOURCES	0.00944* (0.00530)	0.00791** (0.00379)	0.00184 (0.00540)	0.000657 (0.00698)	-0.00584 (0.0113)	0.00309 (0.00515)	0.00448 (0.00686)	-0.000408 (0.00658)	0.00473** (0.00225)	0.00492*** (0.00155)	0.00198 (0.00774)	0.00751 (0.00603)
CREDITPRIV	0.0106* (0.00551)	-0.00499 (0.00322)	-0.00424 (0.00348)	0.0149*** (0.00558)	0.0122** (0.00621)	0.00698* (0.00416)	0.00832** (0.00359)	0.00627 (0.00403)	-0.00540 (0.00329)	-0.00151 (0.00179)	-1.88e-05 (0.00342)	-0.00131 (0.00199)
LPOP	0.655** (0.328)	-0.136 (0.116)	-0.216 (0.233)	0.382** (0.193)	1.433** (0.618)	0.159 (0.230)	0.302 (0.198)	0.612 (0.416)	-0.295 (0.279)	-0.0233 (0.123)	0.561 (0.359)	-0.137 (0.157)
LGDPCA	0.647 (0.435)	-0.180 (0.164)	-0.235 (0.234)	-0.0952 (0.389)	1.205** (0.576)	-0.707 (0.665)	-0.285 (0.461)	0.669 (0.669)	-0.371 (0.336)	-0.0521 (0.0987)	0.687 (0.615)	0.107 (0.216)
FDI	0.000551 (0.00306)	-0.00324 (0.00342)	-0.00459 (0.00750)	-0.00516 (0.0176)	0.0103 (0.0159)	-0.00433 (0.00359)	-0.00319 (0.00890)	-0.00558 (0.0106)	-0.000283 (0.00682)	-0.00356** (0.00150)	-0.000988 (0.00614)	-0.00890 (0.00859)
INTERNET USER	-0.00271 (0.00241)	0.00125 (0.00126)	0.00167 (0.00128)	-0.00270 (0.00200)	-0.00320 (0.00424)	0.00435 (0.00454)	-0.00270 (0.00265)	-0.00219 (0.00280)	-0.000477 (0.00103)	-0.000172 (0.000697)	-0.00179 (0.00284)	-0.00390 (0.00259)
MANUFVA	0.0111 (0.0112)	-0.00366 (0.00454)	-0.00206 (0.00693)	0.0241*** (0.00856)	0.00156 (0.0145)	-0.00203 (0.0136)	0.00927 (0.0113)	-0.00521 (0.0107)	-0.00104 (0.00359)	-0.00107 (0.00219)	0.00420 (0.0138)	-0.0155 (0.0124)

OPENESS	0.000627	0.00256	0.00318*	-0.000588	0.0111	0.000187	-0.00631*	0.00666*	-0.000538	0.000815	0.00665** *	0.00131
	(0.00371)	(0.00204)	(0.00181)	(0.00268)	(0.00844)	(0.00464)	(0.00379)	(0.00390)	(0.00158)	(0.000943)	(0.00225)	(0.00127)
GFCF	-0.00638	-0.00648	-0.00407	-0.00587	-0.0266**	-0.00630	-0.00202	-0.0298	-0.00100	-0.00367	-0.0197**	-0.00767
	(0.00799)	(0.00426)	(0.00460)	(0.00698)	(0.0135)	(0.00864)	(0.00597)	(0.0186)	(0.00450)	(0.00317)	(0.00824)	(0.00508)
TRADCOS T	0.00206	0.00183	0.00236	-0.00273	0.0171	0.00402	0.00184	0.0117	-0.00219	-0.00145	0.00464	0.00353
	(0.00900)	(0.00390)	(0.00380)	(0.00624)	(0.0254)	(0.0149)	(0.0102)	(0.0165)	(0.00420)	(0.00323)	(0.0126)	(0.00306)
LLABORP ROC	0.00319	0.0679	0.0197	0.274	-0.0709	0.686	0.712*	-0.230	0.0786	0.0774	-0.307	-0.186
	(0.280)	(0.0939)	(0.144)	(0.315)	(0.370)	(0.523)	(0.433)	(0.474)	(0.0948)	(0.0620)	(0.437)	(0.190)
LRATIO KL	0.174	-0.0356	-0.107	0.113	0.463*	0.0948	0.0447	0.272	-0.0598	-0.0569	0.198	0.00530
	(0.156)	(0.0529)	(0.0986)	(0.112)	(0.263)	(0.0921)	(0.129)	(0.206)	(0.0527)	(0.0369)	(0.162)	(0.0637)
Log Total Services Exp		0.147** (0.0618)										
Log Transport Export			0.0381* (0.0229)									
Log Travel Export				0.0780* (0.0456)								
Log Constructio n Exp					0.0500 (0.0653)							
Log Insurance Export						0.153* (0.0864)						
Log Finance Export							0.0134 (0.0273)					
Log Licence Export								0.0384 (0.0705)				
Log ICT Export									0.0774* (0.0431)			
Log Business Services Exp										0.0236** (0.0110)		

Log Creative services Export Log Tourism											0.0102	
											(0.0280)	0.318*
Constant	-8.582 (5.494)	1.082 (1.726)	2.843 (3.820)	-8.096* (4.889)	-19.18* (9.820)	-9.863 (6.537)	-12.97** (5.710)	-4.447 (5.315)	2.942 (4.013)	-0.494 (2.194)	-2.994 (5.020)	2.334 (2.802)
Time effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	374	368	351	351	182	321	275	200	318	326	186	322
Number of countries, n	29	29	28	28	22	28	24	22	28	29	20	27
Nb. of instruments, i	25	26	25	26	22	26	22	20	26	24	20	27
Instruments ratio, n/i	1.16	1.12	1.12	1.08	1.00	1.08	1.09	1.10	1.08	1.21	1.00	1.00
AR1 p-value	0.0152	0.000326	0.00112	0.00238	0.362	0.00541	0.00136	0.0283	0.00942	0.00101	0.0535	0.00227
AR2 p-value	0.136	0.816	0.829	0.204	0.128	0.868	0.232	0.495	0.942	0.709	0.306	0.871
Sargan p-value	0.000880	0.735	0.586	0.810	0.000169	0.0909	0.0263	0.0321	0.301	0.765	0.101	0.398
Hansen p-value	0.136	0.634	0.448	0.930	0.469	0.338	0.184	0.181	0.633	0.738	0.224	0.210

Note: Numbers in parentheses represent robust standard errors of estimated coefficients;

*, **, *** represent significance at 10%, 5%, and 1% respectively

Sources: Authors

Table 8: Effects of services export on SSA countries forward integration(FVA)

Variables	2SLS-Regression, Dependent variable : forward integration (FVA)											
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
L.LFVA	1.450*** (0.505)	0.968*** (0.216)	0.877*** (0.152)	0.889*** (0.151)	0.477** (0.222)	1.181*** (0.272)	0.667** (0.281)	0.635* (0.324)	1.043*** (0.245)	1.071*** (0.344)	0.190 (0.301)	1.074*** (0.369)
CORRUPTION	0.300* (0.164)	0.130 (0.0965)	0.0486 (0.0650)	-0.169* (0.0996)	-0.101* (0.0587)	0.181 (0.132)	0.0209 (0.100)	-0.0770 (0.120)	0.0811 (0.0872)	0.127 (0.131)	-0.00118 (0.0788)	0.0270 (0.181)
HHI	0.865 (1.558)	-0.184 (0.424)	-0.803** (0.406)	-0.249 (0.369)	-0.559 (0.416)	0.415 (0.393)	-0.384 (0.379)	-0.540 (0.385)	0.105 (0.309)	-0.324 (0.518)	-0.618** (0.280)	0.514 (0.655)

HC	0.0703 (0.143)	-0.136 (0.102)	-0.137 (0.0868)	0.120 (0.0829)	0.0851 (0.168)	-0.279 (0.195)	0.0168 (0.129)	-0.0560 (0.183)	0.0697 (0.0601)	-0.0829 (0.0955)	0.524*** (0.188)	-0.0446 (0.212)
NATRESOURCE	0.00263 (0.00713)	0.00935** (0.00416)	0.00878** (0.00404)	0.0203* (0.0120)	0.00604 (0.00717)	0.00430 (0.00362)	0.00978 (0.00977)	0.000298 (0.00633)	0.00685*** (0.00236)	0.00996* (0.00514)	0.00638 (0.00526)	-0.00877 (0.00892)
CREDITPRIV	-0.0112* (0.00627)	-0.00616 (0.00511)	-0.00261 (0.00352)	-0.00139 (0.00533)	0.00823** (0.00356)	-0.00282 (0.00548)	0.000609 (0.00508)	0.00354 (0.00539)	-0.00348 (0.00399)	-0.00407 (0.00550)	0.00575* (0.00322)	-0.00274 (0.00765)
LPOP	-0.884 (0.643)	-0.0297 (0.206)	0.145 (0.134)	-0.137 (0.215)	0.454** (0.192)	-0.229 (0.255)	0.211 (0.221)	0.179 (0.321)	-0.0876 (0.205)	-0.0418 (0.302)	0.756*** (0.286)	0.0216 (0.296)
LGDPCA	-1.634 (1.248)	-0.178 (0.258)	0.205 (0.166)	-0.385 (0.456)	0.304 (0.332)	-0.522 (0.459)	0.0947 (0.419)	0.195 (0.355)	-0.216 (0.245)	-0.187 (0.511)	1.061** (0.535)	-0.0972 (0.658)
FDI	- 0.00840** (0.00355)	-0.000742 (0.00722)	-0.0188 (0.0195)	-0.0172 (0.0221)	-0.0145 (0.0102)	-0.00439 (0.00371)	-0.00981 (0.0118)	-0.0163* (0.00836)	0.000309 (0.00605)	-0.0220 (0.0158)	-0.0131 (0.00878)	0.00338 (0.0204)
INTERNETUSER	0.000497 (0.00213)	0.00324*** (0.00110)	-0.00133 (0.00134)	-0.00256 (0.00276)	-0.00159 (0.00191)	0.00181 (0.00341)	- (0.00158)	-0.00245 (0.00226)	- (0.000874)	0.000554 (0.00134)	-0.00565* (0.00295)	-0.00183 (0.00404)
MANUFVA	-0.0104 (0.00703)	-0.00738 (0.00647)	-0.00935* (0.00482)	0.0125 (0.00868)	0.00545 (0.00504)	-0.0114 (0.00988)	0.00185 (0.00961)	0.00742 (0.00827)	0.00115 (0.00345)	-0.00962 (0.00673)	0.0256** (0.0108)	-0.0134 (0.0156)
OPENESS	-0.00356 (0.00642)	0.00847*** (0.00194)	0.00674*** (0.00254)	-0.00408 (0.00540)	0.00571** (0.00271)	0.000576 (0.00241)	0.00353* (0.00212)	0.00310 (0.00450)	0.00125 (0.00199)	0.00305 (0.00481)	0.00711*** (0.00259)	0.0112*** (0.00362)
GFCF	-0.0101* (0.00532)	-0.0134*** (0.00458)	-0.00448 (0.00507)	0.00585 (0.00871)	-0.0127** (0.00615)	- (0.00509)	0.00127 (0.00488)	0.00444 (0.0136)	-0.00136 (0.00249)	0.00119 (0.00839)	-0.00914 (0.00578)	-0.0235** (0.00935)
TRADCOST	0.00553 (0.0112)	0.00993 (0.00670)	0.00157 (0.00592)	- (0.00776)	-0.00731 (0.0109)	0.000672 (0.00658)	-0.0139 (0.00933)	-0.00983 (0.00819)	0.00237 (0.00648)	0.00452 (0.00765)	-0.0457** (0.0183)	0.0153 (0.0122)
LLABORPROC	0.569 (0.461)	0.0385 (0.130)	-0.0255 (0.152)	0.273 (0.249)	0.0948 (0.329)	0.180 (0.307)	0.0524 (0.340)	0.0426 (0.229)	0.0736 (0.106)	0.174 (0.282)	-0.483* (0.290)	-0.0629 (0.492)
LRATIO KL	-0.127 (0.165)	0.0279 (0.0680)	-0.00147 (0.0618)	0.0415 (0.0737)	0.187** (0.0952)	-0.0192 (0.105)	0.139* (0.0826)	0.0628 (0.193)	0.0342 (0.109)	-0.0993 (0.149)	0.291* (0.150)	-0.0403 (0.174)
Trade in services (% GDP)	0.631** (0.306)											
Log Total Services Exp		0.195*** (0.0590)										
Log Transport Export			0.0308* (0.0172)									
Log Travel Export				0.207* (0.123)								

Log Construction Exp					0.00948 (0.0308)							
Log Insurance Export						0.130* (0.0707)						
Log Finance Export							0.0942* (0.0551)					
Log Licence Export								0.0905** (0.0423)				
Log ICT Export									0.107*** (0.0364)			
Log Business Services Exp										0.0326* (0.0181)		
Log Creative services Export											-0.0162 (0.0240)	
Log Tourism												0.117 (0.166)
Constant	5.000 (4.234)	-0.0811 (3.523)	-1.419 (3.113)	-1.226 (3.051)	-7.375 (6.550)	1.896 (4.988)	-2.789 (5.408)	-1.287 (5.080)	0.0262 (2.725)	-1.509 (2.869)	-3.154 (2.357)	-0.493 (5.929)
Time effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	374	368	351	351	182	321	275	200	318	326	186	322
Number of countries, n	29	29	28	28	22	28	24	22	28	29	20	27
Nb. of instruments, i	26	26	26	23	20	23	23	21	27	26	20	25
Instruments ratio, n/i	1.12	1.12	1.08	1.22	1.10	1.22	1.04	1.05	1.04	1.12	1.00	1.08
AR1 p-value	0.0156	0.00682	0.00185	0.00661	0.0112	0.0363	0.00601	0.0201	0.00609	0.0243	0.0469	0.0149
AR2 p-value	0.296	0.100	0.116	0.146	0.483	0.136	0.0280	0.406	0.283	0.235	0.0805	0.125
Sargan p-value	0.143	0.00248	0.0330	0.307	0.00869	0.751	0.141	0.457	0.0785	0.784	0.344	0.0197
Hansen p-value	0.268	0.685	0.438	0.262	0.111	0.735	0.155	0.291	0.312	0.585	0.506	0.184

Note: Numbers in parentheses represent robust standard errors of estimated coefficients; *, **, *** represent significance at 10%, 5%, and 1% respectively

Source: Authors

Table 9: Effects of services imports on SSA countries participation in GVC

Variables	Two-step system GMM regression, dependent variable GVC										
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
L.LGVC	0.509*** (0.178)	0.834** (0.385)	0.744*** (0.151)	0.449* (0.237)	0.407* (0.228)	0.748*** (0.150)	0.898*** (0.159)	0.472*** (0.128)	0.627*** (0.225)	0.411* (0.236)	1.017*** (0.0967)
CORRUPTION	-0.167 (0.102)	-0.0379 (0.219)	-0.0893 (0.197)	-0.394* (0.210)	-0.198 (0.265)	-0.141 (0.150)	0.0552 (0.0842)	-0.261*** (0.0965)	-0.110 (0.149)	-0.162 (0.128)	0.160** (0.0695)
HHI	0.478 (0.792)	-0.478* (0.255)	1.057 (0.773)	0.0302 (0.327)	-1.243 (0.811)	0.836** (0.390)	-0.229 (0.318)	-0.369 (0.227)	0.665 (0.711)	0.103 (0.436)	-0.336** (0.156)
HC	0.0600 (0.130)	0.317* (0.179)	0.140 (0.253)	-0.0986 (0.388)	-0.183 (0.312)	0.0101 (0.177)	0.0379 (0.101)	0.0976 (0.114)	0.453* (0.268)	0.140 (0.211)	0.0304 (0.0535)
NATRESOURCE	0.00148 (0.0070)	0.00132 (0.00788)	-0.0119 (0.0115)	-0.00256 (0.0108)	0.00353 (0.00791)	-0.0126 (0.00973)	0.00702* (0.00413)	0.0202*** (0.00403)	0.0120 (0.00759)	0.00200 (0.00765)	0.00827*** (0.00205)
CREDITPRIV	0.0093* (0.0053)	-0.00240 (0.00773)	0.00809 (0.00512)	0.0124* (0.00721)	0.00198 (0.00620)	0.00855* (0.00503)	-0.00174 (0.00271)	0.00483* (0.00261)	0.00565 (0.00463)	0.0125** (0.00537)	-0.00515** (0.00236)
LPOP	0.53*** (0.183)	-0.571 (0.563)	-0.267 (0.357)	0.371 (0.255)	0.634*** (0.239)	0.249 (0.172)	0.106 (0.148)	0.355** (0.141)	0.135 (0.357)	0.495* (0.266)	-0.00616 (0.0980)
LGDP	0.190 (0.453)	-1.076 (0.702)	-1.317* (0.758)	-0.490 (0.386)	0.490 (0.586)	-0.684* (0.414)	0.0717 (0.211)	0.464* (0.252)	-0.108 (0.874)	-0.203 (0.412)	-0.0273 (0.158)
FDI	0.00263 (0.0055)	-0.00458 (0.00950)	0.00321 (0.00330)	0.00413 (0.00310)	0.00691 (0.0119)	-0.00147 (0.00332)	-0.00689 (0.00519)	0.00279 (0.00653)	0.0130 (0.00997)	-0.0102 (0.00793)	-0.00685 (0.00566)
INTERNETUSER	-0.00024 (0.0014)	- (0.00539*) (0.00289)	-0.00504 (0.00423)	-0.00516 (0.00464)	-0.00184 (0.00478)	-0.00366 (0.00312)	-0.00191 (0.00183)	-0.00280 (0.00201)	-0.00528 (0.00362)	-0.00182 (0.00300)	- (0.00296***) (0.000986)
MANUFVA	0.0112 (0.0094)	-0.00383 (0.0137)	-0.0334* (0.0181)	-0.0641* (0.0385)	-0.0430 (0.0538)	-0.0500** (0.0219)	-0.00265 (0.0171)	0.0167** (0.00832)	0.0211 (0.0319)	-0.0257 (0.0347)	-0.0146* (0.00818)
OPENESS	0.0066*** (0.0025)	-0.00857 (0.00709)	-6.58e-05 (0.00454)	0.00337 (0.00361)	0.00883* (0.00507)	0.00294 (0.00322)	0.00319* (0.00171)	-0.00440 (0.00295)	-0.00320 (0.00464)	0.00428 (0.00513)	0.00181* (0.000960)
GFCF	-0.012** (0.0052)	-0.00765 (0.00539)	-0.0145* (0.00851)	-0.0236* (0.0139)	- (0.0131)	-0.0195*** (0.00704)	-0.00725 (0.00673)	-0.00183 (0.00515)	-0.0105 (0.00649)	- (0.00709)	-0.0113** (0.00473)
TRADCOST	0.00716 (0.0061)	-0.0110 (0.0109)	- (0.0131)	0.00452 (0.0122)	0.0110 (0.0173)	0.00934 (0.0162)	- (0.00959)	-0.00584 (0.00662)	- (0.0132)	0.00809 (0.0195)	-0.00160 (0.00682)
LLABORPROC	0.210 (0.362)	0.499** (0.241)	0.836* (0.470)	0.743* (0.398)	0.120 (0.629)	0.720** (0.348)	0.0285 (0.180)	0.0914 (0.257)	0.0382 (0.492)	0.492 (0.348)	0.0251 (0.0878)

LRATIO KL	0.112 (0.0983)	0.118 (0.166)	0.249 (0.209)	0.372 (0.285)	0.364* (0.218)	0.239* (0.145)	0.0101 (0.0809)	0.115 (0.0846)	0.205 (0.131)	0.198 (0.151)	0.0142 (0.0348)
Log Total services Imp		0.776** (0.355)									
Log Transport Import			0.582** (0.262)								
Log Travel Import				0.195* (0.118)							
Log Construction Import					0.0426 (0.0303)						
Log Insurance Import						0.000634*** (0.000230)					
Log Finance Import							0.0288* (0.0152)				
Log Licence Import								0.000314*** (7.52e-05)			
Log ICT Import									0.255* (0.135)		
Log Business services Import										0.128** (0.0534)	
Log Creative services Import											0.00567 (0.0203)
Constant	-10.0** (4.993)	2.193 (7.409)	-7.327 (5.286)	-15.53* (7.998)	-11.02 (9.860)	-13.82** (5.551)	-1.535 (3.293)	-5.316 (3.892)	-1.324 (5.296)	-12.49* (6.701)	0.0217 (1.434)
Time effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	374	370	365	356	269	354	305	291	330	348	228
Number of countries, n	29	29	29	29	24	29	26	27	28	29	22
Nb. of instruments, i	21	24	24	27	24	24	26	21	25	23	22
Instruments ratio, n/i	1.38	1.21	1.21	1.07	1.00	1.21	1.00	1.29	1.12	1.26	1.00
AR1 p-value	0.00015	0.0123	0.000915	0.0178	0.0173	0.00161	0.000852	0.000455	0.00679	0.0250	0.00297
AR2 p-value	0.0719	0.202	0.626	0.152	0.293	0.222	0.575	0.689	0.307	0.850	0.446
Sargan p-value	0.192	0.0231	0.0243	0.0337	0.0143	0.343	0.139	0.249	0.341	0.00291	0.665
Hansen p-value	0.315	0.232	0.268	0.387	0.307	0.630	0.187	0.536	0.703	0.329	0.240

*Note: The numbers in parentheses represent the robust standard errors of the estimated coefficients; *, **, ***represent the significances at 10%, 5% and 1%.

Source: Authors' calculations

Table 10: Effects of services imports on SSA countries backward integration (DVA)

VARIABLES	Two-step variable:DVA	system	GMM	regression,	dependent					
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
L.LDVA	0.932*** (0.161)	0.932*** (0.115)	0.977*** (0.128)	-0.444 (0.297)	1.072*** (0.134)	1.091*** (0.124)	1.007*** (0.176)	0.957*** (0.0751)	0.869*** (0.103)	0.349 (0.311)
CORRUPTION	0.0325 (0.113)	0.0324 (0.0783)	-0.00764 (0.0636)	-0.707*** (0.225)	0.0761 (0.0597)	0.104 (0.0765)	0.0341 (0.0664)	0.0420 (0.0474)	0.0544 (0.0492)	-0.197 (0.234)
HHI	-0.872 (0.630)	0.384 (0.410)	0.0514 (0.164)	-0.939** (0.370)	0.379 (0.301)	-0.0725 (0.104)	-0.0552 (0.101)	-0.110 (0.122)	-0.263*** (0.0959)	-0.483 (0.485)
HC	0.244* (0.126)	0.149 (0.0976)	-0.0794 (0.112)	-0.0975 (0.211)	0.0238 (0.0700)	0.0564* (0.0327)	0.0340 (0.0717)	0.162* (0.0881)	0.0434 (0.0641)	0.0110 (0.245)
NATRESOURCE	0.00817 (0.00630)	0.00101 (0.00496)	0.000845 (0.00302)	-0.00691 (0.0122)	0.000142 (0.00364)	0.00670*** (0.00239)	0.00929*** (0.00359)	0.00675** (0.00278)	0.00568*** (0.00204)	0.00659 (0.00832)
CREDITPRIV	-0.00492 (0.00366)	-0.000549 (0.00298)	-0.00138 (0.00254)	0.0149*** (0.00430)	-0.000823 (0.00200)	-0.00336* (0.00201)	-0.00145 (0.00220)	-0.00299 (0.00207)	0.000120 (0.00161)	0.00443 (0.00521)
LPOP	-0.581** (0.230)	-0.162 (0.140)	-0.0107 (0.165)	1.786*** (0.370)	-0.104 (0.158)	-0.145 (0.143)	-0.0756 (0.214)	-0.0357 (0.106)	0.0372 (0.109)	0.692** (0.324)
LGDPCA	-0.855** (0.400)	-0.354* (0.198)	0.0374 (0.180)	1.602** (0.630)	-0.183 (0.197)	-0.220 (0.198)	-0.0921 (0.403)	-0.0842 (0.187)	-0.149 (0.167)	0.623 (0.593)
FDI	-0.00783** (0.00351)	-0.000460 (0.00201)	-0.000431 (0.00172)	-0.0149 (0.0114)	-0.00343*** (0.00112)	-0.00132 (0.00351)	-0.00510 (0.00344)	-0.00171 (0.00532)	-0.00819*** (0.00216)	-0.00765 (0.0117)
INTERNETUSER	-0.00439* (0.00261)	-0.00182 (0.00187)	0.000411 (0.00124)	-0.00300 (0.00262)	1.30e-05 (0.000901)	0.000271 (0.000749)	-0.000274 (0.000719)	-0.00193 (0.00183)	-0.000842 (0.000991)	-0.00199 (0.00285)
MANUFVA	-0.00556 (0.00693)	0.00792 (0.00603)	-0.00712 (0.00481)	-0.00519 (0.0134)	0.00407 (0.00351)	-0.00333 (0.00373)	-0.000197 (0.00366)	0.00430 (0.00338)	-0.00443* (0.00234)	-0.00549 (0.0162)
OPENESS	-0.0127** (0.00513)	-0.000440 (0.00439)	0.00483*** (0.00151)	0.0146*** (0.00508)	0.000820 (0.00181)	-0.000292 (0.00107)	-0.000187 (0.00169)	0.000892 (0.00115)	0.000333 (0.00101)	0.00794*** (0.00215)
GFCF	-0.00157 (0.00553)	-0.00654 (0.00442)	-0.00958** (0.00422)	- (0.0110)	-0.00299 (0.00407)	0.000232 (0.00336)	0.00128 (0.00825)	-0.00652 (0.00435)	-0.00789** (0.00316)	-0.0233** (0.0107)
TRADCOST	-0.0167 (0.0111)	-0.00721 (0.00834)	0.00202 (0.00532)	0.0140 (0.0188)	-0.00479 (0.00457)	0.000822 (0.00357)	0.00100 (0.00451)	0.00277 (0.00494)	0.00250 (0.00416)	0.0124 (0.0120)
LLABORPROC	0.412* (0.226)	0.169 (0.150)	-0.0629 (0.168)	-0.242 (0.534)	0.0515 (0.116)	0.130 (0.0923)	0.138 (0.215)	0.0484 (0.139)	0.157 (0.111)	0.0815 (0.532)

LRATIO KL	0.0358 (0.0879)	0.00413 (0.0713)	-0.0109 (0.0540)	0.545*** (0.179)	-0.0640 (0.0574)	-0.0797** (0.0384)	-0.132 (0.0861)	-0.0230 (0.0504)	-0.0163 (0.0358)	0.138 (0.135)
Log Total services Imp	0.626*** (0.157)									
Log Transport Import		0.264*** (0.0958)								
Log Travel Import			0.102* (0.0540)							
Log Construction Import				0.0534* (0.0312)						
Log Insurance Import					0.0512* (0.0299)					
Log Finance Import						0.0479* (0.0254)				
Log Licence Import							0.0512* (0.0300)			
Log ICT Import								0.126* (0.0661)		
Log Business services Import									0.126*** (0.0386)	
Log Creative services Import										0.0170 (0.0321)
Constante	3.847 (4.153)	0.555 (3.300)	1.327 (3.803)	-21.00** (8.635)	1.254 (2.818)	0.612 (1.666)	0 (0)	0.369 (2.287)	-1.380 (2.170)	-9.875 (9.044)
Time effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	370	365	356	182	348	305	273	330	348	228
Number of countries, n	29	29	29	22	29	26	27	28	29	22
Nb. of instruments, i	28	26	26	21	26	24	28	27	24	21
Instruments ratio, n/i	1.04	1.12	1.12	1.05	1.12	1.08	0.96	1.04	1.21	1.05
AR1 p-value	0.00130	0.00176	0.000687	0.784	0.000732	0.00236	0.0281	0.00347	0.00157	0.0157
AR2 p-value	0.273	0.530	0.705	0.877	0.784	0.830	0.986	0.674	0.651	0.971
Sargan p-value	0.332	0.0489	0.447	0.483	0.643	0.649	0.244	0.0221	0.576	0.00688
Hansen p-value	0.785	0.302	0.562	0.952	0.839	0.469	0.848	0.227	0.400	0.148

*Note: The numbers in parentheses represent the robust standard errors of the estimated coefficients; *, **, ***represent the significances at 10%, 5% and 1%.

Source: Authors' calculations

Table 11: Effects services import on SSA counties forward integration (FVA)

VARIABLES	Two-step system GMM regression, dependent variable: FVA									
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
L.LFVA	0.824*** (0.281)	0.672*** (0.256)	1.166*** (0.179)	0.690** (0.295)	0.937*** (0.226)	0.919*** (0.283)	0.892*** (0.132)	0.740*** (0.192)	0.931*** (0.248)	0.334* (0.186)
CORRUPTION	-0.0344 (0.0993)	0.0192 (0.125)	0.0603 (0.115)	0.0524 (0.194)	0.0178 (0.114)	0.0221 (0.0903)	0.0566 (0.0657)	0.0529 (0.0766)	0.0639 (0.113)	-0.131 (0.0965)
HHI	-0.885 (0.746)	-0.444 (0.496)	0.248 (0.389)	-0.349 (0.824)	-0.0606 (0.729)	-0.237 (0.311)	0.474 (0.418)	-0.521* (0.283)	-0.530 (0.727)	-0.966*** (0.274)
HC	0.319* (0.187)	0.0990 (0.201)	-0.0496 (0.0940)	0.0686 (0.178)	0.0935 (0.0983)	0.156** (0.0749)	0.137 (0.0926)	0.333* (0.175)	0.0682 (0.0916)	0.149 (0.0918)
NATRESOURCE	0.00533 (0.00686)	0.00195 (0.00642)	-0.00324 (0.00407)	-0.000893 (0.00910)	0.00491 (0.00546)	0.0140** (0.00675)	0.00844** (0.00364)	0.0107** (0.00434)	0.00662* (0.00385)	0.00519 (0.00499)
CREDITPRIV	-0.00262 (0.00605)	0.00168 (0.00713)	-0.00544 (0.00373)	0.00187 (0.00436)	-0.000984 (0.00273)	0.00249 (0.00543)	0.00434 (0.00386)	-0.00200 (0.00412)	-0.00108 (0.00240)	0.00606** (0.00259)
LPOP	-0.584 (0.553)	-0.0928 (0.400)	-0.153 (0.150)	0.375* (0.211)	-0.0400 (0.189)	0.0450 (0.224)	0.0355 (0.123)	0.0870 (0.212)	-0.0720 (0.259)	0.581*** (0.168)
LGDPCA	-0.868 (0.746)	-0.201 (0.603)	-0.165 (0.229)	0.215 (0.688)	-0.0351 (0.305)	-1.327* (0.806)	-0.173 (0.214)	0.139 (0.329)	-0.0744 (0.463)	0.789* (0.431)
FDI	-0.00366 (0.00741)	0.00760 (0.00926)	0.00440 (0.0112)	-0.0109 (0.0118)	-0.00148 (0.00181)	-0.0146 (0.0135)	0.00335 (0.00755)	-0.000219 (0.00922)	-0.00410** (0.00204)	-0.0192** (0.00811)
INTERNETUSER	-0.00620** (0.00311)	-0.00188 (0.00216)	9.36e-05 (0.00199)	0.00135 (0.00206)	-0.00185 (0.00130)	-0.00159 (0.00173)	-0.00147 (0.00111)	-0.00406* (0.00210)	-0.00263** (0.00122)	-0.00433* (0.00228)
MANUFVA	-0.000498 (0.00591)	0.0107 (0.00966)	-0.0130* (0.00701)	0.000965 (0.00917)	0.00864** (0.00436)	-0.0150*** (0.00243)	0.0105 (0.00817)	0.00907 (0.00579)	-0.00191 (0.00457)	0.0124** (0.00520)
OPENESS	-0.0116 (0.0102)	0.00374 (0.00367)	0.00725*** (0.00199)	0.0129*** (0.00490)	-0.00160 (0.00196)	0.00128 (0.00274)	0.000174 (0.00235)	0.00235 (0.00206)	-0.00348 (0.00474)	0.00549*** (0.00190)
GFCF	-0.00129 (0.00521)	-0.00271 (0.00479)	-0.0144*** (0.00406)	-0.0142** (0.00569)	0.000186 (0.00422)	0.00875 (0.00658)	-0.00308 (0.00590)	-0.00851* (0.00455)	-0.00255 (0.00532)	-0.00727** (0.00323)
TRADCOST	-0.0227** (0.0115)	-0.00521 (0.00866)	0.0125 (0.00909)	0.000719 (0.0303)	-0.0106* (0.00543)	0.0121 (0.00832)	0.00103 (0.00662)	-0.00448 (0.0112)	-0.00864* (0.00477)	-0.0313*** (0.0104)
LLABORPROC	0.304 (0.226)	-0.0459 (0.288)	-0.113 (0.168)	-0.179 (0.281)	0.00774 (0.187)	1.355 (0.874)	0.143 (0.167)	-0.149 (0.181)	0.0103 (0.157)	-0.264 (0.228)
LRATIO KL	0.152** (0.0744)	0.217** (0.100)	-0.0126 (0.0926)	0.196*** (0.0691)	-0.000968 (0.0809)	-0.0414 (0.143)	-0.0359 (0.0784)	0.118 (0.101)	0.0130 (0.0730)	0.237*** (0.0804)

Log Total services Imp	0.727** (0.340)									
Log Transport Import		0.454* (0.269)								
Log Travel Import			0.134** (0.0648)							
Log Construction Import				0.00210 (0.0167)						
Log Insurance Import					0.0877* (0.0483)					
Log Finance Import						0.0443*** (0.0139)				
Log Licence Import							0.0504*** (0.0170)			
Log ICT Import								0.195* (0.101)		
Log Business services Import									0.106* (0.0601)	
Log Creative services										0.0149 (0.0150)
Constant	5.407 (7.068)	2.731 (5.669)	3.592 (3.063)	-2.379 (3.854)	1.250 (4.005)	-20.11 (13.83)	-1.430 (2.287)	1.845 (3.450)	2.251 (3.193)	-3.584 (2.848)
Time effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	370	365	356	269	348	305	273	330	348	228
Number of countries, n	29	29	29	24	29	26	27	28	29	22
Nb. of instruments, i	23	25	28	24	25	26	25	23	25	20
Instruments ratio, n/i	0.00560	0.00602	0.000305	0.00789	0.000876	0.00287	0.00186	0.00562	0.00109	0.00215
AR1 p-value	0.264	0.124	0.149	0.415	0.994	0.683	0.529	0.392	0.131	0.173
AR2 p-value	0.769	0.0911	0.0253	0.00222	0.575	0.0477	0.819	0.240	0.650	0.749
Sargan p-value	0.808	0.266	0.416	0.146	0.405	0.211	0.782	0.354	0.743	0.880

*Note: The numbers in parentheses represent the robust standard errors of the estimated coefficients; *, **, ***represent the significances at 10%, 5% and 1%.
Source: Authors' calculations

Finally, imports of business services make a positive contribution to participation in GVC and to backward and forward integration, as the elasticities are significant at 1%, 5% and 10%. Indeed, when imports of business services increase, this generates elasticities of 0.128% for participation in GVC, an elasticity of 0.126% for upstream integration and an elasticity of 0.106% for downstream integration in the GVC of subSaharan countries. Business services are essential at all stages of production and distribution. These services, which more often than not turn into subcontracting services, contribute to growth in business productivity. These results, which not only confirm the findings of [Okah Efogo \(2020\)](#), are also in line with the vision of [Vandermerwe and Rada \(1988\)](#) and [Jiang and Zhang \(2020\)](#). Indeed, [Jiang and Zhang \(2020\)](#) believe that business services that are part of servicisation is an effective way to improve the distribution of labour in global manufacturing, promote the transformation and production efficiency of manufacturing firms, improve the international competitiveness of manufacturing and increase the value added that the firm and the country receive from global value chains. Imports of creative services show positive but insignificant signs.

6. Robustness check of results

In this section, we check the robustness of our results from the estimations of equations 4, 5 and 6. First, we use a 2SLS estimation technique, which is an alternative to the GMM method. Second, we group the main dimensions of trade in services into two subgroups, using the trade in services database of the 6th edition of the Balance of Payments Manual (MBP6). Thirdly, we analyze the sensitivity of our models' parameters.

6.1 Alternative method of estimation of the parameters (instrumental variables 2SLS method)

In order to verify the robustness of our results, we use an estimation technique other than the Generalised Moment Method (GMM) in the system. We extend our basic models, this time using the Two-Stage Least Squares (2SLS) estimation technique. This technique has the advantage of fixing endogeneity issue by using instruments for variables that are likely to be endogenous. It relies on the Sargan/Hansen overidentification test to test the validity of the instruments. Since the literature says little about the instruments that we can refer to correct for endogeneity bias, we therefore use the lagged level variables as instruments.

Therefore, in order to limit possible analysis bias when using data from the combination of the two UNCTAD databases following the editions of the Balance of Payments Manual (BPM5 and BPM6), we only use data on trade in services from BPM6²⁴.

Thus, with the new database, we re-estimated equations (7), (8) and (9) whose results can be founded in tables 12 to 17.

$$\log GV C_{it} = \Phi_{0it} + \Phi_{1it} \log TiS_{it} + \Phi_{2it} Y_{it} + \eta_{1i} + \delta_{1t} + \epsilon_{it} \quad (7)$$

$$\log FV A_{it} = \rho_{0it} + \rho_{1it} \log TiS_{it} + \rho_{2it} Wit + \eta_{1i} + \delta_{1t} + \epsilon_{it} \quad (8)$$

²⁴ The sixth edition of the Balance of Payments Manual (BPM6) presents a wider range of services than those presented in the fifth edition of the Balance of Payments Manual (BPM5). It provides data for the period 2005 - 2019.

$$\log DV A_{it} = \theta_0 i_t + \theta_1 i_t \log T i S i_t + \theta_2 i_t Z i_t + \eta_1 i + \delta_1 t + \epsilon_{it} \quad (9)$$

With $\log GV C_{it}$, $\log FV A_{it}$ and $\log DV A_{it}$ representing, respectively, the logarithms of GVC, FVA and DVA of country i in period t . $\log T i S i_t$ represents the logarithm of the dimensions of trade in services of country i in period t and can be decomposed into several commercial dimensions. Y_{it} , W_{it} and Z_{it} represent sets of control variables. η_{1i} and δ_{1t} capture individual country effects and the time effect, respectively.

The results from the 2SLS estimates and those from estimates using the UNCTAD database (BMP6) from 2005 to 2019 are shown in tables 12 to 20. The results obtained with the 2SLS method show that, from an econometric point of view, our results are valid and are also in line with economic theory. Indeed, the R^2 in practically all the export and import specifications are greater than 50%, which means that all our models are globally significant. Also, Hensen's under-identification tests show that the instruments are valid because the probabilities of Hensen's tests are all greater than 10%.

These results do not only confirm the results obtained previously, but above all the use of the 2SLS method allows us to obtain explanatory variables of interest that become significant when they were not with the GMM estimation method. In fact, for instance tables 12 and 13 show that practically all the dimensions of service exports and import contribute positively to participation in the GVC and are significant, with the exception of exports of transport services. With the 2SLS method, exports of construction services, insurance services, financial services, licensing services, other services and creative economy services have parameters with positive and significant signs, whereas these variables were not significant using the GMM system.

6.2 Merging commercial services into traditional and modern services

One of the main limitations in analysing the induced effects of the main aspects of commercial services is that trade flows (exports and imports) in certain aspects are time-limited for many countries. As a result, our panel is non-cylindrical, with many observations missing. The consequence of such a situation is the impact on the quality of the estimates, which may be biased. While the use of estimators that take account of non-cylindrical panels helps to overcome these limitations, the fact remains that the use of other alternatives to obtain sufficiently available data over the analysis period constitutes a major advance. It is with this in mind that we have taken the step of reclassifying the main types of commercial services into two broad categories. These are traditional services (transport, travel and tourism) and modern services (construction, insurance, finance, licensing, ICT, business

and creative services). We opted to follow [Sahoo and Dash \(2017\)](#)²⁵ classification for two main reasons²⁶ instead of the one adopted by [Eichengreen and Gupta \(2013\)](#) previously.

Tables 18 to 20 show that exports and imports of traditional and modern

services have a positive impact on sub-Saharan countries' participation in upstream, downstream and total global value chains (GVCs) over the two periods of the analysis (1996 - 2019 and 2005 - 2019).

6.3 Analysis of the parameter's sensitivity

The Analysis of the sensitivity of the coefficients of our models in the different specifications and with the different estimation techniques shows two major facts. In fact, table 21 and 22 reveal firstly that the parameters of the models estimated using the 2SLS technique are more consistent than those estimated using the GMM technique. Secondly, imports of services have a more positive effect on the participation of sub-Saharan countries into GVC. This is reflected in the high level of the coefficients associated with the services import variables.

7. Conclusion

The objective in this paper was to assess the effects of the main dimensions of trade in services on the participation of sub-Saharan countries in global value chains. The hypothesis is tested by first analysing the relationship using stylised facts and descriptive statistics, before turning to rigorous empirical analysis. To do this, three models are used, relating the dimensions of exports and imports of services to (1) participation in foreign value added trade (FVA), (2) domestic value added trade (DVA) and (3) overall participation in global value chains (GVCs). The Generalised Moment Method (GMM) is used as the preferred technique for estimating model parameters. The various tests confirm the validity of the results obtained from the different estimates. Total imports of services produce more favourable effects for SSA countries in terms of their participation in MVCs, since a variation of 1% in total imports of services leads to a 0.582% increase in the participation of SSA countries in MVCs, while a variation of 1% in total exports of services leads to a 0.235% increase in their participation in GVCs. The double ordinary least squares (OLS) method is used to check the robustness of the results obtained. The 2SLS method was used to confirm the results obtained with

²⁵ It should be noted that [Eichengreen and Gupta \(2013\)](#) in their classification include financial and insurance services in the category of traditional services. There are two reasons for this classification, according to them, the first being linked to their long history and the second considering that insurance and finance exports are strongly correlated with merchandise exports. In our context, to combine exports of transport, travel and tourism services, we take into account inbound tourism expenditure provided by the World Bank (through the World Development Indicator (WDI)). Another categorisation method we could consider is that proposed by [Katouzian \(1970\)](#) since the 1970s, which proposes a three-level categorisation of services. Category 1, called new services, includes services such as education, clinical and health services, entertainment (hotels, vacation resorts, cinemas, nightclubs and others). He names category 2 in complementary services, comprising banking and financial services, transport, wholesale and retail. Finally, he designates category 3 as old services, comprising services that flourished long before the industrial revolution, namely domestic services. However, we do not use this method because it is not in line with currently recognised international classifications of services, since it takes into account certain services that do not fit into these classifications, namely domestic and other services.

²⁶ The first point is linked to the fact that, taking a long history into account, it's obvious that their production and distribution are currently being revolutionised by information and communication technologies (today referred to as the digital revolution or fin-tech). The second point relates to the fact that finance and insurance are highly skilled and knowledge-intensive sectors.

the GMM method and also with the 2SLS method, certain variables that were not significant became significant. Based on these results, economic policy recommendations are formulated. (1) Sub-Saharan African countries need to develop policies that allow them to use services as strategies to increase their participation in global value chains. (2) SSA countries must step up their industrialisation and economic diversification policies in order to strengthen their backward integration into GVCs. (3) SSA countries should develop mechanisms to target their comparative advantage in international trade in services as a development strategy.

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Table 12: Results of the effects of services exports on GVC participation in SSA (2SLS regression)

VARIABLES	Dependent variable: GVC											
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
OPENNESS	0.000992 (0.00121)	0.00164* (0.000944)	0.00285*** (0.000474)	0.00160 (0.00147)	0.00370*** (0.00126)	0.00235*** (0.000787)	0.00180** (0.000895)	0.00130 (0.00235)	0.0023*** (0.000734)	0.000339 (0.000850)	-0.00508* (0.00270)	0.00213** (0.000872)
CORRUPTION	-0.221*** (0.0482)	-0.231*** (0.0540)	0.0709 (0.0550)	-0.181*** (0.0682)	-0.0903 (0.0617)	-0.0901* (0.0488)	0.0720 (0.0515)	-0.0435 (0.0904)	0.0725* (0.0428)	0.0156 (0.0434)	0.640*** (0.153)	-0.124** (0.0546)
HHI	0.0255 (0.124)	-0.109 (0.127)	0.158 (0.0990)	-0.169 (0.160)	-0.139 (0.158)	0.157 (0.132)	0.178 (0.132)	0.205 (0.221)	0.439*** (0.116)	0.0731 (0.115)	0.735*** (0.0995)	-0.0733 (0.138)
HC	0.179 (0.158)	-0.122 (0.164)	-0.0315 (0.106)	-0.227 (0.193)	0.234 (0.320)	-0.0818 (0.166)	-0.842*** (0.147)	-0.128 (0.330)	-0.0721 (0.159)	-0.264* (0.142)	1.451*** (0.470)	-0.474*** (0.175)
FDI	-0.00175 (0.00149)	-0.0049*** (0.00185)	-0.000156 (0.00180)	-0.0077** (0.00387)	-0.0096*** (0.00300)	-0.0080*** (0.00242)	-0.0067*** (0.00252)	-0.029*** (0.00969)	-0.000593 (0.00190)	-0.0041** (0.00159)	0.00816 (0.00879)	-0.011*** (0.00249)
CREDITPRIV	0.00194 (0.00155)	0.000657 (0.00168)	-0.000154 (0.000941)	-0.00310 (0.00236)	3.98e-05 (0.00171)	-0.00233 (0.00142)	-0.00206 (0.00155)	-0.0067** (0.00329)	0.00228* (0.00123)	0.00163 (0.00171)	0.00162 (0.00160)	-0.000495 (0.00153)
NATRESOURCE	0.00282 (0.00267)	-4.79e-05 (0.00211)	-0.00384** (0.00161)	0.00582 (0.00378)	0.0173*** (0.00483)	0.00147 (0.00493)	0.00693* (0.00373)	0.0263** (0.0116)	-0.00107 (0.00475)	0.000266 (0.00385)	-0.064*** (0.0104)	-0.00444* (0.00232)
MANUFVA	0.0112** (0.00457)	0.000226 (0.00447)	0.00361 (0.00324)	-0.00256 (0.00641)	-0.00669 (0.00700)	0.00697* (0.00411)	-0.00126 (0.00492)	0.0109 (0.0116)	0.00396 (0.00421)	-0.000310 (0.00612)	0.0516*** (0.0199)	-0.00113 (0.00496)
GFCF	-0.000620 (0.00220)	0.000943 (0.00202)	-0.00355* (0.00182)	0.00248 (0.00348)	-0.0106*** (0.00368)	0.00339* (0.00182)	0.00101 (0.00230)	0.00830 (0.00946)	0.000307 (0.00207)	0.00110 (0.00221)	0.0113*** (0.00323)	-0.00107 (0.00227)
INTERNETUSER	0.000506 (0.00119)	0.00253** (0.00121)	0.00321*** (0.00112)	0.00327* (0.00176)	-0.00106 (0.00246)	0.00123 (0.00202)	0.00561*** (0.000993)	0.000773 (0.00256)	0.00150 (0.00108)	0.0057*** (0.00100)	0.00240 (0.00174)	0.00234 (0.00201)
TRADCOST	-0.015*** (0.00345)	-0.0185*** (0.00427)	0.000443 (0.00226)	-0.020*** (0.00534)	-0.00398 (0.00580)	-0.0107*** (0.00304)	-0.00177 (0.00483)	-0.0219** (0.00883)	-0.00447* (0.00247)	3.55e-05 (0.00383)	0.0152*** (0.00495)	-0.0069** (0.00349)
LLABORPROC	0.178 (0.194)	-0.0350 (0.220)	-0.831*** (0.222)	-0.926** (0.422)	-0.443* (0.252)	0.0632 (0.186)	0.208 (0.223)	-0.831 (0.531)	-0.398** (0.165)	-0.829*** (0.264)	0.315 (0.515)	-0.322 (0.214)
LRATIO KL	0.0629 (0.0416)	0.106** (0.0422)	0.0437 (0.0441)	0.164*** (0.0513)	0.427*** (0.0963)	-0.0205 (0.0616)	-0.0159 (0.0503)	0.478*** (0.182)	0.0502 (0.0372)	0.0848* (0.0511)	0.272*** (0.0469)	-0.0627 (0.0463)
LGDPCA	0.361* (0.190)	0.578*** (0.196)	1.006*** (0.212)	1.554*** (0.368)	0.845*** (0.255)	0.269 (0.165)	0.0191 (0.243)	1.420*** (0.488)	0.507*** (0.171)	0.908*** (0.260)	-0.0585 (0.535)	0.611*** (0.201)
LPOP	0.726*** (0.172)	0.661*** (0.159)	0.267 (0.216)	0.979*** (0.178)	1.965*** (0.308)	-0.0192 (0.314)	-0.273* (0.165)	0.531 (0.418)	-0.362 (0.264)	-0.183 (0.159)	-2.340*** (0.569)	0.326 (0.307)
Log Total Services Export		0.106** (0.0428)										

Log Transport Export			0.0132 (0.0187)									
Log Travel Export				0.118* (0.0657)								
Log Construction Export					0.0731* (0.0424)							
Log Insurance Export						0.0186 (0.0231)						
Log Finance Export							0.0190* (0.0113)					
Log Licence Export								0.0741* (0.0397)				
Log ICT Export									0.0317* (0.0185)			
Log Business Services Export										0.0465** (0.0224)		
Log Creative Services Exp											0.0264* (0.0152)	
Log Tourism												0.131** (0.0612)
Time effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	370	357	112	311	125	275	213	105	154	138	34	290
R2	0.932	0.921	0.711	0.850	0.961	0.961	0.943	0.922	0.871	0.492	0.972	0.947
Number of id	29	29	21	26	12	24	20	11	17	19	7	26
Test of under-identification	38.36	33.88	13.78	12.61	6.160	9.852	10.90	4.125	6.907	6.486	10.32	34.95
Prob>LM	4.69e-09	4.40e-08	0.00322	0.00556	0.104	0.0199	0.0123	0.248	0.0749	0.0902	0.0160	1.25e-07
Test de Hansen	1.423	0.510	2.417	0.299	1.568	0.295	2.143	1.003	0.244	0.717	2.100	2.240
Prob. Hansen	0.233	0.475	0.299	0.861	0.456	0.863	0.342	0.606	0.885	0.699	0.350	0.326
Prob. Of	0.1386	0.2041	0.3317	0.0166	0.3638	0.5082	0.1614	0.0257	0.0535	0.0330	0.0164	0.1711
Endogeneity test												

*Note: The numbers in parentheses represent the robust standard errors of the estimated coefficients; *, **, ***represent the significances at 10%, 5% and 1%.

Source: Authors' calculations

Table 13: Results of the effects of services imports on GVC participation in SSA (2SLS regression)

Dependant variable: GVC												
VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
OPENNESS	0.000992	-0.00117	6.55e-05	0.00128**	0.0037***	0.00132	0.00193**	6.91e-06	0.00183*	-	0.00247	0.00213**
										0.000925		
CORRUPTION	(0.00121)	(0.00205)	(0.00118)	(0.000630)	(0.00110)	(0.00131)	(0.00089)	(0.00102)	(0.00098)	(0.00110)	(0.00172)	(0.00087)
	-0.221***	-0.0945*	-0.136***	-0.0581	-0.0992*	-0.0320	0.145***	-0.0708	0.0286	-0.00316	0.0338	-0.124**
	(0.0482)	(0.0506)	(0.0425)	(0.0391)	(0.0560)	(0.0465)	(0.0461)	(0.0499)	(0.0631)	(0.0509)	(0.101)	(0.0546)
HHI	0.0255	0.171	0.0124	0.252**	-0.00855	0.232	0.221*	0.0154	0.551**	0.398**	0.497***	-0.0733
	(0.124)	(0.139)	(0.117)	(0.116)	(0.147)	(0.159)	(0.126)	(0.156)	(0.231)	(0.169)	(0.137)	(0.138)
HC	0.179	-0.570***	-0.524***	-0.566***	0.00933	-0.0791	-0.747***	-0.147	-0.152	-	0.0208	-0.474***
										0.507***		
FDI	(0.158)	(0.142)	(0.124)	(0.131)	(0.250)	(0.141)	(0.118)	(0.159)	(0.193)	(0.177)	(0.498)	(0.175)
	-0.00175	-0.0061**	-0.0041**	-0.00302**	-0.00421	-0.00382*	-0.0050**	-0.0082***	-0.00482*	-	0.00196	-0.011***
										0.00500*		
CREDITPRIV	(0.00149)	(0.00242)	(0.00161)	(0.00128)	(0.00336)	(0.00199)	(0.00219)	(0.00272)	(0.00260)	(0.00275)	(0.00657)	(0.00249)
	0.00194	-0.0036**	-0.00189	-0.00352**	0.00104	-0.000645	-0.000527	0.000257	0.00225	-0.00120	7.06e-05	-0.000495
	(0.00155)	(0.00179)	(0.00158)	(0.00164)	(0.00174)	(0.00158)	(0.00153)	(0.00194)	(0.00269)	(0.00209)	(0.00141)	(0.00153)
NATRESOURCE	0.00282	-0.00297	-0.00151	-0.00356*	-0.000665	0.000401	0.00474	0.00524	0.00298	-0.00307	-0.00696	-0.00444*
	(0.00267)	(0.00237)	(0.00248)	(0.00215)	(0.00290)	(0.00316)	(0.00329)	(0.00350)	(0.00308)	(0.00287)	(0.0109)	(0.00232)
MANUFVA	0.0112**	0.00637	0.00496*	0.00476	0.0182**	0.0123**	-0.00355	-0.00274	0.00463	-0.00106	0.00600	-0.00113
	(0.00457)	(0.00455)	(0.00298)	(0.00394)	(0.00840)	(0.00477)	(0.00393)	(0.00699)	(0.00510)	(0.00504)	(0.0105)	(0.00496)
GFCF	-0.000620	-0.00131	-0.000628	0.00114	-0.00366	0.00125	5.06e-05	-0.000407	-0.000974	-	0.0089***	-0.00107
										0.000127		
INTERNETUSER	(0.00220)	(0.00202)	(0.00161)	(0.00188)	(0.00267)	(0.00226)	(0.00205)	(0.00338)	(0.00344)	(0.00283)	(0.00317)	(0.00227)
	0.000506	0.00329*	0.00284*	0.00276***	0.00196	0.0035***	0.00308*	0.00797***	0.00298**	0.000774	-0.00297	0.00234
	(0.00119)	(0.00169)	(0.00154)	(0.000944)	(0.00131)	(0.00120)	(0.00158)	(0.00140)	(0.00138)	(0.00200)	(0.00322)	(0.00201)
TRADCOST	-0.015***	-0.00610*	-0.00327	-0.0088***	-0.0129	-0.00107	-0.00288	-0.0253***	0.000497	0.000298	0.00394	-0.0069**
	(0.00345)	(0.00351)	(0.00299)	(0.00322)	(0.00871)	(0.00432)	(0.00471)	(0.00546)	(0.00538)	(0.00391)	(0.00441)	(0.00349)
LLABORPROC	0.178	0.306	0.150	0.0225	-0.0626	-0.751***	0.323	-0.571**	-0.447*	-0.380	-0.433*	-0.322
	(0.194)	(0.194)	(0.168)	(0.173)	(0.257)	(0.234)	(0.205)	(0.247)	(0.254)	(0.261)	(0.251)	(0.214)
LRATIO_KL	0.0629	-0.0538	-0.0360	-0.0386	0.0576	-0.0244	0.0216	0.130***	0.00464	-0.0588	0.185*	-0.0627
	(0.0416)	(0.0379)	(0.0332)	(0.0324)	(0.0723)	(0.0745)	(0.0561)	(0.0421)	(0.0676)	(0.0561)	(0.101)	(0.0463)
LGDPCA	0.361*	-0.156	0.101	0.312*	0.614*	0.956***	-0.174	0.882***	0.558**	0.361	0.640**	0.611***
	(0.190)	(0.265)	(0.165)	(0.163)	(0.320)	(0.223)	(0.223)	(0.249)	(0.267)	(0.285)	(0.260)	(0.201)
LPOP	0.726***	-0.297	-0.188	-0.112	0.555*	-0.340	-0.851***	1.321***	0.0916	-0.685	0.731	0.326
	(0.172)	(0.375)	(0.320)	(0.139)	(0.317)	(0.270)	(0.297)	(0.234)	(0.314)	(0.419)	(0.575)	(0.307)
Log Total Services Import		0.238*										
		(0.135)										
Log Transport Import			0.134*									
			(0.0765)									

Log Travel Import				0.0469*								
				(0.0278)								
Log Construction Import					0.00336							
					(0.0208)							
Log Insurance Import						0.0538						
						(0.0763)						
Log Finance Import							0.0254**					
							(0.0122)					
Log Licence Import								0.0375*				
								(0.0204)				
Log ICT Import									0.0982*			
									(0.0528)			
Log Business Services Imp										0.0914**		
										(0.0420)		
Log Creative Services Imp											0.0101	
											(0.0138)	
Time effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	370	334	344	291	235	159	203	217	158	178	47	290
R2	0.932	0.929	0.950	0.927	0.921	0.305	0.953	0.936	0.677	0.785	0.884	0.947
Number of id	29	29	28	26	20	23	20	19	20	22	10	26
Test of under-identification	38.36	17.66	11.12	34.47	9.677	1.418	11.93	21.83	5.400	20.25	6.928	34.95
Prob>LM	4.69e-09	0.000517	0.0111	1.57e-07	0.0215	0.701	0.00764	7.08e-05	0.145	0.000151	0.0742	1.25e-07
Test de Hansen	1.423	0.311	0.904	3.773	1.175	0.744	0.505	2.621	0.780	2.775	4.518	2.240
Prob. Hansen	0.233	0.856	0.636	0.152	0.556	0.690	0.777	0.270	0.677	0.250	0.104	0.326

*Note: The numbers in parentheses represent the robust standard errors of the estimated coefficients; *, **, ***represent the significances at 10%, 5% and 1%.

Source: Authors' calculations

Table 14: Effect of services exports on participation in foreign value added trade (FVA), 2SLS regression

VARIABLES	Effect of services export on FVA, 2SLS Regression: Dependent variable, LFVA											
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
OPENESS	0.00546*** (0.00152)	0.00279* (0.00147)	-0.00165 (0.00404)	0.00481** (0.00190)	0.00552*** (0.00110)	0.00572*** (0.00115)	0.00507*** (0.00127)	0.00216 (0.00323)	0.00360*** (0.00107)	0.00427*** (0.00159)	0.00408 (0.00259)	0.00349* (0.00187)
CORRUPTION	-0.0109 (0.0633)	-0.0782 (0.0698)	-0.0358 (0.0665)	-0.121 (0.0791)	-0.00460 (0.0489)	-0.276*** (0.0679)	0.0952 (0.0695)	0.0568 (0.133)	-0.0284 (0.0696)	-0.0943 (0.0942)	-0.0912 (0.0864)	-0.0492 (0.0914)
HHI	0.511*** (0.176)	0.210 (0.186)	0.638* (0.341)	0.150 (0.203)	0.116 (0.132)	0.319* (0.176)	0.135 (0.193)	0.0930 (0.279)	0.701*** (0.205)	0.290 (0.209)	0.0695 (0.282)	0.0727 (0.222)
HC	0.103 (0.203)	-0.0587 (0.245)	-0.0984 (0.321)	-0.289 (0.274)	0.0433 (0.231)	-0.381 (0.293)	-1.180*** (0.212)	0.325 (0.384)	-0.345 (0.210)	-0.166 (0.204)	0.999*** (0.238)	-0.520** (0.261)
FDI	-0.00250 (0.00274)	- (0.00321)	-0.0102** (0.00491)	- (0.00497)	-0.0122*** (0.00364)	-0.0188*** (0.00431)	-0.0134*** (0.00375)	- (0.0110)	-0.00401 (0.00316)	-0.0190*** (0.00400)	- (0.00575)	- (0.00410)
CREDITPRIV	-0.000514 (0.00214)	-0.00356* (0.00207)	-6.83e-05 (0.00389)	-0.00258 (0.00257)	-0.00214 (0.00134)	-0.00130 (0.00237)	- (0.00217)	-0.00411 (0.00374)	-0.00136 (0.00206)	-0.000663 (0.00222)	-0.00217 (0.00276)	-0.00271 (0.00248)
NATRESOURCE	6.98e-05 (0.00311)	0.00295 (0.00261)	0.00661 (0.00530)	0.00545 (0.00404)	0.00833** (0.00386)	0.00592 (0.00468)	0.00714 (0.00519)	0.0400*** (0.0119)	0.00460 (0.00639)	0.00695* (0.00362)	0.00352 (0.00645)	-0.00157 (0.00309)
MANUFVA	0.00601 (0.00616)	-0.00188 (0.00651)	-0.00376 (0.00911)	0.00267 (0.00876)	-0.000693 (0.00740)	0.0127* (0.00767)	0.00198 (0.00667)	0.0389** (0.0154)	0.00825 (0.00631)	-0.00560 (0.00667)	0.00345 (0.0182)	-0.00214 (0.00880)
GFCF	0.00430 (0.00383)	0.00748** (0.00327)	0.00234 (0.00570)	0.0124** (0.00509)	-0.00718** (0.00360)	0.0176*** (0.00318)	0.00495 (0.00327)	0.0124 (0.0105)	0.00282 (0.00305)	0.0120*** (0.00363)	0.00581 (0.00536)	0.00698 (0.00500)
INTERNETUSER	9.93e-05 (0.00165)	0.00105 (0.00194)	0.00777*** (0.00235)	0.00574** (0.00228)	-0.00348 (0.00268)	0.00871*** (0.00212)	0.00723*** (0.00147)	0.00600* (0.00351)	0.000310 (0.00173)	0.00474*** (0.00183)	-0.000900 (0.00369)	0.00506 (0.00366)
TRADCOST	-0.0234*** (0.00549)	-0.0316*** (0.00550)	-0.0334*** (0.00603)	- (0.00561)	0.00101 (0.00499)	-0.0247*** (0.00473)	-0.0115* (0.00612)	-0.0236* (0.0123)	-0.00332 (0.00402)	-0.0306*** (0.00461)	- (0.00619)	- (0.00662)
LLABORPROC	0.265 (0.259)	-0.298 (0.313)	-0.618 (1.368)	-0.550 (0.452)	-0.530** (0.252)	-0.0921 (0.250)	0.666** (0.269)	-0.360 (0.551)	0.335 (0.263)	0.268 (0.303)	0.319 (0.464)	-0.765 (0.496)

LRATIO KL												
-0.00848	0.139**	-0.0328	0.120*	0.400***	0.134*	-0.103	0.0172	-0.289***	-0.0181	-0.0236	-0.0300	
	(0.0615)	(0.0674)	(0.0730)	(0.0655)	(0.116)	(0.0770)	(0.0720)	(0.194)	(0.0664)	(0.0654)	(0.102)	(0.101)
LGDPCA	0.283	0.744***	0.870	1.239***	0.740***	0.519**	-0.191	1.179**	-0.167	0.391	0.252	1.201***
	(0.258)	(0.288)	(1.151)	(0.392)	(0.259)	(0.229)	(0.283)	(0.520)	(0.285)	(0.307)	(0.535)	(0.426)
LPOP	0.367	0.194	1.026***	0.844***	0.432	1.058***	-0.747***	0.0876	-0.991**	0.961***	0.573*	1.038***
	(0.272)	(0.224)	(0.208)	(0.199)	(0.354)	(0.217)	(0.236)	(0.366)	(0.459)	(0.165)	(0.337)	(0.247)
LSERVEXPORT		0.313***										
		(0.0684)										
LTRANSPORT EXP			0.207									
			(0.231)									
LTRAVEL EXP				0.124*								
				(0.0693)								
LCONSTRUCT_EXP					0.0588*							
					(0.0304)							
LINSURANCE_EXP						0.0679**						
						(0.0312)						
LFINANCE_EXP							0.0468**					
							(0.0192)					
LLICENSE_EXP								0.0835*				
								(0.0495)				
LICT_EXP									0.0515*			
									(0.0294)			
LOTHERBUSINESS _EXP										0.0682***		
										(0.0189)		
LCREATIVE_EXP											0.0422	
											(0.0467)	
LTOURISM												0.232*
												(0.127)

Time Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	370	357	274	328	104	275	213	105	154	307	133	250
R-squared	0.889	0.863	0.758	0.838	0.959	0.921	0.913	0.888	0.786	0.873	0.927	0.839
Number of id	29	29	26	26	10	24	20	11	17	25	14	26
Underidentification test	38.36	33.88	1.781	15.91	14.99	10.47	10.90	4.517	6.907	33.14	9.049	25.26
Prob>LM	4.69e-09	4.40e-08	0.411	0.000351	0.00183	0.0150	0.0123	0.211	0.0749	6.35e-08	0.0286	3.27e-06
Hansen stat	0.339	1.807	0.335	0.0457	0.813	7.356	4.099	1.657	1.193	0.103	3.573	0.347
Hansen P value	0.563	0.179	0.563	0.831	0.666	0.0253	0.129	0.437	0.551	0.748	0.168	0.556

*Note: The numbers in parentheses represent the robust standard errors of the estimated coefficients;

*, **, ***represent the significances at 10%, 5% and 1%.

Source: Authors' calculations

Table 15: Effect of services imports on participation in foreign value added trade (FVA), 2SLS regressio

VARIABLES	Effect of services export on FVA, 2SLS Regression: Dependent variable, LFVA									
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
OPENESS	-0.00425 (0.00402)	-0.000167 (0.00143)	0.00413*** (0.00130)	0.00697*** (0.00149)	0.00408* (0.00214)	0.00483*** (0.00134)	0.00256** (0.00118)	0.00240** (0.00116)	-0.000737 (0.00140)	0.0101*** (0.00262)
CORRUPTION	-0.0830 (0.0973)	-0.0319 (0.0591)	-0.166** (0.0773)	-0.151* (0.0897)	0.276* (0.163)	0.130* (0.0688)	-0.120* (0.0643)	-0.0711 (0.0702)	-0.137* (0.0767)	0.209 (0.134)
HHI	0.263 (0.238)	0.0339 (0.248)	0.241 (0.205)	-0.0722 (0.270)	0.218 (0.311)	0.182 (0.193)	0.0487 (0.200)	0.629** (0.280)	0.541** (0.213)	0.288 (0.204)
HC	-0.586** (0.268)	-0.193 (0.190)	-0.309 (0.249)	0.676* (0.407)	0.0297 (0.491)	-1.115*** (0.191)	-0.268 (0.183)	-0.209 (0.229)	-0.508* (0.299)	1.365** (0.667)
FDI	-0.00869* (0.00461)	-0.00389 (0.00291)	-0.000147 (0.00321)	-0.0126*** (0.00447)	0.000236 (0.00459)	-0.00923** (0.00367)	-0.0198*** (0.00422)	-0.00556 (0.00341)	-0.00700* (0.00407)	-0.0187* (0.0103)
CREDITPRIV	-0.00475 (0.00306)	-0.00262 (0.00190)	-0.00466* (0.00273)	0.00149 (0.00248)	-0.00255 (0.00327)	-0.00664** (0.00286)	-0.00118 (0.00246)	0.00362 (0.00360)	0.00155 (0.00294)	-0.00108 (0.00200)
NATRESOURCE	-0.000171 (0.00302)	0.00438* (0.00254)	0.000407 (0.00303)	-0.00593 (0.00573)	0.00252 (0.00553)	0.00410 (0.00482)	0.00484 (0.00412)	0.00212 (0.00383)	0.00333 (0.00332)	-0.0365** (0.0180)
MANUFVA	-0.00510 (0.00741)	0.0138*** (0.00503)	0.00604 (0.00649)	0.0484*** (0.0186)	0.0163 (0.0122)	0.00201 (0.00575)	0.00527 (0.00960)	0.0139* (0.00759)	0.00583 (0.00828)	0.00613 (0.0156)
GFCF	0.000666 (0.00409)	0.000619 (0.00285)	0.00657 (0.00405)	-0.00406 (0.00453)	-0.00484 (0.00601)	0.00383 (0.00339)	0.00490 (0.00456)	-0.00109 (0.00396)	-0.00167 (0.00322)	0.0140*** (0.00445)
INTERNETUSER	0.00912*** (0.00218)	0.00412*** (0.00118)	0.00134 (0.00172)	0.00126 (0.00277)	0.00381 (0.00403)	0.00242 (0.00263)	0.00912*** (0.00179)	0.00434*** (0.00155)	0.00825*** (0.00147)	-0.0115** (0.00454)
TRADCOST	-0.0266*** (0.00782)	-0.00530 (0.00464)	-0.0347*** (0.00686)	-0.0265** (0.0106)	0.00543 (0.00938)	-0.00999* (0.00593)	-0.0375*** (0.00756)	-0.00987 (0.00651)	-0.0127*** (0.00480)	0.00391 (0.00680)
LLABORPROC	-0.0679 (0.363)	-0.135 (0.263)	-0.757** (0.317)	-0.242 (0.306)	-0.232 (0.515)	0.746*** (0.269)	0.0564 (0.314)	-0.00517 (0.314)	-0.442 (0.302)	0.665* (0.376)
LRATIO_KL	-0.00730 (0.0782)	-0.221*** (0.0696)	0.181*** (0.0527)	0.0141 (0.0849)	-0.409** (0.173)	-0.0992 (0.0813)	-0.0147 (0.0641)	-0.229*** (0.0773)	-0.220*** (0.0670)	0.0735 (0.142)
LGDP	-0.0495 (0.519)	0.0491 (0.256)	1.471*** (0.321)	1.048*** (0.294)	0.248 (0.527)	-0.323 (0.285)	0.454 (0.300)	0.127 (0.334)	0.407 (0.329)	-0.176 (0.393)
LPOP	0.835** (0.355)	-0.122 (0.226)	0.716*** (0.210)	0.723** (0.334)	-1.878** (0.804)	-1.621*** (0.458)	0.889*** (0.281)	0.436* (0.249)	0.917*** (0.268)	-1.168 (0.922)
LSERVIMPORT	0.573* (0.296)									
LTRANSPORT IMP		0.265** (0.112)								
LTRAVEL IMP			0.0693* (0.0419)							

LCONSTRUCTION				0.0844						
IMP				(0.0799)						
LINSURANCE IMP					0.294*					
					(0.174)					
LFINANCE EXP						0.0564***				
						(0.0201)				
LLICENCE IMP							0.0523***			
							(0.0200)			
LICT IMP								0.154**		
								(0.0709)		
LOTHERBUSINESS									0.130**	
IMP									(0.0617)	
LCREATIVE IMP										0.0551***
										(0.0202)
Time effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	312	164	291	213	135	203	216	158	178	47
R-squared	0.759	0.570	0.800	0.826	-0.750	0.915	0.887	0.600	0.691	0.884
Number of id	29	23	26	19	22	20	19	20	22	10
Underidentification	10.30	8.066	34.54	2.602	3.659	19.75	23.26	5.493	18.91	6.928
test										
Prob>LM	0.0162	0.0447	1.53e-07	0.457	0.301	0.000191	3.57e-05	0.139	0.000285	0.0742
Hansen_stats	0.580	3.659	6.016	0.808	2.342	0.650	3.481	0.928	0.597	0.261
Hansen P_Value	0.748	0.160	0.0494	0.668	0.310	0.722	0.175	0.629	0.742	0.877

*Note: The numbers in parentheses represent the robust standard errors of the estimated coefficients;

*, **, ***represent the significances at 10%, 5% and 1%.

Source: Authors' calculations

Table 16: Effect of services export on backward integration (DVA) in SSA, 2SLS regression

VARIABLES	Effect of services export on backward Participation, 2SLS Regression: Dependent variable, LFVA											
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
OPENESS	-0.000586 (0.00141)	-0.000529 (0.00113)	0.00401 (0.00326)	-5.07e-05 (0.00167)	0.00486*** (0.00152)	0.00346** (0.00144)	0.00363** (0.00185)	-0.00231 (0.00267)	0.00560*** (0.00212)	0.00141 (0.00152)	-0.0133 (0.00873)	0.000581 (0.00116)
CORRUPTION	-0.244*** (0.0535)	-0.218*** (0.0641)	0.0424 (0.290)	-0.199** (0.0824)	0.0151 (0.0782)	-0.148* (0.0877)	0.418** (0.193)	0.0570 (0.122)	0.335** (0.145)	0.108 (0.0803)	0.616*** (0.210)	-0.199** (0.0820)
HHI	0.0211 (0.176)	-0.0534 (0.153)	0.247 (0.545)	-0.0345 (0.201)	-0.104 (0.189)	0.276 (0.230)	-0.238 (0.526)	0.352 (0.312)	0.783** (0.312)	-0.0402 (0.216)	1.153*** (0.425)	-0.0883 (0.231)
HC	0.119 (0.140)	0.0105 (0.144)	-0.300 (0.682)	0.230 (0.160)	-0.0407 (0.413)	-0.259 (0.283)	-1.403* (0.727)	-0.173 (0.404)	-0.606 (0.441)	-0.355 (0.220)	-1.301*** (0.466)	0.0873 (0.180)
FDI	-0.00204 (0.00136)	- (0.00209)	-0.00196 (0.0118)	-0.00345 (0.00406)	-0.00711** (0.00358)	-0.00655 (0.00408)	0.00174 (0.00746)	-0.0282** (0.0113)	-0.00769 (0.00470)	- (0.00327)	-0.0181 (0.0174)	- (0.00319)
CREDITPRIV	0.00386** (0.00175)	0.000604 (0.00195)	-0.00797 (0.0141)	-0.000929 (0.00265)	-0.00146 (0.00199)	-9.15e-05 (0.00281)	0.00879* (0.00461)	- (0.00407)	0.00647* (0.00388)	-0.000721 (0.00236)	0.00792*** (0.00293)	0.00264 (0.00204)
NATRESOURCE	0.00271 (0.00287)	0.000603 (0.00259)	-0.00599 (0.00778)	0.00434 (0.00435)	0.00878 (0.00718)	0.00744 (0.00675)	-0.00629 (0.0156)	0.0240* (0.0141)	-0.0151 (0.0126)	-0.00219 (0.00509)	-0.00306 (0.0168)	-0.00492* (0.00296)
MANUFVA	0.0158*** (0.00471)	0.00991** (0.00432)	0.0387 (0.0269)	0.0137** (0.00572)	-0.00943 (0.00828)	0.0160** (0.00673)	0.00756 (0.0166)	0.0153 (0.0159)	0.0227** (0.0110)	0.0138 (0.0105)	0.0468 (0.0401)	0.0178*** (0.00514)
GFCF	-0.00140 (0.00249)	-0.00212 (0.00229)	-0.0128 (0.0145)	0.00160 (0.00392)	-0.0174*** (0.00521)	0.00666* (0.00361)	-0.00761 (0.00669)	0.0102 (0.0107)	-0.00125 (0.00435)	0.000977 (0.00421)	0.00915 (0.0103)	-0.00419 (0.00349)
INTERNETUSER	0.00444*** (0.00152)	0.00206* (0.00119)	0.00753 (0.00460)	-7.15e-06 (0.00175)	-0.00111 (0.00225)	0.00652*** (0.00246)	0.00903*** (0.00334)	0.00149 (0.00298)	0.0108*** (0.00299)	0.00962*** (0.00157)	0.0197*** (0.00458)	-0.000112 (0.00281)
TRADFCOST	- (0.00368)	-0.0158*** (0.00536)	0.0310 (0.0438)	- (0.00576)	-0.00816 (0.00808)	-0.0242*** (0.00530)	-0.0162 (0.0175)	-0.0153* (0.00841)	-0.00158 (0.00809)	0.00445 (0.00477)	0.00430 (0.0119)	-0.00883* (0.00488)
LLABORPROC	0.0868 (0.232)	-0.222 (0.279)	-5.662 (6.245)	-1.042** (0.480)	-0.145 (0.377)	-0.737** (0.300)	-1.386** (0.538)	-1.188* (0.618)	-2.061*** (0.568)	-1.210*** (0.414)	-1.257** (0.530)	-0.606** (0.294)
LRATIO KL	0.0361 (0.0449)	0.115* (0.0604)	-0.146 (0.475)	0.185*** (0.0654)	0.514*** (0.110)	0.210** (0.0879)	0.596*** (0.151)	0.503** (0.229)	0.114 (0.140)	0.240** (0.105)	0.622*** (0.132)	-0.0431 (0.0704)
LGDPCA	0.309 (0.221)	0.507** (0.252)	5.444 (5.663)	1.514*** (0.413)	0.581* (0.344)	1.126*** (0.259)	1.593*** (0.559)	1.742*** (0.566)	2.195*** (0.617)	1.215*** (0.404)	1.160** (0.579)	0.767*** (0.273)
LPOP	1.119*** (0.253)	0.576*** (0.217)	-1.714 (2.126)	0.879*** (0.189)	2.102*** (0.329)	1.162*** (0.270)	-0.362 (0.453)	0.130 (0.459)	-1.947* (1.071)	-0.688** (0.295)	-1.483** (0.740)	0.550 (0.407)
LSERVEEXPORT		0.200*** (0.0535)										
LTRANSPORT EXP			0.635 (0.862)									
LTRAVEL EXP				0.121* (0.0729)								

LCONSTRUCT_EXP					0.0727**							
					(0.0338)							
LINSURANCE_EXP						0.0746*						
						(0.0384)						
LFINANCE_EXP							0.109*					
							(0.0652)					
LLICENSE_EXP								0.106*				
								(0.0487)				
LICT_EXP									0.0840*			
									(0.0471)			
LOTHERBUSINESS_EXP										0.0618*		
										(0.0355)		
LCREATIVE_EXP											0.115*	
											(0.0626)	
LTOURISM												0.241***
												(0.0820)
Time Effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observation	370	357	137	311	125	262	123	105	94	137	58	290
R-squared	0.879	0.864	-4.704	0.770	0.916	0.840	0.309	0.880	0.358	0.357	0.833	0.868
Number of id	29	29	23	26	12	24	14	11	16	19	8	26
Underidentification test	38.87	34.11	0.617	12.72	10.06	14.64	3.751	4.125	5.413	6.394	6.597	34.95
Prob>LM	3.63e-09	3.93e-08	0.735	0.00529	0.0180	0.00215	0.153	0.248	0.144	0.0939	0.0859	1.25e-07
Hansen stat	0.356	1.844	0.0584	0.0387	1.173	1.549	0.795	3.474	4.150	3.834	1.689	4.095
Hansen P value	0.551	0.174	0.809	0.981	0.556	0.461	0.373	0.176	0.126	0.147	0.430	0.129

*Note: The numbers in parentheses represent the robust standard errors of the estimated coefficients;

*, **, ***represent the significances at 10%, 5% and 1%.

Source: Authors' calculations

Table 17: Effect of services import on backward integration (DVA) in SSA, 2SLS regression

Effect of services import on backward integration in SSA, 2SLS regression										
VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
OPENESS	-0.00597** (0.00290)	-0.00239 (0.00254)	0.000153 (0.00131)	0.00193 (0.00182)	0.00133 (0.00129)	0.00222 (0.00138)	-0.000432 (0.00147)	-0.000606 (0.00121)	-0.00156 (0.00177)	0.0152*** (0.00403)
CORRUPTION	-0.0674 (0.0716)	-0.233*** (0.0744)	-0.0671 (0.0758)	0.124 (0.116)	-0.113 (0.0820)	0.131* (0.0797)	-0.0605 (0.0742)	0.0896 (0.0742)	0.0647 (0.0864)	0.245 (0.162)
HHI	0.270 (0.212)	-0.161 (0.247)	0.377* (0.211)	0.478 (0.329)	0.105 (0.208)	0.140 (0.212)	0.149 (0.225)	0.502** (0.219)	0.382 (0.238)	1.405** (0.613)
HC	-0.223* (0.129)	0.149 (0.135)	0.0779 (0.128)	0.631 (0.422)	0.162 (0.138)	-0.174 (0.154)	0.419** (0.168)	-0.112 (0.139)	-0.272 (0.231)	-1.716** (0.860)
FDI	- 0.00835*** (0.00307)	-0.00280 (0.00215)	0.000259 (0.00201)	0.00226 (0.00715)	-0.00319 (0.00203)	-0.00414 (0.00338)	0.00225 (0.00398)	0.00463 (0.00378)	-0.00579 (0.00383)	0.00218 (0.00931)
CREDITPRIV	-0.00304 (0.00271)	0.00335 (0.00252)	-0.00126 (0.00288)	0.00371 (0.00385)	0.00270 (0.00249)	0.00822*** (0.00283)	-0.000366 (0.00215)	0.00356 (0.00250)	-2.72e-05 (0.00299)	0.000436 (0.00295)
NATRESOURCE	-0.00364 (0.00315)	0.00502 (0.00409)	-0.00300 (0.00352)	-0.00625 (0.00854)	0.00183 (0.00375)	0.0223*** (0.00708)	0.0100* (0.00574)	0.00601* (0.00353)	-0.00584 (0.00428)	0.00563 (0.00661)
MANUFVA	0.0182*** (0.00525)	0.0223*** (0.00528)	0.0214*** (0.00518)	0.0525** (0.0208)	0.0209*** (0.00477)	0.0227*** (0.00699)	0.0117 (0.00753)	0.0166*** (0.00466)	0.0152** (0.00689)	0.0118 (0.0134)
GFCF	-0.00490* (0.00275)	-0.00128 (0.00346)	0.00204 (0.00341)	- (0.00578)	-0.00255 (0.00295)	-0.00231 (0.00332)	-0.00761* (0.00443)	- (0.00385)	-0.00398 (0.00412)	0.0124 (0.0109)
INTERNETUSER	0.00137 (0.00230)	0.000605 (0.00127)	0.00353** (0.00139)	- (0.00295)	0.00237* (0.00122)	0.0113*** (0.00184)	0.00189 (0.00150)	0.00275 (0.00219)	0.00124 (0.00260)	-0.00564 (0.00414)
TRADCOST	-0.00834 (0.00571)	- (0.00530)	- (0.00593)	- (0.0135)	- (0.00457)	-0.0141** (0.00570)	- (0.00611)	0.00299 (0.00668)	-0.00415 (0.00573)	0.0121 (0.0134)
LLABORPROC	0.124 (0.292)	-0.723** (0.358)	-1.064*** (0.380)	-0.939** (0.393)	-0.523** (0.263)	-0.415 (0.336)	-1.151*** (0.387)	-0.272 (0.289)	-0.987** (0.423)	-1.497* (0.767)
LRATIO KL	0.0160 (0.0532)	0.227*** (0.0679)	0.106* (0.0609)	0.222** (0.0909)	0.0520 (0.0522)	0.0969 (0.0789)	0.350*** (0.0856)	0.140** (0.0656)	0.0683 (0.0998)	0.360*** (0.106)
LGDPCA	-0.407 (0.387)	1.032*** (0.337)	1.374*** (0.349)	1.157*** (0.427)	1.147*** (0.250)	0.745** (0.359)	1.481*** (0.354)	0.271 (0.302)	0.825* (0.443)	2.399*** (0.761)
LPOP	-0.562 (0.461)	0.611** (0.244)	0.842*** (0.185)	0.285 (0.345)	0.856*** (0.184)	0.735*** (0.224)	0.787*** (0.294)	-0.0198 (0.355)	-1.167** (0.585)	-0.471 (1.114)

LSERVIMPORT	0.567*** (0.187)									
LTRANSPORT IMP		0.332* (0.190)								
LTRAVEL IMP			0.196*** (0.0740)							
LCONSTRUCTION IMP				0.160* (0.0832)						
LINSURANCE IMP					0.0608* (0.0354)					
LFINANCE EXP						0.0192* (0.0111)				
LLICENCE IMP							0.0454* (0.0252)			
LICT IMP								0.125** (0.0526)		
LOTHERBUSINESS IMP									0.199*** (0.0693)	
LCREATIVE IMP										0.0852*** (0.0305)
Time effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	334	323	291	193	307	204	217	265	178	57
R-squared	0.833	0.805	0.788	0.446	0.846	0.822	0.836	0.827	0.569	0.662
Number of id	29	28	26	17	26	20	19	23	22	11
Underidentification test	17.66	12.44	16.59	4.303	28.87	8.336	21.95	10.41	20.25	8.807
Prob>LM	0.000517	0.00602	0.000859	0.116	2.39e-06	0.0396	6.68e-05	0.0154	0.000151	0.0320
Hansen stat	1.874	0.782	2.264	0.334	4.354	5.579	0.758	1.340	0.478	3.346
Hansen P value	0.392	0.676	0.322	0.563	0.113	0.0615	0.684	0.512	0.787	0.188

*Note: The numbers in parentheses represent the robust standard errors of the estimated coefficients; *, **, ***represent the significances at 10%, 5% and 1%.

Source: Authors' calculations

Table 18: Effects of trade in traditional and modern services on participation in to GVC in SSA over 1996 – 2018 and 2005 - 2018

VARIABLES	2SLS regression, dependent variable GVC data BMP5 & BMP6 (1996 – 2018)				2SLS regression, dependent variable GVC, data BMP6 (2005 – 2018)			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
OPENESS	0.000136 (0.00149)	-6.83e-05 (0.00107)	0.00319 (0.00273)	-0.00241 (0.00293)	0.00282*** (0.000534)	0.000364 (0.000915)	-0.00105 (0.00354)	0.00402*** (0.00105)
CORRUPTION	-0.181*** (0.0641)	-0.189*** (0.0594)	-0.116** (0.0482)	0.273 (0.203)	0.144*** (0.0531)	-0.0409 (0.0599)	-0.233*** (0.0843)	0.418*** (0.158)
HHI	0.0118 (0.166)	-0.0677 (0.165)	1.089*** (0.277)	1.928* (1.138)	0.122 (0.116)	0.344* (0.200)	0.233 (0.229)	-0.130 (0.366)
HC	0.578*** (0.223)	0.00355 (0.157)	0.508** (0.204)	0.634 (0.421)	-0.314** (0.131)	-0.220 (0.184)	0.661*** (0.188)	-0.318 (0.205)
FDI	- 0.00856** (0.00354)	-0.0126*** (0.00274)	0.00179 (0.00287)	-0.0340* (0.0184)	-0.000787 (0.00204)	-0.00290 (0.00211)	- 0.00938*** (0.00357)	-0.0128* (0.00703)
CREDITPRIV	-0.000544 (0.00173)	0.00303* (0.00174)	- 0.00351*** (0.00103)	0.00186 (0.00323)	0.00216* (0.00115)	-0.000514 (0.00196)	-0.00216 (0.00153)	0.000164 (0.00126)
NATRESOURCE	0.00575 (0.00475)	0.00611** (0.00273)	0.00207 (0.00962)	0.0337* (0.0194)	-0.00389** (0.00195)	-0.000942 (0.00331)	-0.000326 (0.00544)	-0.0122* (0.00629)
MANUFVA	0.00457 (0.00654)	0.00884* (0.00500)	-0.0569*** (0.0151)	- 0.000212 (0.0203)	0.00604* (0.00356)	0.00763* (0.00427)	-0.0284*** (0.0108)	-0.0277* (0.0151)
GFCF	0.00574** (0.00282)	0.00681*** (0.00264)	-0.00558* (0.00336)	0.0154 (0.0134)	-0.00480*** (0.00176)	0.00424 (0.00288)	-0.000818 (0.00487)	-0.0103** (0.00439)
INTERNETUSER	-0.00123 (0.00168)	0.00411*** (0.00126)	-0.00470 (0.00321)	0.0105 (0.00798)	0.00426*** (0.00107)	0.00223* (0.00123)	-0.00426* (0.00232)	0.000571 (0.00216)
TRADCOST	- 0.0256*** (0.00476)	-0.0230*** (0.00430)	0.0325*** (0.00853)	-0.112** (0.0532)	-0.00376 (0.00250)	-0.00341 (0.00351)	0.0124** (0.00606)	-0.0315* (0.0190)
LLABORPROC	-0.604* (0.321)	0.119 (0.253)	-2.175*** (0.378)	-1.539 (1.262)	-0.813*** (0.190)	-0.722*** (0.248)	-1.680** (0.696)	-1.891* (0.986)
LRATIO_KL	0.0301	0.0812*	-0.00204	0.0362	0.0626	0.0113	0.0713	0.0132

	(0.0472)	(0.0415)	(0.0843)	(0.131)	(0.0404)	(0.0509)	(0.130)	(0.117)
LGDP	1.171***	0.382	2.265***	1.391	0.920***	0.859***	1.995***	2.043**
	(0.271)	(0.242)	(0.450)	(1.130)	(0.180)	(0.260)	(0.677)	(0.934)
LPOP	0.756***	0.469***	0.847***	-1.263	-0.281	-0.239	1.410***	-0.0390
	(0.140)	(0.155)	(0.207)	(1.025)	(0.195)	(0.219)	(0.511)	(0.380)
LTRADISERV EXP	0.0350**				0.0173**			
	(0.0151)				(0.00859)			
LTRADISERV IMP		0.0841***				0.0471**		
		(0.0209)				(0.0213)		
LMODSERV EXP			0.00604*				0.0108*	
			(0.00355)				(0.00599)	
LMODSERV IMP				0.0645**				0.0248**
				(0.0298)				(0.0106)
Time effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	275	265	44	57	105	151	52	52
R-squared	0.893	0.911	0.986	0.657	0.705	0.384	0.949	0.683
Number of id	24	24	6	9	19	24	7	11
Underidentification test	40.36	21.59	10.32	5.148	3.114	11.47	7.338	3.531
Prob>LM	8.95e-09	7.93e-05	0.0160	0.0762	0.374	0.00945	0.0255	0.171
Hansen stat	2.816	0.859	2.059	1.768	1.879	3.003	1.170	0.465
Hansen P value			0.357	0.184	0.391	0.223	0.279	0.495

*Note: The numbers in parentheses represent the robust standard errors of the estimated coefficients; *, **,

***represent the significances at 10%, 5% and 1%.

Source: Authors' calculations

Table 19: Effects of trade in traditional and modern services on backward integration (DVA) in SSA over 1996 – 2018 and 2005 - 2018

VARIABLES	2SLS regression, dependent variable LDVA, data BMP5 & BMP6 (1996 – 2018)				2SLS regression, dependent variable LDVA, data BMP6 (2005 – 2018)			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
OPENESS	0.000938 (0.00201)	0.00108 (0.00167)	-0.00139 (0.00540)	0.00755*** (0.00155)	-0.00171 (0.00197)	-0.000436 (0.00148)	-0.0233 (0.0205)	0.00191 (0.00317)
CORRUPTION	0.128 (0.101)	0.0348 (0.0970)	-0.419*** (0.144)	0.714*** (0.206)	-0.251*** (0.0912)	-0.145* (0.0766)	-0.0913 (0.250)	0.162 (0.166)
HHI	-0.0754 (0.195)	0.405 (0.281)	0.167 (0.263)	-0.354 (0.568)	0.111 (0.227)	0.0344 (0.202)	2.420** (0.946)	0.271 (0.643)
HC	0.0223 (0.336)	-0.137 (0.224)	0.765*** (0.265)	-0.195 (0.397)	0.526* (0.292)	0.207* (0.121)	0.0703 (0.432)	0.0762 (0.421)
FDI	-0.00421 (0.00354)	-0.00846* (0.00447)	-0.00425 (0.00384)	-0.0234*** (0.00601)	-0.00675 (0.00431)	-0.00911*** (0.00311)	0.0415** (0.0204)	-0.00456 (0.00756)
CREDITPRIV	-0.00289 (0.00286)	-0.000831 (0.00276)	-0.00607** (0.00264)	0.00149 (0.00220)	2.35e-06 (0.00201)	0.00604*** (0.00225)	0.00104 (0.00503)	-0.00936* (0.00556)
NATRESOURCE	-0.00686* (0.00401)	-0.00352 (0.00472)	-0.0169* (0.00905)	-0.0289*** (0.00603)	0.00727 (0.00490)	0.00735** (0.00325)	0.0874 (0.0615)	-0.00931 (0.00743)
MANUFVA	0.0137 (0.0116)	0.0260*** (0.00648)	-0.0441*** (0.0162)	-0.0181 (0.0206)	0.0125* (0.00694)	0.0213*** (0.00480)	-0.131* (0.0694)	0.0248 (0.0153)
GFCF	-0.00427 (0.00395)	0.00667 (0.00417)	-0.0108 (0.00811)	-0.0236*** (0.00519)	0.00656* (0.00381)	0.00245 (0.00288)	- (0.00651)	-0.0165** (0.00722)
INTERNETUSER	0.00346 (0.00292)	0.00522*** (0.00166)	-0.00795** (0.00372)	0.00135 (0.00321)	-0.00197 (0.00218)	0.00494*** (0.00124)	-0.00139 (0.00406)	0.00301 (0.00514)
TRADCOST	-0.00773 (0.00729)	-0.00368 (0.00468)	0.00519 (0.0105)	-0.0557** (0.0242)	- (0.00588)	-0.0157*** (0.00460)	0.00863 (0.0200)	-0.0718* (0.0367)
LLABORPROC	-1.530*** (0.00729)	-0.850** (0.00468)	-2.860** (0.0105)	-2.253* (0.0242)	-1.078*** (0.00588)	0.0951 (0.00460)	- (0.0200)	-2.442** (0.0367)
							2.441***	

	(0.483)	(0.379)	(1.214)	(1.217)	(0.415)	(0.295)	(0.872)	(0.977)
LRATIO KL	0.134	0.0838	0.203	0.508***	0.190***	0.0980*	1.239	0.521***
	(0.104)	(0.0957)	(0.265)	(0.115)	(0.0637)	(0.0586)	(0.920)	(0.118)
LGDPCA	1.542***	0.855**	3.434***	2.672**	1.469***	0.289	0.909	2.742***
	(0.424)	(0.389)	(1.212)	(1.126)	(0.352)	(0.275)	(1.467)	(0.995)
LPOP	-0.607*	-0.674*	3.321***	-2.022**	0.814***	0.523**	0.435	0.301
	(0.318)	(0.366)	(1.056)	(0.860)	(0.184)	(0.210)	(0.554)	(0.452)
LTRADISERV EXP	0.0652*				0.0388*			
	(0.0387)				(0.0200)			
LTRADISERV IMP		0.0878**				0.0738**		
		(0.0398)				(0.0293)		
LMODSERV EXP			0.0187**				0.0669*	
			(0.00939)				(0.0375)	
LMODSERV IMP				0.0309**				0.0433*
				(0.0143)				(0.0246)
Time effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	169	151	52	51	289	266	42	90
R-squared	0.569	0.285	0.910	0.687	0.796	0.853	0.840	0.786
Number of id	22	24	7	10	24	24	6	14
Underidentification test	5.042	11.47	7.338	7.743	47.89	25.15	3.111	6.979
Prob>LM	0.169	0.00945	0.0255	0.0516	2.25e-10	1.44e-05	0.375	0.0726
Hansen stat	0.200	4.425	4.050	0.215	2.825	3.025	0.471	5.087
Hansen P value	0.905	0.109	0.0442	0.898	0.244	0.220	0.790	0.0786

*Note: The numbers in parentheses represent the robust standard errors of the estimated coefficients; *, **, ***represent the significances at 10%, 5% and 1%.

Source: Authors' calculations

Table 20: Effects of trade in traditional and modern services on backward integration (DVA) in SSA over 1996 – 2018 and 2005 - 2018

VARIABLES	2SLS regression, dependent variable LFVA data BMP5 & BMP6 (1996 – 2018)				2SLS regression, dependent variable LFVA data BMP6 (2005 – 2018)			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
OPENESS	0.00112 (0.00190)	0.000410 (0.00171)	-0.00196 (0.00346)	0.00959*** (0.00235)	0.000219 (0.00240)	0.000250 (0.00155)	-0.00298 (0.00478)	0.0102*** (0.00198)
CORRUPTION	-0.00773 (0.0798)	-0.257*** (0.0735)	-0.114* (0.0670)	0.431*** (0.125)	-0.00253 (0.112)	0.105 (0.0740)	-0.0538 (0.0743)	0.367*** (0.113)
HHI	-0.109 (0.203)	0.189 (0.224)	0.318* (0.174)	0.487 (0.456)	0.476* (0.257)	0.647*** (0.182)	0.161 (0.367)	0.0350 (0.487)
HC	0.409 (0.400)	-0.514** (0.235)	0.599*** (0.189)	1.089*** (0.422)	1.143* (0.589)	-0.584*** (0.191)	0.648 (0.508)	-0.153 (0.466)
FDI	0.00479 (0.00371)	-0.0160*** (0.00428)	-0.0124*** (0.00397)	-0.0101 (0.00626)	-0.00218 (0.00388)	-0.00419 (0.00324)	-0.0177*** (0.00433)	-0.0129*** (0.00364)
CREDITPRIV	- 0.00381** (0.00183)	-0.000519 (0.00232)	-0.00272*** (0.000867)	-0.00376 (0.00390)	0.000832 (0.00342)	-0.00142 (0.00293)	-0.000971 (0.00143)	-8.71e-05 (0.00167)
NATRESOURCE	0.00322 (0.00432)	0.00669** (0.00305)	0.0129*** (0.00404)	-0.0106 (0.00649)	0.00168 (0.00473)	-0.00298 (0.00277)	0.00287 (0.0136)	-0.0170*** (0.00595)
MANUFVA	0.0208*** (0.00788)	-0.000714 (0.00606)	-0.0356*** (0.0126)	0.0304* (0.0162)	-0.00111 (0.0104)	-0.0105 (0.00760)	-0.0371 (0.0566)	0.0276* (0.0160)
GFCF	-0.00518 (0.00339)	0.0137*** (0.00420)	-0.00715* (0.00401)	-0.0143** (0.00728)	-0.00485 (0.00338)	0.000272 (0.00308)	0.00469 (0.00497)	-0.0112** (0.00558)
INTERNETUSER	0.00527** (0.00223)	0.00521*** (0.00166)	-0.00762*** (0.00204)	-0.00196 (0.00287)	0.00323 (0.00341)	-0.00119 (0.00212)	-0.00494 (0.00626)	0.0110*** (0.00404)
TRADCOST	-0.00315 (0.00777)	-0.0269*** (0.00692)	0.00736 (0.00522)	-0.0820*** (0.0237)	-0.0213** (0.00914)	-0.0120** (0.00613)	0.00366 (0.00792)	-0.0287 (0.0204)
LLABORPROC	-0.823* (0.451)	-0.240 (0.326)	-1.101** (0.431)	-0.204 (0.972)	-0.510 (0.673)	0.272 (0.342)	-0.427 (0.873)	-0.806 (1.011)
LRATIO KL	-0.187** (0.0799)	0.0502 (0.0687)	0.464*** (0.163)	-0.0239 (0.126)	-0.0551 (0.0725)	-0.251*** (0.0671)	0.444** (0.189)	0.0619 (0.112)
LGDPCA	0.856**	0.608**	1.150**	1.050	0.677	-0.191	0.476	1.097

	(0.395)	(0.295)	(0.499)	(0.880)	(0.593)	(0.349)	(0.976)	(0.950)
LPOP	-0.100	0.592**	1.481***	-0.156	1.155**	-1.159**	0.378	-1.726***
	(0.365)	(0.240)	(0.134)	(0.464)	(0.585)	(0.498)	(0.400)	(0.400)
LTRADISERV_EXP	0.0530*				0.0721			
	(0.0321)				(0.0494)			
LTRADISERV_IMP		0.0818*				0.117**		
		(0.0428)				(0.0538)		
LMODSERV_EXP			0.0128*				0.0136	
			(0.00772)				(0.0115)	
LMODSERV_IMP				0.0427*				0.0268**
				(0.0192)				(0.0124)
Time Effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	126	234	69	78	170	194	40	65
R-squared	0.535	0.827	0.987	0.798	0.552	0.708	0.866	0.544
Number of id	21	21	7	12	22	24	7	13
Underidentification test	10.11	9.723	3.939	9.452	3.954	7.948	3.641	7.219
Prob>LM	0.0177	0.0211	0.140	0.00886	0.138	0.0188	0.162	0.0271
Hansen stat	0.328	2.338	0.464	1.331	0.345	0.336	3.787	0.122
Hansen P value	0.849	0.311	0.496	0.249	0.557	0.562	0.0516	0.727

*Note: The numbers in parentheses represent the robust standard errors of the estimated coefficients;

*, **, ***represent the significances at 10%, 5% and 1%.

Source: Authors' calculations

Table 21: Analysis of the parameters' sensitivity under GMM estimation

Variables	LGVC		LDVA		LFVA	
	Export	Import	Export	Import	Export	Import
Total services	0.235** (0.104)	0.776** (0.355)	0.147** (0.0618)	0.626*** (0.157)	0.195*** (0.0590)	0.727** (0.340)
Transport	0.0787*** (0.0290)	0.582** (0.262)	0.0381* (0.0229)	0.264*** (0.0958)	0.0308* (0.0172)	0.454* (0.269)
Travel	0.141** (0.0662)	0.195* (0.118)	0.0780* (0.0456)	0.102* (0.0540)	0.207* (0.123)	0.134** (0.0648)
Construction	0.00707 (0.0410)	0.0426 (0.0303)	0.0500 (0.0653)	0.0534* (0.0312)	0.00948 (0.0308)	0.00210 (0.0167)
Insurance	0.0187 (0.0118)	0.000634*** (0.000230)	0.153* (0.0864)	0.0512* (0.0299)	0.130* (0.0707)	0.0877* (0.0483)
Finance	0.00874 (0.0532)	0.0288* (0.0152)	0.0134 (0.0273)	0.0479* (0.0254)	0.0942* (0.0551)	0.0443*** (0.0139)
Licence	0.00222 (0.0148)	0.000314*** (7.52e-05)	0.0384 (0.0705)	0.0512* (0.0300)	0.0905** (0.0423)	0.0504*** (0.0170)
ICT	0.00194 (0.0288)	0.255* (0.135)	0.0774* (0.0431)	0.126* (0.0661)	0.107*** (0.0364)	0.195* (0.101)
Business services	0.0356 (0.0668)	0.128** (0.0534)	0.0236** (0.0110)	0.126*** (0.0386)	0.0326* (0.0181)	0.106* (0.0601)
Creative services	0.000187 (0.00124)	0.00567 (0.0203)	0.0102 (0.0280)	0.0170 (0.0321)	-0.0162 (0.0240)	0.0149 (0.0150)
Tourism	0.226* (0.136)	-	0.318* (0.185)	-	0.117 (0.166)	-

Table 22: Analysis of the parameters' sensitivity under 2SLS estimation

Variables	LGVC		LDVA		LFVA	
	Export	Import	Export	Import	Export	Import
Total services	0.106** (0.0428)	0.238* (0.135)	0.200*** (0.0535)	0.567*** (0.187)	0.313*** (0.0684)	0.573* (0.296)
Transport	0.0132 (0.0187)	0.134* (0.0765)	0.635 (0.862)	0.332* (0.190)	0.207 (0.231)	0.265** (0.112)
Travel	0.118* (0.0657)	0.0469* (0.0278)	0.121* (0.0729)	0.196*** (0.0740)	0.124* (0.0693)	0.0693* (0.0419)
Construction	0.0731* (0.0424)	0.00336 (0.0208)	0.0727** (0.0338)	0.160* (0.0832)	0.0588* (0.0304)	0.0844 (0.0799)
Insurance	0.0186 (0.0231)	0.0538 (0.0763)	0.0746* (0.0384)	0.0608* (0.0354)	0.0679** (0.0312)	0.294* (0.174)
Finance	0.0190* (0.0113)	0.0254** (0.0122)	0.109* (0.0652)	0.0192* (0.0111)	0.0468** (0.0192)	0.0564*** (0.0201)
Licence	0.0741* (0.0397)	0.0375* (0.0204)	0.106** (0.0487)	0.0454* (0.0252)	0.0835* (0.0495)	0.0523*** (0.0200)
ICT	0.0317* (0.0185)	0.0982* (0.0528)	0.0840* (0.0471)	0.125** (0.0526)	0.0515* (0.0294)	0.154** (0.0709)
Business services	0.0465** (0.0224)	0.0914** (0.0420)	0.0618* (0.0355)	0.199*** (0.0693)	0.0682*** (0.0189)	0.130** (0.0617)
Creative services	0.0264* (0.0152)	0.0101 (0.0138)	0.115* (0.0626)	0.0852*** (0.0305)	0.0422 (0.0467)	0.0551*** (0.0202)
Tourism	0.131** (0.0612)	-	0.241*** (0.0820)	-	0.232* (0.127)	-

IV.IV Incorporating gender dimensions of trade facilitation in e-commerce: A critical analysis of the Southern African Development Community (SADC)

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Abstract

The development of e-commerce on the African continent requires the concerted effort of all governments to facilitate international cooperation on matters to do with e-commerce, establish harmonised legal frameworks, and develop joint policy interventions. This is to ensure that the benefits of e-commerce cascade to everyone, and are not just enjoyed by a privileged few. The gender dimensions of e-commerce cannot be ignored. Developments in E-commerce in Regional Economic Communities (RECs) and the Africa Continental Free Trade Area (AfCFTA) need to fully address the impact of e-commerce on Gender, and contain express provisions which address the gender dimensions of E-commerce. The Southern African Development Community (SADC) developed a model law on electronic transactions and e-commerce in 2013. However, his model law does not address the role of e-commerce in trade facilitation, and specifically the gender dimensions of trade facilitation in e-commerce. This paper will assess how gender perspectives of trade facilitation in E-commerce in the SADC region can be developed and incorporated into existing regional instruments in the SADC region: the SADC Trade Protocol and the Model Law on Electronic Transactions and e-commerce. A desktop review will be taken to assess the trade facilitation challenges in e-commerce faced by women in the SADC region. The paper will asses what legal and policy interventions need to developed at a regional level, drawing from comparative perspectives from other Preferential Trade Agreements in force addressing this aspect. These developments at regional level may also have a positive effect on the development of a continental framework to regulate e-commerce under AfCFTA, as negotiations are currently under way under AfCFTA for the development of a Protocol on e-commerce.

1. Introduction and background

E- Commerce is a fluid concept, with no single accepted definition of the term. E-commerce has associated with terms such as “e-business, internet business, IT business, e-marketing, e-trading, digital marketing, internet-marketing, internet-trading, internet-commerce, e-retail, virtual trading, distance trading, electronic trading” (Trushkina, 2020). Shahriari et al. (2015) defines e-commerce, as “trading goods or services using computer networks such as the internet.” They maintain that e-commerce is dependent on the use of technologies such as mobile commerce, electronic funds transfer, supply chain management, internet marketing, online transaction processing, electronic data interchange (EDI), inventory management systems and automated data collection systems. The WTO Work Programme on e-commerce (2023) has defined e-commerce as “the production, distribution, marketing, sale or delivery of goods and services by electronic means”. The emergence and growth of internet and the virtual space has had an impact on the way business has been conducted, and there has been a growth in business and “entrepreneurial activity” using the internet. (Kwilinski, 2019)

E- commerce as a way to do business has been expanding. In the wake of the COVID-19 pandemic, the use of the internet as a platform to do business transactions grew in leaps and bounds. E-commerce proved to be a necessary tool in an era when lockdowns, and physical restrictions on movement was restricted. E-commerce ensured that even in a time of lockdown, traders would have access to manufacturers and suppliers, and that traders would also have access to their customers. During the COVID- 19 pandemic, digital platforms offered through the internet became the major way of communicating, and ensuring that businesses were still able to participate in some form of economic activity. Though the COVID-19 pandemic had negative effects on global trade, it proved to be a ‘quantum leap’ in the development of the digital economy and e-commerce. (Ismail, 2020) The data presented by Statista show that in “2020, global e-retails grew by 27.6 per cent ... retail e-commerce sales accounted for 18 per cent of global retail sale.” (Coppola, 2021) The demand for use of the internet, and devices which are facilitated by the internet and the use of mobile data has grown exponentially as a result of the COVID-19 pandemic. (World Economic Forum, 2020) Even after the aftermath of the COVID- 19 pandemic, the use of e-commerce to conduct business is steadily growing due to the advantages that it offers in doing business (Coppola, 2023). The advantages of conducting business using e-commerce include increased business efficiency, increased market efficiency, the ability to develop and provide customized services to consumers, and the opportunity to expand services and offer such services to a global market (Ndonga, 2012)

It has been established that e-commerce provides developing countries the opportunity to leapfrog their economies, develop economic resilience, and achieve the sustainable goals. (UNCTAD, 2021). To do this, governments must put in place a conducive environment which fosters the growth and realization of e-commerce within their respective jurisdictions. (UNCTAD, 2021) Governments must work on building international cooperation, and developing common standards which will harmonize the rules and regulations pertaining to e-commerce to further facilitate international trade. However, without the correct regulatory framework and necessary support from government, e-commerce can prove to be a “double- edged sword” (Ismail, 2020) It can further fan the flames of inequalities and further the digital gap, if the needs of the vulnerable in society are not addressed. (OCED, 2020) The digital gap can be generally defined as the gap that exists between persons who access to information and communication technologies (ICT), such

as fast, affordable and reliable internet and modern ICT devices. It also refers to the socio-economic inequality which results from the unequal access to and use of ICT (Katz, 2019) The digital gap can manifest at different levels- between countries, and between different groups in society. (Muller, 2022)

If the correct measures are not put in place, e-commerce can further exacerbate the inequality between women and men. The inequality that exists between men and women, affects the manner in which the benefits of trade liberalisation are realised. The benefits are not distributed evenly between men and women, due to the fact that the economy is a gendered structure, (UNCTAD, 2014). This entails that gender structures social, economic and political relations that exist between men and women. This structuring ultimately affects the way in which resources and opportunities are distributed between the two, (Elson, 1993). Because of the different roles that are played by men and women in the economy, the effects of trade rules and policies will have a different impact on men and women. (Zarili, 2017) Thystrup (2018, p.1 making reference to Bamber and Staritz, 2016) maintains that a “gender gap” exists in trade due to “the structural differences women face in terms of (i) the gendered composition of the labour force, (ii) women’s primary responsibility for reproductive work, and (iii) women’s differential access to and control over resources relative to men.”

Aclair and Saebo, (2023) found that despite the proliferation in the use of the internet and ICT devices, women, especially those living in the developing and least developed countries, are disproportionately affected by the digital gap. Statistics show that 52% of men have access to the internet and ICT devices in the developing and least developed countries. (World Economic Forum, 2022). This digital gender gap has also amplified the gender gap that exists in trade as trade is increasingly transitioning digital platform through the use of e-commerce. It has been found that the structural inequalities that exist between men and women, and hinder women from reaping the benefits of trade liberalisation, do not disappear when business is now done through digital means. In some case, these structural inequalities can actually be magnified (Dy et al, 2017) These structural inequalities include factors such as the excessive burden of unpaid domestic and care work; lower incomes; over representation in informal employment and less access to social security protection; a greater presence in micro, small and medium sized enterprises; greater barriers to access to finance; and concentration in lower-productivity sectors and occupations (ECLAC, 2021). (Ismail and Hirani, 2021) maintain that there is a ‘vicious cycle’ of gender gaps that cause women to miss out on opportunities to fully participate in e-commerce. Factors that contribute to this ‘vicious cycle’ include the gender gap between men and women who have access to the internet. They maintain that this digital gender is wider in developing and less developed countries. Where women have internet access, they often use inferior hardware compared to men. Women are also poorly funded in technology. Women do not use the internet to make profit, and they are less likely to use the internet to participate in public life. Though women do participate in e-commerce, these factors limit the number of women that are participating in e-commerce. (Ismail and Hirani, 2021) The COVID- 19 pandemic also had a disproportionate effect on women’s participation in e-commerce. A study by the World Economic Forum (2021) found that that “pre-existing gender gaps have amplified the crisis asymmetrically between men and women... The hardest hit sectors by lockdowns and rapid digitalisation are those where women are more frequently employed.”

In the context of Sub-Saharan Africa, it has been seen that e-commerce is growing. The number of online shoppers has increased by an average of 18% very year since 2014 (International Finance Corporation, 2021). Women contribute significantly to trade in Africa. In West and Central Africa, women account for more than 60 % of informal cross border traders. (UNFAO,2017) In the SADC region, women contribute to about 70% of all informal cross border trade in the SADC (UNFAO,2017) The presence of women traders involved in e-commerce is also growing steadily. Women are actively involved in e-commerce, as noticed on the Jumia platform where own over a third of online business businesses on the platform in Cote d'Ivoire, and over half of the businesses in Kenya and Nigeria are owned by women (International Finance Cooperation, 2021).

Methodology

The study carried out by the International Finance cooperation (2021, p.19) notes that women buyers and traders form increasingly percentage of the people using e-commerce as a way to do business. Understanding their needs, and the barriers they face when using e-commerce is important to ensure the growth e-commerce in Africa, and to ensure that to benefits of e-commerce are experience by both men and women. The gender perspective in e-commerce in Africa should not be overlooked. To ensure that the gender perspective is not overlooked when developing trade rules and policies, there must be gender mainstreaming. (UNCTAD, 2009, p.13) maintain that "...mainstreaming gender in trade policy essential means analysing the impact that policies and programmes have on men and women separately, to help identify ways for using trade to empower women, and possible remedies for when trade policies negatively affect women." Frohmann (2017) defines gender mainstreaming as "the integration of a gender perspective into the design, preparation, implementation, monitoring and evaluating of policies, regulatory measures with a view to promoting equality between men and women." Gender mainstreaming in trade policy entails incorporating gender considerations at every stage of the trade policy process. Mainstreaming gender into trade policy is a process that involves three important steps. (1) Before any trade rules or policies are drafted, there is need to assess the potential impact that these policies will have on the wellbeing of men and women. This calls for the need to gather evidence as to the practical reality and use this evidence to inform decisions on trade policy. (2) Trade rules and policies must be designed based on the evidence gathered. (3) Lastly, the policies drafted must be translated into programmes

This study will specifically focus on the Southern African Development Cooperation (SADC), and the gender dimensions of trade facilitation. SADC is Regional Economy Community which is made of 16 member states: - Angola, Botswana, Comoros, Democratic Republic of Congo, Eswatini, Lesotho, Madagascar, Malawi, Mauritius, Mozambique, Namibia, Seychelles, South Africa, Tanzania, Zambia and Zimbabwe. It has been noted in the course of conducting this study that there is a dearth of information and statistics of women involved in e-commerce, especially in the SADC region. This speaks to the need for there to have more studies carry out which sex disaggregated data on the presence of women in e-commerce. However, it is beyond the scope to this present study to gather such information. In an effort to contribute to the mainstreaming of gender into e-commerce provisions, this study will carry out a desktop review of e-commerce provisions in the SADC region, and assess whether gender perspectives are effectively incorporated into provisions that address trade facilitation in e-commerce in the SADC region. As a large percentage of trade in the SADC region also still carried out by informal cross border trading, and the majority of such traders being women, this study will also carry out a desktop review of whether current provisions and practices on trade facilitation in the SADC region cannot

improved through incorporating digital means. The paper will assess what legal and policy interventions need to be developed at a regional level, drawing from comparative perspectives from other Preferential Trade Agreements in force addressing this aspect.

2. Trade facilitation and e-commerce

Trade facilitation can be broadly defined as the simplification, modernization and harmonisation of export and import process, (TFA Agreement, preamble). It refers to essentially expediting the movement, release and clearance of goods. The digitalization of trade and the increasing use of e-commerce can contribute to the further simplification, modernization and harmonisation of trade processes. However, in most cases, even though there is a shift doing business online, and transacting electronically, e-commerce can be constrained by the fact that the border processes for clearing goods may still be required to be done physically. It was noted by a World Bank Report, that the trader often needs to physically go to border agency offices and complete paperwork. The paperwork is complicated, and time consuming. It was noted that an average trade transaction can involve 20 to 30 different parties, and can have 40 separate documents, (World Bank Report). Such documentation is paper based, and must be filled in physically. The result is that customs and border procedure require specialized knowledge. Even when small parcels are shipped, they are usually treated as general cargo, which may delay the shipment. The result is that businesses, companies or traders will resort to using a customs broker, which will inevitably make trading more expensive. The high prices accrued by border procedures and the associated lengthy border delays negatively impact cross border e-commerce, making it less attractive for consumers (World Bank)

Even in the context of physical trading, the lengthy border procedures hamper trade. In Southern Africa, 70% of informal cross border trade is carried out by women. Border clearance processes are lengthy and outdated, with complex and cumbersome procedures and systems (Higgins, 2012). Higgins (2012, p.9- 10) notes that “inefficient customs and border management creates opportunities for corruption... women traders face particular constraints when it comes to customs and border management.” Low levels of literacy, compounded with the fact that border procedures are already complicated, make women more susceptible to corruption. Men are more likely to have a knowledge of cross border trade regulations and procedures, placing them at an advantage over women (Morris and Saul, 2000). The digitalization of cross border measures and procedures will go a long way in addressing these specific difficulties that women traders face

3. Mainstreaming gender into trade facilitation in the SADC region

It is evident that the need for digitalizing trade facilitation is important to facilitate the further uptake of e-commerce. It is important that the digitalization of trade facilitation incorporates the relevant gender dimensions. There is need to develop a trade facilitation regime that is specifically tailored to the needs of informal cross-border traders, as cross border trading plays a significant role in trade in the SADC region, and that 70% of women are involved in informal cross border trade. This will require the gathering of up-to-date sex disaggregated data which addresses the present and current experiences by informal cross border traders, both men and women in the SADC region. It was noted that there is a dearth of information on the current changes of informal cross border traders. SADC has a Gender Unit, whose main role is to mainstream gender in all SADC Institutions, and to facilitate, coordinate, monitor and evaluate the implementation of the Revised SADC Protocol on Gender and Development, (SADC, 2022). It can spearhead the collection of this data, or even co-ordinate the collection of information amongst state parties. The

following tools can be used to identify the gender dimensions in trade facilitation, the Trade and Transport Facilitation Assessment (TTFA), which has been developed by the World Bank, or the Diagnostic Trade Integration Studies (DTIS) which developed under the Enhanced Integrated Framework (EIF) (Taneja et al, 2018)

Such data should then inform the crafting of the trade facilitation regime. This regime should be crafted with a special focus on ensuring the digitalization of trade facilitation, which will also encourage the increased uptake of e-commerce in the region. In addition to the need gathering sex disaggregated data, the following factors can also be considered. In developing this special regime on trade facilitation, it is noted that most countries in the SADC region are a party to the WTO Trade Facilitation Agreement (2014). Out of the 16 member states, only 1 country (Comoros) is yet to ratify this Agreement (WTO Trade Facilitation Agreement Facility, 2023). Hence the progressive provisions of the Trade Facilitation Agreement can serve as a baseline on which to infuse the specific gender dimensions which arise in the SADC in respect to trade facilitation, as these dimensions are not aptly captured by the WTO Trade Facilitation Agreement. However, Article 2 of the WTO TF Agreement mandates that all parties must be consulted and given the opportunity to give comments on rule and protocols before they are enforced. This provision can be taken advantage of to incorporate the relevant gender perspectives into trade facilitation in the SADC region.

Article 1 of the TF Agreement mandates that member states publish all information regarding import and export procedures, and that such information should be made readily available through the internet. This obligation can be met through the setting up of a Trade Information Portal. A trade Information Portal can be described as a resource in web application form, which is provided by government to traders in order to obtain all the information from one single source regarding import and export procedures and regulations which need to be met when importing or exporting goods, or transiting goods (World Bank, 2012). Trade Information Portals are important in facilitating trade as they help to make complex trade procedures easy to understand, and they simplify trade procedures, cutting through bureaucracy and red tape (UNCTAD). In Africa, there are only nine countries which have set up Trade Information Portals – Benin, Burkina Faso, Burundi, Kenya, Mali, Nigeria, Tanzania, Rwanda, and Uganda (UNCTAD). The East African Community has set up a regional Trade Information Portal. Interestingly, Tanzania is the only country in SADC to set up a Trade Information Portal, and yet is not a party to the WTO TF Agreement. Member states within the SADC region should be encouraged to comply with this obligation under the TF Agreement, and set up Trade Information Portals. SADC should also follow the footsteps of the East African Community and set up a regional Trade Information Portal. The setting up of these Trade Information Portals in each SADC country, and the setting up of a regional portal will assist to feed into efforts at a continental level to make trade information available readily on the internet. The African Union plans to launch the African Trade Observatory which will be a trade information portal at the continental level (African Union, 2019)

Article 10.4 of the WTO Agreement provides that member states should establish or maintain a single window, to enable traders to submit documentation and data requirements for importation, exportation, or transit of goods through a single-entry point. All required documentation is submitted to a single interface. From the interface, documentation will be dispatched to agency for processing, and to give feedback to the trader regarding the documentation they have submitted for the clearance of their goods. The single window is essentially an information system that enables

the interchange and exchange of information between all parties which are involved in the process of clearing the relevant goods for customs. The fact that all relevant parties are brought together by a single interface speeds up the process of moving goods across borders, as traders no longer have to move papers physically to the office of each agency department which may be involved in the clearing of the goods, (Mbouwe, 2020). The SADC Information Communication Technology Strategy, which was commissioned in 2013 mandates the implementation of a Single Window System at a regional level. (SADC, 2013). However, the implementation the SADC Single Window System is yet to be fully implemented. Even within the SADC region, there are few countries who have been able to successfully establish a Single Window System, such as the Democratic Republic of Congo. Several countries in Africa such as Senegal, Tunisia, and Cameroon have also been able to implement Single Window Systems. (AACE, 2017) In Zimbabwe, the implementation of a Single Windows System is in its second phase of implementation. (ZIMRA, 2023) This is because of the challenges which are associated in implementing a Single Window System such as privacy and data protection issues, sharing of access to data and sharing of data amongst agencies, data quality and the archiving of electronic document (Trade Facilitation Implementation Guide, 2012). All these factors are problematic at country level. At regional level, it becomes more complicated as there is need to coordinate and link information and agencies between all 16 countries in the SADC region.

The use of an automated customs system to clear customs will also help to facilitate trade. This refers to using an online application to clear customs so that goods can cross borders. It is more advantageous than manual processing, as customs officers can become overwhelmed by the number of goods which need to be cleared, and it can end up taking a number of days to clear the goods, (Mbouwe, 2020). Automated customs processing is hence faster and more efficient. Article 6 of the SDAC Protocol on trades provides a legal basis, and gives a foundation upon which regional collaboration for the computerisation of customs operation and the implementation of an automated customs system can be carried out in the SADC region. (SADC, 2013) Mbouwe (2020) notes that African countries are finding it difficult to establish automated customs systems, due to political reasons. Automated customs systems are yet to be in the SADC region.

In addressing the gender dimensions, it is important to have widespread dissemination of trade information portals, single window systems and automated customs systems to women traders through the government ministries, and trade associations groups – Women associations and small to medium business enterprises associations which may represent women. Nationwide education seminars and activities structured around the dissemination of such trade facilitation applications. This should also be coupled with basic courses on computer and internet literacy skills which can be offered to women traders. These measures will assist to address the gender digital gap. Trade information portal play an important role of simplifying information related to trade procedures. This will assist to address the knowledge gap of women traders often have compared to the male trader counterparts as noted by (Morris and Saul, 2000). Closing this knowledge gap will also help to limit the instances where women fall victim to corrupt practices, as they are now empowered with the knowledge of the relevant trade procedures. The relevant government ministries and associations representing women traders can be mandated to carry out seminars on the relevant trade procedures of how in import and export goods. Empowering women with this knowledge will serve to limit women trader's dependency on "customs brokers".

Article 23 of the WTO TF Agreement requires the establishment of national trade facilitation committees in all members states. To ensure that committees are gender responsive, there must be sufficient representation from women traders and women entrepreneurial support organization in them membership of this committee, (Taneja et al, 2018). Article 7.2 of the WTO TF Agreement mandates the adoption of electronic payment for duties, taxes, fees and charges collected by customs incurred upon importation and exportation. In the SADC, an Integrated Regional Electronic Settlement System (SIRESS) was developed by member states to settle cross border transactions without having to dependent on intermediary banks from outside the region (Southern African Research and Documentation Centre, 2018) As of 2018, the system is now operational in 14 countries. This system will help to facilitate the intra-regional e-commerce trade as it settles payments quicker, using the South African Rand and the United States. The SIRESS is also important in facilitating the payment of taxes, fees and charges collected by customs electronically in the region. In carrying out this study, it was noted that there is less information specifically focusing on women traders' experience in using this system.

Drawing from other regions, a study was carried in 2018 which addressed the gender dimensions in trade facilitation in Bangladesh, Bhutan, India and Nepal. (Taneja et al,2018). Though this study did not specifically address aspects of digital trade facilitation, and paperless trade, some of the measures suggested can also be instructive to the SADC region. Such measures include periodic media campaigns on the digital trade applications available. Information should also be made readily available through information booklets and pamphlets. Assistance should be given to women traders to effectively market their products in foreign markets using online marketing strategies.

National and regional infrastructure must be developed so that paperless trading can be facilitated. Ndonga (2012) notes several important factors which have negatively derailed the uptake of e-commerce in Africa. The lack of adequate ICT infrastructure, The high prices of internet, low penetration and access to internet especially in rural and areas, the lack of ICT knowledge, and the threat of cybercrimes. These factors are still drawing back on the successful implementation and uptake of e-commerce in the SADC region, and in the African continent as a whole. Governments must address these important infrastructural factors if e-commerce is to thrive in Africa.

4. Conclusion

(Ismail, 2020) argues that that developing countries can no longer sit back complacently in the wake of the digital divide which separates them from the developed world. They must rise up, and implement measures that will fast track the digitalization of their economies, and create a conducive regulatory system that will support the growth of e-commerce within their economies, regionally and internationally. Addressing the gender dimensions of e-commerce, specifically focusing on the aspect of trade facilitation requires a multi-disciplinary and multi-sectoral approach. This is the approach taken the Protocol to the African Charter on Human and People's Rights on the Rights of Women in Africa. This approach is also mandated by the SADC Protocol on Gender and Development. As women find themselves at the intersection of multiple discrimination, a multi sectoral approach is required in fighting gender inequality and gender discrimination even in the area of trade.

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V. SOCIO POLITICAL PANEL

V.I The effects of size and product quality on regional competitiveness: Implications for MSMEs and small countries in Africa

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Abstract

There is a broad consensus among researchers that the African Continental Free Trade Area (AfCFTA) has a potential to revolutionise the regional trade landscape in Africa forever, with significant benefits for African countries. However, the free trade area may result in intense competition and different benefits for African countries, with the possibility that large firms and countries may initially receive greater benefits than small ones. In addition to the size of an economy, the extant literature suggests product quality as another important factor for bolstering the competitiveness of countries. What is not clear in the trade literature is the extent to which the size of the firm and product quality, interact to influence the competitiveness of firms and their countries. To address this research gap, the aims of the current paper are two-fold. First, the paper examines the effects of size and product quality on the competitiveness of agribusiness firms in South Africa and Zimbabwe, two countries located in the Southern African Development Community (SADC). Second, the effects on competitiveness, of the interaction between size and product quality of these businesses, are explored. The theories of comparative advantage and the Porter's Diamond Model of National Competitive Advantage are used as guiding theoretical frameworks in the study. The study adopted a quantitative research design paradigm, and was based on a sample of 400 agribusinesses from Free State and Mashonaland provinces of South Africa and Zimbabwe, respectively, with the response rate of 67%. Data were analysed through the Statistical Package for Social Sciences (SPSS) and the Hayes's Process Macro. The results suggest that agribusinesses in South Africa were significantly more competitive than those in Zimbabwe. Furthermore, both size and product quality were significantly related to competitiveness, with product quality producing larger effect sizes on competitiveness than the size of the firm. Intriguingly, the product quality moderated the size of the firm such that at low levels of product quality, large agribusinesses were more competitive than small ones; but as product quality increased, the smaller agribusiness firms became increasingly competitive until the competitive advantage of larger agribusinesses was eliminated. At some critical point, product quality became more important to competitiveness than the size of the firm. The results imply that, while both size and product quality are important factors for competitiveness, product quality is a more potent determinant for competitiveness than size. The moderating effects imply that as product quality increases, the importance of size as a determinant of competitiveness in a free trade area may be truncated until such time that product quality becomes a deciding factor for competitiveness. The study recommends to managers of agribusiness firms and small countries to focus on product quality to leverage their competitive advantage in the proposed AfCFTA. Policymakers, especially ministries responsible for trade in small countries, should capacitate firms to compete on quality rather than efficiency alone.

Key words: African Continental Free Trade Area, Agribusiness, Asset value, Competitiveness, Product quality.

1. Introduction

There is a broad consensus among scholars and policymakers that the African Continental Free Trade Area (AfCFTA) has a realistic chance of boosting regional integration and trade in Africa, and by so doing, improving economic growth and social development in the continent. Several studies suggest that AfCFTA will deepen global and regional value chains (Fofack & Mold, 2021; de Melo & Twum, 2021); increase real incomes and lift millions of Africans out of extreme poverty (Maliszewska, van der Mensbrugghe, Pereira, Osorio-Rodarte, & Ruta, 2019); significantly increase intra-African trade (United Nations Conference on Trade and Development, UNCTAD, 2019); foster cooperation and trust among African states (Albert, 2019); and attract foreign direct investment (FDI) to the continent (Albert, 2019); to mention, but a few gains from this landmark agreement.

Several economic and management theories have been used to explain the benefits of (international) trade, including economic theories such as Ricardo's Theory of Comparative Advantage (and its variants), and management theories such as Porter's Diamond Framework (Smit, 2010). The Theory of Comparative Advantage posits that countries specialize in producing goods and services that they can produce more efficiently than other countries, leading to a positive sum game (Fofack & Mold, 2021; Smit, 2010). At micro level of trade, Porter's Diamond Model of National Competitive Advantage indicates that the firm's ability to compete in international markets is determined by an interrelated set of four attributes of a nation, namely, **factor conditions; demand conditions; related and supporting industries; and the firm's strategy, structure and rivalry**. Some economists reject the Porter's management school of thought on the basis that countries in international trade do not compete, but engage in a win-win (positive sum) game (Smit, 2010).

Whether one subscribes to the economic school or management school of thought, there is an agreement among many scholars that liberalization of trade will intensify competition in Africa, especially among firms from different countries in the continent (Albert, 2019). Several studies further predict that regional integration and stronger degree of competition may negatively affect Micro, Small and Medium Enterprises (MSMEs) and least developed countries with less diversified economies, particularly at the beginning when tariff and non-tariff adjustment costs are still high (Albert, 2019; Okubo, Picard, and Thisse, 2014; Signè & Madden, 2021). That notwithstanding, there is evidence that in the long run, *ceteris paribus*, MSMEs and the least developed countries (LDCs) will benefit more (proportionally) from regional integration, and the new created value chains (Mold, 2021).

Besides size, location, tariff and non-tariff barriers, firms and countries can leverage their competitive advantage through production of quality products. It is axiomatic that big organisations are often more productive, sell more products, and earn more profits than small organisations do (Manova & Yu, 2017), with substantial benefits to their countries. While some policy discourse advocates reducing costs for firms to compete successfully (production efficiency), little is known about the concurrent and interactive impact of size (asset value) and (product) quality in the national and international markets, which limits our understanding on how small firms and LDCs can participate meaningfully in the proposed free trade area in Africa.

The aims of this study are therefore two-fold. First, the paper examines the influence of size (asset value) and product quality on the competitiveness of agribusinesses in South Africa and Zimbabwe, two countries located in the Southern African Development Community (SADC) free trade area. Second, the effects on competitiveness, of the interaction between size and product quality of these businesses, are also explored.

The study contributes to trade literature and policy in several ways. First, we explore if both product quality of agribusinesses in South Africa and Zimbabwe and their size (asset value) have unique contribution to their competitiveness. Since higher degree of competition that would be ushered in by regional integration may affect MSMEs and small-scale farmers more negatively than bigger firms (Kubo et al., 2014), it is vital to explore if firms can leverage their competitiveness based on size, product quality, or both. Second, we explain the interactive effects of size and product quality on competitiveness of agribusinesses. To advance knowledge and inform practice, It is necessary to evaluate if the effects of size on competitiveness is enhanced or reduced by product quality. From the policy standpoint, it is essential to examine the role of product quality in an environment characterised by the domination of big businesses, but in which the majority of businesses are MSMEs, and the economy is mostly agro-based (Albert, 2019). After this introductory section, the next section focuses on literature review, which will be followed by sections on research methods, presentation of results and their discussions, respectively. The last section provides conclusions and recommendations.

2. Literature Review

2.1 Theoretical framework

We use the Ricardo's Theory of Comparative Advantage and Porter's (1990) Diamond Model for competitiveness as guiding theories in this study.

Most of the literature on regional integration and intra-trade is predicated on an economic Theory of Comparative Advantage (or its variants). According to this theory, countries specialize in producing goods and services that they can produce more efficiently than others, leading to allocative efficiency, accumulation effects, and a positive sum game (Fofack & Mold, 2021; Smit, 2010). As alluded to earlier, once fully implemented, studies argue that AfCFTA will increase intra-Africa trade, significantly increasing gross domestic product (GDP) and incomes in the continent.

The Diamond Model of National Competitive Advantage acknowledges the importance of external and internal factors in the firm's international competitiveness (Rambe & Khaola, 2023). According to Porter (1990), the firm's ability to compete in international markets is determined by an interrelated set of four attributes of a nation, namely, **factor conditions; demand conditions; related and supporting industries; and firm strategy, structure and rivalry** (Rambe & Khaola, 2023). According to Porter (1990), if firms in a particular country have these four attributes, they will leverage their competitiveness in international markets, and therefore make their countries more competitive. Whereas both theories acknowledge that firms can compete in international markets, the Theory of Comparative Advantage does not emphasise competition, but Porter's Model does. Porter argues that the competitiveness of countries in international markets is driven by competitiveness of local firms in such countries, the thesis that informs our arguments in the current paper.

2.2 The potential relationship between size (asset value) and competitiveness in the Africa Continental Free Trade Area

In a free trade area, evidence suggests that, initially, big countries with more diversified economies may benefit more than their small and less diversified counterparts (Albert, 2019). Mold (2021) argues that large countries gain more in absolute terms, but that eventually smaller countries tend to gain more proportionally from regional integration. Along similar lines, big firms are more likely to benefit from regional integration than MSMEs (Albert, 2019). Several reasons have been cited to support these propositions.

First, it is posited that specialization that may result from regional integration could increase accumulation of production efficiencies and concentration of income in higher income economies (Mold, 2021), resulting in relocation of some firms. Since firms are free to change location in a free trade area, there is a tendency of firms to relocate from poor countries to more diversified countries, resulting in bigger countries becoming net exporters of manufactured goods (Okubo et al., 2014). This is not surprising because, compared to their smaller counterparts, bigger countries are more likely to have advanced factor conditions such as human capital and technology; high consumer demand; local firms that participate in backward value chains; and strong competition that may fuel rivalry and technological developments among local firms (de Melo & Twum, 2021; Porter, 1990; Smit, 2010).

Second, fixed costs associated with certification of rules of origin (ROO) may negatively and disproportionately affect MSMEs and smaller countries with lower trade volumes and poorer customs capacity, thus creating barriers that big firms and countries may easily cope with (Signè & Madden, 2021). Third, compared to their small counterparts, big companies and countries tend to benefit more from regional and global value chains. De Melo and Twum (2021) found positive and significant results for the correlation between GDP and participation of countries in global value chains.

Based on Porter's Diamond Model, we posit that agribusinesses in South Africa will have larger asset values, and be more competitive than those in Zimbabwe. We further submit that size (proxied as asset value) of agribusinesses in South Africa and Zimbabwe will be positively correlated to their competitiveness.

Hypothesis 1a: Agribusiness firms in South Africa have higher asset values than those in Zimbabwe.

Hypothesis 1b: Agribusiness firms in South Africa are more competitive than those in Zimbabwe.

Hypothesis 2: Controlling for other variables, there is a positive relationship between asset value and competitiveness of agribusiness firms.

2.3 The relationship between product quality and competitiveness

Product quality is a critical determinant of the competitiveness of firms in local and international markets (Monova & Yu, 2017). According to Porter's Diamond Model, the local demand may compel 'country firms to continually innovate and upgrade their competitive positions to meet high standards in terms of product quality, features and service demands' (Smit, 2010: 116). This quality is the one that determines the competitiveness of firms in international markets. In support of this proposition, Morgan and Vorhies (2001) found that product quality alignment positively affects business unit performance. In an earlier study, Porter (1990) asserted that Japanese automakers obtained sustained competitive advantage through process improvements that led to product quality, and better customer-satisfaction than competitors did. Along similar lines, Lakhali (2009) found that quality had direct impact on the competitive advantage of organisations in Tunisia. Shi et al. (2018) found that technological innovation led to product quality, and that product quality influenced product market positioning in China. Customer satisfaction and appropriate product positioning are pillars of competitiveness. Monova and Yu (2017) found positive relationships between quality and competitiveness of exports in China. Specifically, these authorities indicate that the 'firm's core competence is in varieties of superior quality that

command higher prices but nevertheless generate higher sales than cheaper goods of lower quality' (p.117).

Taken together, the aforementioned studies affirm that product quality is important for competitiveness of firms. It is therefore conceptually plausible to expect that product quality of agribusinesses could influence their competitiveness in the two Southern African countries under spotlight. We therefore hypothesise that:

Hypothesis 3: There is a positive relationship between product quality and competitiveness of firms and countries.

The moderating effects of asset value in the relationship between product quality and competitiveness

As indicated before, the size of a firm has implications for its competitiveness. Since asset value is sometimes used as a proxy for business size (Hashmi, Gulzar, Ghafoor, & Naz, 2020), we expected that agribusinesses with larger asset values could compete better than those with smaller asset values. However, that advantage could in fact depend on quality of products brought to the market (Lakhal, 2009; Manova & Yu, 2017; Shi, Wang, Sun, & He, 2018). Consequently, we expected asset value to produce greater impact on competitiveness when product quality was low, but to gradually lose its influence as product quality increased. Put differently, we expected quality products to compensate organisations with smaller asset values such that, as product quality improved, the competitive advantage of agribusinesses with smaller asset values would increase up to a point where size no longer gave firms any competitive advantage. This brings us to our last hypothesis as follows:

Hypothesis 4: The relationship between the size of the firm and its competitiveness is moderated by the product quality such that the relationship is stronger when product quality is low rather than high.

Figure 1 shows the conceptual model of the study.

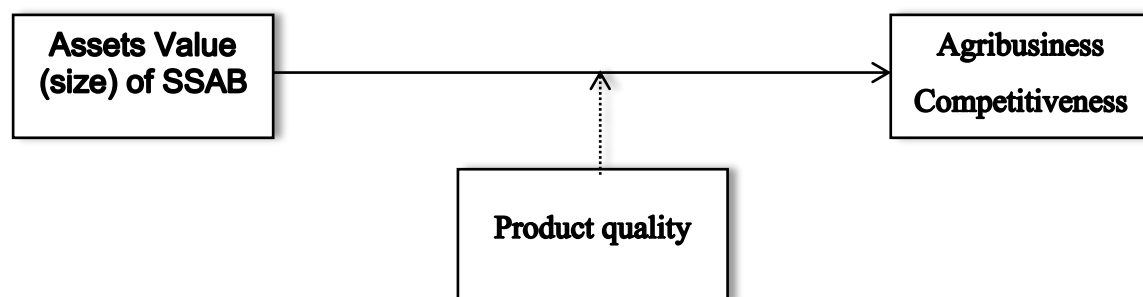


Figure 1: The conceptual model

3. Method

3.1 Research Design

We adopted the quantitative research paradigm to address the hypotheses. This research design was deemed appropriate because the study sought to relate one variable to another (Cooper and Schindler, 2018).

3.2 Sample and procedures

We targeted a population of 7000 agribusinesses (including suppliers of agricultural equipment and inputs, farming associations and other farm-related businesses) in Mashonaland Central and Free State Provinces of Zimbabwe and South Africa. We obtained data estimates from relevant

ministries in both Zimbabwe and South Africa. At the time of study, the Department of Agriculture, Forestry and Fisheries in the Free State estimated that there were approximately 3000 small-scale agribusinesses in the Free State, and the Ministry of Agriculture, Mechanisation and Crop Production in Zimbabwe provided an estimate of about 4000 such agribusinesses in Mashonaland Central Province. Thus, the estimated target population for the two countries was 7000 firms in agribusiness.

We selected a convenience sample of 400 respondents (200 from each country). While convenience sampling does not permit generalisation of results to the entire population, we are confident of the adequacy of this sample size because according to Sekaran and Bougie's (2016) statistical tables, it was higher than the one required ($n = 364$) for the target population ($N = 7\ 000$).

Research assistants distributed self-administered questionnaires to owners or managers of agribusinesses to fill in. While some questionnaires were completed on the same day, some respondents requested the research assistants to collect them later. 277 questionnaires were returned, but only 268 of were found usable, resulting in a usable response rate of 67%. Of the returned questionnaires, 106 (39.6%) were from Zimbabwe, and 162 (60.4%) were from South Africa. The respondents came from different types of agribusinesses, including animal husbandry (9.3%), crop production (31.3%), horticulture (21.6%), manufacturing or agro-processing (19.4%), sale of agro equipment (9.3%), and marketing of agro-equipment or implements (9%).

The largest number of agribusinesses (37%) has been in operation for a period ranging from 11 to 15 years, and in terms of the number of employees, the highest number of firms (36.2%) employed between 51 and 100 employees. In terms of total assets, the highest number of firms (45.1%) owned between USD 200 000 and USD 499 999 inclusive.

3.3 Measures

Competitiveness: Competitiveness is a multi-dimensional construct, and as such, we measured it based on several dimensions, including the product market competitiveness, customer satisfaction, market pricing competitiveness, business market dominance, and promotion strategy (Dlamini, 2012; Awale and Rowlinson, 2014; Gumbochuma, 2017). On a scale ranging from 1 (Strongly disagree) to 5 (Strongly agree), respondents were asked to indicate the extent to which they agreed with the statements provided on the questionnaire.

Sample items under product market competitiveness included 'the business has established strong agro-processing brands/services in the market compared to competitors', and 'the business agro-processing products or services are easily recognisable in the market compared to those of competitors'.

Sample items under *customer satisfaction* were 'customers are satisfied with the agro-business's brands/services compared to those of its competitors', and 'business' agro-processing products /services are preferred by customers compared to those of competitors'.

Sample item under the *market pricing competitiveness* dimension was 'the agribusiness has favourable pricing compared to competitors'.

To assess business market dominance, participants were asked to state, on a scale ranging from strongly disagree to strongly agree, the level of business dominance on certain issues, for example, dominance in domestic markets over competitors, dominance in research and development, and marketing skills dominance.

After systematically deleting items which tended to lower the Cronbach's alphas (α) of respective scales, product market competitiveness was measured with two items ($\alpha = 0.89$), customer satisfaction with four items ($\alpha = 0.92$), and business market dominance with five items ($\alpha = 0.90$). Items for marketing price competitiveness and promotional strategy were not added together because the alphas (α) of these dimensions were low.

Overall competitiveness construct was measured as an index of items used to tap into dimensions mentioned above ($\alpha = 0.88$).

Product quality: Four items adapted from the management quality literature were used to tap into this construct. The items used were 'the business develops / produces high quality agro product/services', 'the business has ISO certification of products to meet local quality requirements', 'the business' products or services meet the international quality standards set by global institutions', and 'the business is involved in continuous agro product development and improvement'. The first item 'prodqual1' was deleted because it did not load well on the latent construct. The Cronbach's alpha (α) of the remaining items was 0.77.

Asset Value: Asset value was reported on an ordinal scale by agribusiness owners or managers. Agribusinesses that were worth less than USD 200 000 were coded 1; those that were worth from USD 200 000 to USD 499 999 were coded 2; those that were worth from USD 500 000 to USD 999 999 were coded 3; those that were worth from USD 1 000 000 to USD 4 999 999 were coded 4; those that were worth USD 5 000 000 to USD 9 999 999 were coded 5, and those that were worth USD 10 million and above were coded 6.

Control Variables: Since there are several variables that are related to asset value, and can equally be used as a proxy for size, we included them in the model to control for possible spurious relationships.

The control variables included the country in which the agribusiness was located, the number of years the agribusiness had been in operation, the number of employees the agribusiness had, and the nature of agribusiness. Agribusinesses located in Zimbabwe were coded 1, and those located in South Africa were coded 2. In terms of age, agribusiness that were in business for less than 5 years were coded 1; those that were in business for 6 to 10 years were coded 2; those that were in business for 11 to 15 years were coded 3; those that were in business for 16 to 20 years were coded 4; and those that were in business for over 20 years were coded 5. In terms of nature of agribusiness, those that were in animal husbandry were coded 1; those that were in crop production were coded 2; those in horticulture were coded 3; those in manufacturing or agro-processing were coded 4; those that were in sale of agro-equipment were coded 5; those that were in marketing of marketing of agro-equipment or implements were coded 6; and those in other areas not mentioned in other categories were coded 7.

3.4 Data analysis

Data were analysed using the Statistical Package for Social Sciences (SPSS) and Hayes' Process Macro software packages. To test for hypothesized relationships, we used correlation analysis, A Mann-Whitney U test, and Process Macro Model 1. Specifically a Mann-Whitney U test was used to test for differences in asset value and competitiveness of firms between South Africa and Zimbabwe, and Process Macro was used to test for interaction effects on competitiveness, between the independent variable and the presumed moderator.

4. The results

To have an overview of all relationships, we conducted zero-order correlations on SPSS. The results are shown in Table 1.

Table 1: Inter-correlations among study variables (Spearman's rho)

Variable	Country	Business years	Employees	Asset value	Nature of business	Competitiveness	Product quality
Country	-	0.252**	0.119*	0.415**	0.187**	0.720**	0.544**
Business Years		-	0.642**	0.586**	0.342**	0.446**	0.414**
Employees			-	0.537**	0.191**	0.364**	0.366**
Asset value				-	0.469**	0.526**	0.289**
Nature of business					-	0.321**	0.194*
Competitiveness						-	0.709**
Product Quality							-

Notes: ** Significant at 0.01 (two-tailed), * Significant at 0.05 (two-tailed)

The zero-order correlations in Table 1 suggest that there were positive correlations between asset value and competitiveness ($r = 0.39$, $p \leq 0.01$), and between product quality and competitiveness ($r = 0.41$, $p \leq 0.01$), implying that higher asset value and product quality were related to high levels of competitiveness, and vice versa.

Testing of hypotheses

Hypothesis 1a predicted that the total asset value of firms in South Africa would differ significantly from total asset value of firms in Zimbabwe. Since evidence suggests that the economies of Nigeria, Egypt and South Africa account for over 50% of Africa's cumulative GDP (Albert, 2019), we concluded that the economy of Zimbabwe would be smaller than that of South Africa. We used asset value as a proxy for business size (Hashmi, Gulzar, Ghafoor, & Naz, 2020). Because business size is associated with competitiveness and gains from trade (Albert, 2019), and competitiveness of countries derives from local firms (Porter, 1990), we expected agribusinesses in South Africa to possess assets with higher values than those in Zimbabwe.

A Mann-Whitney U test was performed to evaluate whether asset values of firms differed by the location of such firms. The results are shown in Table 2.

Table 2: Differences of asset value of firms between South Africa and Zimbabwe

	Country	N	Ranks	
			Mean Rank	Sum of Ranks
Asset value	Zimbabwe	106	96.88	10269.50
	South Africa	162	159.11	25776.50
	Total	268		

As expected, the results suggest that agribusinesses in South Africa had significantly greater asset values than those in Zimbabwe, $z = -6.79$, $p \leq 0.001$. This is an indication that South Africa is a larger economy than Zimbabwe, and therefore, may be more competitive than Zimbabwe in the current SADC free trade area.

In fact, hypothesis 1b predicted that firms in South Africa would be more competitive than those in Zimbabwe, the main reason being that South African economy is larger in size, and is more diversified than that of Zimbabwe.

To address hypothesis 1b, we again performed Mann-Whitney U test to evaluate whether competitiveness of firms in Zimbabwe differ significantly from competitiveness of firms in South Africa. The results are shown in Table 3.

Table 3: The differences in competitiveness between South Africa and Zimbabwe

Competitiveness	Country	N	Ranks	
			Mean Rank	Sum of Ranks
	Zimbabwe	106	65.52	6945.00
	South Africa	159	177.99	28300.00
	Total	265		

As predicted, the results imply that firms in South Africa reported significantly higher competitiveness than those in Zimbabwe, $z = -11.71$, $p \leq 0.001$. This is another indication that size and diversified economy may matter in competitiveness of firms and their countries.

Figure 2 presents a plot of the differences in both product quality and competitiveness in South Africa and Zimbabwe.

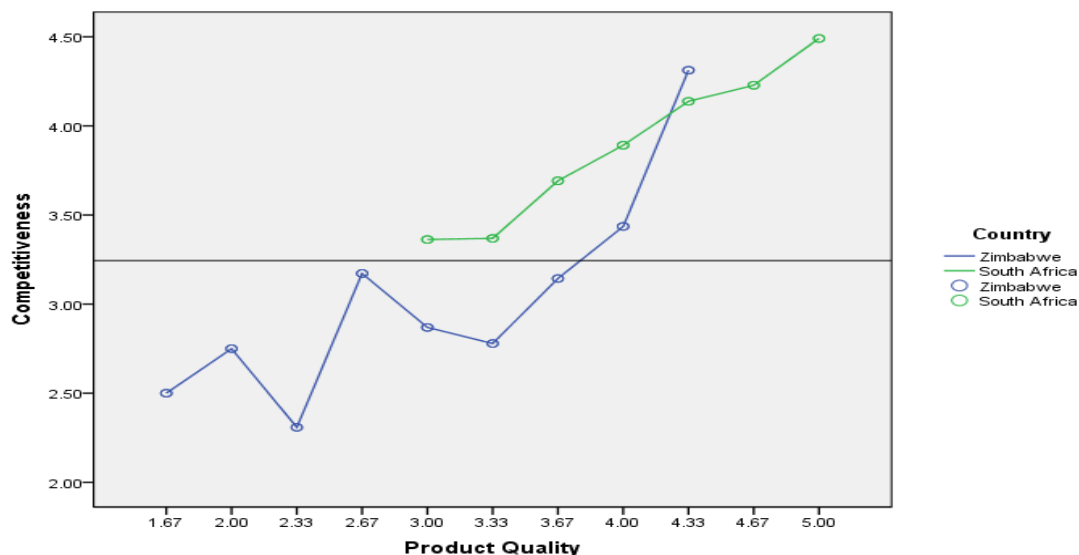


Figure 2: Differences of product quality and competitiveness in South Africa and Zimbabwe

The figure depicts that firms in South Africa reported higher product quality and competitiveness than those in Zimbabwe, implying that in a regional free trade area, South Africa (would) benefit more than Zimbabwe.

To address hypotheses 2, 3 and 4, we ran Hayes' Macro Process (Model 1) on SPSS. The criterion variable was competitiveness; the independent variable was product value; and the moderator was product quality. We included years in business (age of a firm), number of employees, country, and the nature of a business as control variables. The results are shown in Table 3.

Table 3: The results of Hayes's' Process Macro Model

Variable	Coeff	SE	t-value	p-value	Confidence Interval	
					Lower	Upper
Product quality	0.67	0.10	6.97	0.00	0.48	0.87
Asset value	0.33	0.12	2.69	0.01	0.09	0.57
Prod quality X Asset value	-0.08	0.03	-2.52	0.01	-0.14	-0.02
Years in Business	0.01	0.03	0.44	0.66	-0.04	0.07
Number of employees	0.05	0.03	1.67	0.10	-0.01	0.10
Country	0.45	0.05	8.57	0.00	0.35	0.56
Nature of SSAB	0.05	0.02	2.76	0.01	0.01	0.08
Model statistics: R = 0.80, R-square = 0.64, F = 76.65, p ≤ 0.001						

Hypotheses 2 predicted that asset value (size) of firms in South Africa and Zimbabwe would significantly influence competitiveness. As expected, Table 3 suggests that there was a positive and significant relationship between asset value and competitiveness of firms ($\beta = 0.33$, $p = .001$, CI 0.09, 0.57), controlling for other factors such as number of employees, age of a firm, the country in which the firm is located, and the nature of a firm. This implies that higher asset value was associated with higher reported competitiveness of firms, and vice-versa. Hypothesis 2 was hence confirmed.

Hypothesis 3 predicted that there would be a significant relationship between product quality and competitiveness of firms. In support of this conjecture, Table 3 indicates a positive and significant relationship between the two constructs ($\beta = 0.67$, $p \leq .001$, CI 0.48, 0.87), implying that the higher the product quality, the higher the competitiveness of firms, and vice-versa. In fact, product quality emerged as the most influential factor on competitiveness in this model. Hypothesis 3 was also confirmed.

Hypothesis 4 predicted that the relationship between the size of the firm and competitiveness would be moderated by the product quality such that the relationship would be stronger when product quality was low rather than high. Table 3 shows that the interaction factor between asset value and product was significant ($\beta = -0.08$, $p = .001$, CI -0.14, -0.02) because the confidence intervals did not include zero. The negative coefficient of interaction suggests that the impact of asset value (size) on competitiveness was weakened by the increasing product quality. Table 4 shows the conditional effects of asset value on competitiveness at different values of product quality, namely, at 1 standard below the mean, at mean, and at 1 standard deviation above the mean.

Table 4: Conditional effect of Asset Value (X) on Competitiveness (Y) at values of product quality (moderator)

Variable		Confidence Interval				
Product quality	Effect	SE	t-value	p-value	Lower	Upper
3.36	0.07	0.03	2.53	0.01	0.02	0.13
3.84	0.03	0.02	1.57	0.12	-0.01	0.08
4.32	0.00	0.02	-0.08	0.93	-0.05	0.05

As hypothesised, the effect of asset value on competitiveness was significant when product quality was low, but its effect decreased as the product quality increased. Specifically, the impact of asset

value was only significant when product quality was one standard deviation below the mean, and became non-significant at the level of mean, and one standard deviation above the mean.

The critical value of product quality, according to Johnson-Neyman significance region, in which the interaction changed from significant to non-significant, was 3.70. This implies that the impact of asset value on competitiveness was becoming smaller and smaller as product quality increased until the value of 3.70, after which it became non-significant.

Put differently, the significant negative moderating effects of product quality by asset value intimate that as product quality increased, the effects of asset value on competitiveness became less significant or important.

The plot of the moderating effects of product quality by asset value on competitiveness are illustrated in Figures 3 and 4.

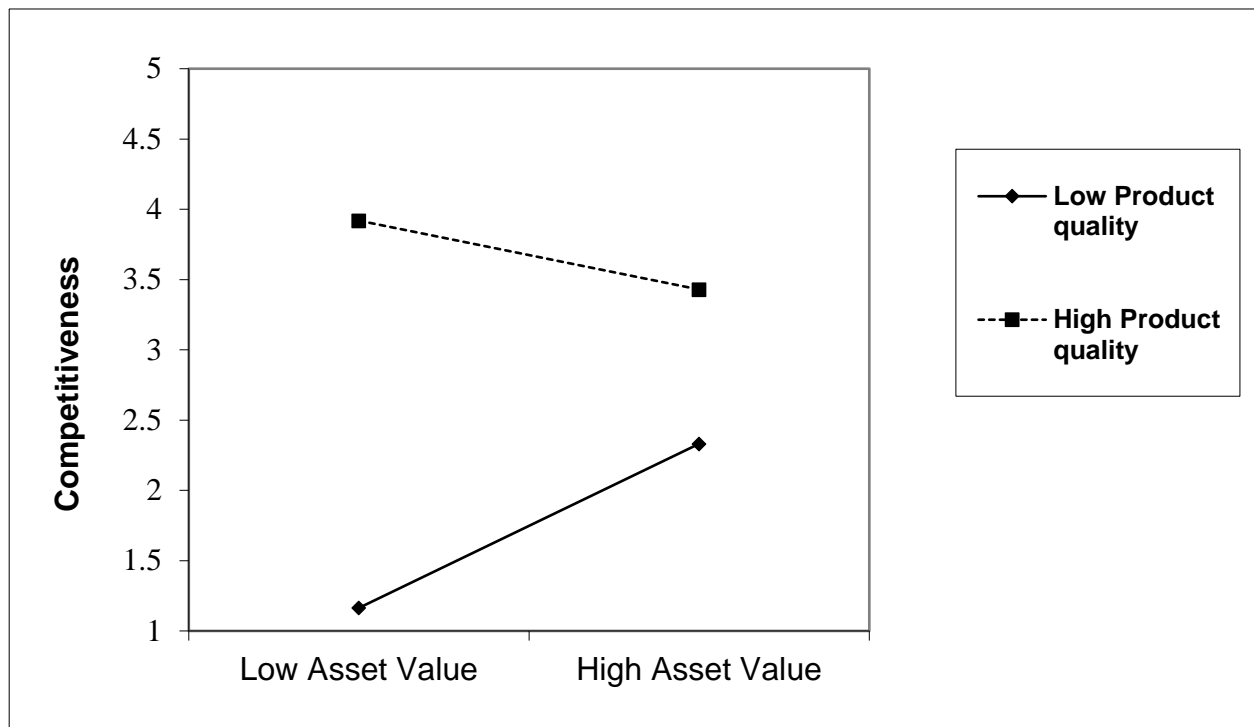


Figure 3: The effects of asset values at different levels of product quality

As hypothesized, Figure 3 suggests that the impact of asset value on competitiveness was significant when quality was low, rather than high. This is because the gradient of slope for low product quality graph was steeper and significant ($\beta = 0.234$, $t = 3.139$, $p = 0.002$), but that of high quality product was less steep and negative, albeit non-significant ($\beta = -0.098$, $t = -0.360$, $p = 0.719$).

To explain the same effects using a different approach, in Figure 4 we plotted the interaction effects at different levels of asset value.

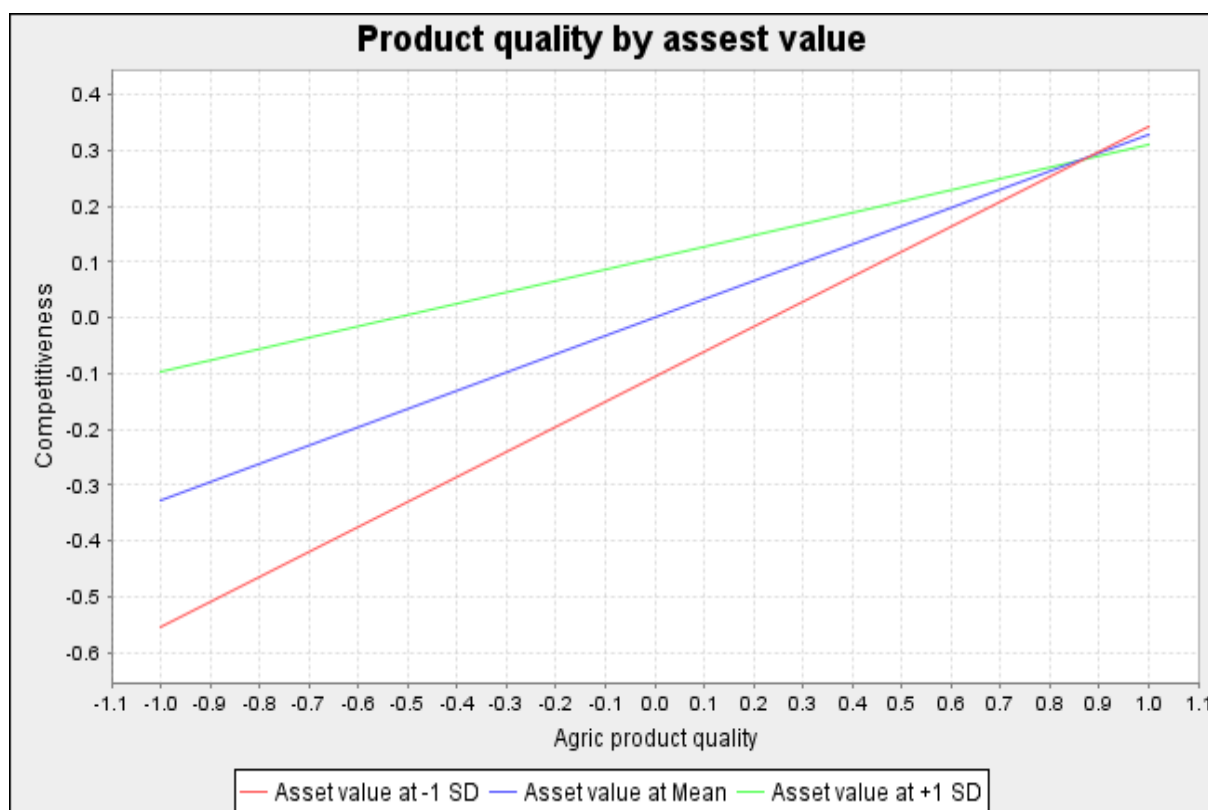


Figure 4: The effects of product quality at different levels of asset value

As shown in Figure 4, at low levels of product quality, firms with larger asset values became more competitive than those with smaller asset values; but as product quality increased, firms with smaller asset value became increasingly competitive until the competitive advantage of those with larger asset values was eliminated. In fact, the relationship between product quality and competitiveness was steeper or more impactful for firms with smaller asset values than those with larger asset values, implying that firms with smaller asset values (often MSMEs) can leverage their competitiveness in the free trade area by focusing on product quality, and not merely on cost reduction (efficiency).

5. Discussion and conclusions

5.1 Summary of findings

Based on a usable sample of 268 agribusinesses based in South Africa and Zimbabwe, the purpose of the current study was to examine if the relationship between size and competitiveness of agribusinesses was moderated by product quality of such businesses. As expected, our results confirm that size had significant effects on competitiveness of agribusiness in South Africa and Zimbabwe, and that agribusinesses in South Africa were generally more competitive than those in Zimbabwe. This finding affirms those studies indicating that, in a free trade area, big firms are likely to be more competitive, and hence benefit more than SMMEs (Albert, 2019; Signè & Madden, 2021). It is possible that big businesses with large volumes (mostly in South Africa) were able to deal with non-tariff barriers in the SADC free trade area, giving such businesses a competitive advantage. As suggested by Porter's Diamond Model of National Competitive Advantage, compared to Zimbabwe, South Africa could be having better attributes that make firms compete successfully, including human capital and technology, relatively high demand of local products, an ecosystem of supporting industries, viable firm strategy and structure, and lively rivalry between competing firms. In a free trade area, this gives South Africa a stronger competitiveness in absolute terms (Mold, 2021). While the fast track land reform programme

(FTLRP) that started in 2000 might have precipitated the disadvantage that Zimbabwe finds itself in (Gumbochuma, 2017, Mazwi, Chemura, Mudimu, & Chambati, 2019), there is also a possibility that the SADC free trade area might have benefitted the bigger and more diversified agribusiness firms in South Africa. As indicated earlier, compared to smaller countries, there is ample evidence that bigger and more diversified economies gain more from regional integration and free trade (De Melo & Twum, 2021; Mold, 2021).

Even though many studies speculate and confirm the effects of size and product quality in regional and international trade, we are not aware of studies that explore the interactive effects of size and product quality on the competitiveness of firms or countries. Our results suggest that the product quality moderated the relationship between asset value (firm size) and competitiveness such that at low levels of product quality, agribusinesses with larger asset value became more competitive than those with smaller asset values. As product quality increased, the impact of size on competitiveness gradually became non-significant. In fact, as product quality increased, agribusinesses with smaller asset value became increasingly competitive until the competitive advantage of those with larger asset value was eliminated.

In an earlier study, Shi et al. (2017) found that firm size moderates the relationship between technological innovation process and product quality. While slightly different from the current study, we build on Shi et al.'s (2017) study to propose and confirm that product quality is an effective moderator of the relationship between firm size and competitiveness. Overall, our results suggest that small-scale businesses can compete successfully with their larger counterparts if they focus on producing quality products and services.

This is important because, even though South Africa and Zimbabwe are in the same regional economic community (REC), they do not enjoy the same economic muscle, and the sizes of their businesses differ, as is the case with many countries in SADC.

5.2 Practical implications and recommendations

We submit that our findings can assist small countries and MSMEs to leverage their competitiveness in the AfCFTA. We have several reasons to support our view that our results can remain the same in AfCFTA. First, South Africa and Zimbabwe are two African countries which are in the same REC which mimic what is proposed in AfCFTA. Second, the results confirm what literature predicts would likely happen in AfCFTA, namely, that big firms and countries are likely to benefit more (in absolute terms) from AfCFTA than their smaller counterparts.

As indicated in our results, whereas we argue that big firms and countries are likely to benefit more from this landmark agreement, we also argue that small firms can benefit if they focus not only on efficiency, but also on producing quality products and services. While agribusinesses with large asset values were generally more competitive than small-scale farmers with small asset value, the latter increased their competitiveness through quality products. This gives us hope that MSMEs and small countries in Africa can, in the long run, leverage their competitive advantage through the quality of their products. We submit that opting out of AfCFTA is not a solution, but improvement of products and services to customers is the strategy that probably matters more.

We recommend that MSMEs and small countries in Africa focus more on the quality of their products, and less on their size, as the latter does not matter as much as the former on competitiveness, according to our results. Arguably, once tariff and non-tariff barriers have been eliminated in AfCFTA, one of the few things that will matter for competitiveness will be quality. Ministries responsible for trade in small countries in the region should not only communicate the

importance of quality to producers, but should also facilitate trade by establishing national departments that comply with technical requirements of the International Standardisation Organisation (ISO). At the micro level of production, producers, especially small-scale producers, should instil the culture of quality in their employees. In the long run, to inculcate the culture of quality among future workers and producers, quality programmes should be developed and integrated into curriculum of Vocational Training Institutions and universities in small countries.

5.3 Limitations and prospects for future research

Like many studies of this nature, our study has some limitations that have to be considered before decisions are made. First, the cross-sectional design adopted in the study makes it difficult to infer the causality between variables (McIver & Lengnick-Hall, 2018). For instance, while we hypothesized that product quality influences competitiveness, the reverse causality whereby competitiveness influences the quality of products cannot be ruled out. This is because that competitive firms and countries have resources they can use to improve the quality of their products. Thus, even though the relationships were premised on sound theoretical underpinnings, longitudinal and/or experimental designs are needed to confirm causality between variables. Second, the samples based on only two provinces (albeit large ones) from South Africa and Zimbabwe limit the generalizability of the results. Relatedly, trade dynamics within SADC REC may not exactly mimic trade dynamics within AfCFTA. Future studies can be based on stratified random samples of agribusiness firms from all countries in Africa to ensure generalizability. Third, data were collected based on self-reports of agribusiness firms, and this raises the possibility of the same-source bias. Future studies can be based on different sources of data, including firm managers, employees, policymakers, and objective data from existing documents. Fourth, our results are based on firms, and not directly on competitiveness of countries, principally to avoid the on-going debate on whether countries can compete, as purported by Porter (Smit, 2010). The results do not therefore suggest that countries compete in a free trade area.

In general, even though the assumed relationships were based on sound theories, and gives us confidence that they are correct and verifiable, the interpretation of the results should be made with caution.

6. Conclusions

The purpose of the current study was to examine if the relationship between size and competitiveness of agribusiness firms in South Africa and Zimbabwe was moderated by product quality. The results suggest that both product quality and firm size had independent influence on competitiveness of the sampled firms. It is noted that the effect size of product quality on competitiveness was larger than that of firm size. As hypothesised, the relationship between size and competitiveness was moderated by product quality such that at low levels of product quality, agribusiness firms with larger asset value became more competitive than those with smaller asset value. However, as product quality increased, agribusiness firms with smaller asset value became increasingly competitive until the competitive advantage of those with larger asset value was eliminated. Based on these results, we recommend that MSMEs and small countries focus on quality rather than mere size of their assets or economies and their efficiencies as they prepare to enter the AfCFTA. We hope our study will evoke further debates and discourse on how MSMEs and small countries can compete successfully with their bigger counterparts within the envisaged free trade area in Africa.

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Appendix

1. Competitiveness of agribusinesses

Product's Market competitiveness (Scale: strongly disagree, disagree, neutral, agree, and strongly agree)

- i. The business has established strong agro-processing brands/services in the market compared to its competitors
- ii. The business' agro-processing products or services are easily recognizable in the market compared to those of its competitors
- iii. The business ' agro-processing enjoy higher sales in the market compared to those of competitors
- iv. The agro-processed products or services have more dominance over those of the organisations competitors

Customer satisfaction (Scale: strongly disagree, disagree, neutral, agree, strongly agree)

- i. The customers are satisfied with the business' agro-business brands/services compared to that of its competitors
- ii. The business' agro-processing products /services are bought by customers ahead of those of competitors
- iii. The business' agro-processing products/services are preferred by customers compared to those of competitors
- iv. The price of the business' agro-processing products /services are preferred by customers compared to those of its competitors
- v. The business has strong relationship with its customers base compared to its competitors

Market pricing competitiveness (Scale: strongly disagree, disagree, neutral, agree, strongly agree)

- i. My business in agro-processing has developed competitive pricing model
- ii. The agro business has favourable pricing compared with other businesses

Business market dominance (Scale: strongly disagree, disagree, neutral, agree, strongly agree)

- i. Please state the business' level of dominance of the domestic market over competitors

- ii. Please state the business' level of dominance of its research and development and development (R&D) locally
- iii. Please state the business' level of dominance of its research and development and development (R&D) internationally
- iv. Please state the business' level of production dominance of agro products and services
- v. Please state the marketing skills dominance of the business' employees

Promotion strategy (Scale: strongly disagree, disagree, neutral, agree, strongly agree)

- i. The business' product promotion help has helped it o to be dominant on the market
- ii. The business emphasises effective and unique agro product promotion techniques

Organisational competitiveness (Scale: strongly disagree, disagree, neutral, agree, strongly agree)

- i. The organisation has invested in production capacity that is competent
- ii. The business agro business has developed competitive, efficient and effective agro organisational structure

2. Product quality (Scale: strongly disagree, disagree, neutral, agree, strongly agree)

The business develops / produces high quality agro product/services

The business have ISO certification of products to meet local quality requirements

The business' products or services meet the international quality standards set by global institutions

The business is involved in continuous agro product development and improvement

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V.II The Post-Colonial African States and the Dilemma of the African Continental Free Trade Area (AfCFTA): A Prognostic Analysis

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Abstract

Trade as the decisive force that binds countries of the world together, has pushed and pulled the states in the global world into formation of trade blocs as part of regional integration processes. Africa has recognized the benefits derivable from regional integration especially on level of trade and has keyed into this through the African Continental Free Trade Area (AfCFTA) which was founded and ratified by the required number of countries in 2018. However, it is very worrisome and heart-quaking that as of the 5th of August 2021, only three out of the 36 countries that had deposited their instruments of ratification have met the custom requirements on infrastructure for trading as submitted by the Initiative for African Trade and Prosperity in 2021. The implication therefore is that only 3 of the 55 African Union nations who have signed the pact could trade effectively under the liberalized AfCFTA terms. This suggests some form of unwillingness and lack of the will to pursue this project on the part of member-countries of the AfCFTA. We therefore set out in this study to ruminate on the current and future problems of the AfCFTA. The study is guided by two research questions: (1) Does the undue economic advantage and control of African economy by their former colonial masters hamper the AfCFTA? (2) Does the weak nature of the post-colonial African states militate against the success of the AfCFTA? The study is a qualitative one and relied extensively on documentary evidence which were analyzed using content analysis method. The post-colonial state and the Neo-colonial dependence theories formed the theoretical framework around which the work revolved. We intend to demonstrate, using the chosen theories, that the neo-colonial ties and exploitation of African states in the contemporary periods by their former colonial masters forms a strong distraction and humongous obstacle to the optimal success of the AfCFTA. We also want to submit that the weak nature of African states in different sectors, arising from their colonial experiences, continues to hamper their ability to effectively implement regional integration strides which has become a major setback for the AfCFTA. Based on the above, we proffer that the individual member countries of the AfCFTA need to first strengthen their internal political cum economic structures. When this is achieved, they will then begin to extricate themselves from the existing Neo-colonial grip in which they have been entangled. When these are achieved, then AfCFTA will certainly be a reality.

Key words: Free-Trade Area, Neo-Colonialism, Post-Colonial African States, Protectionism, Regional Integration

1. Background and Problem Statement

The African Continental Free Trade Area (AfCFTA) represents a move by African states towards African continental integration. Africa's desire for a united regional economy or economic integration started as early as the immediate post-colonial periods. Having individually grappled with managing a post-independent state, these leaders saw the need for a united front in solving their collective problems which seemed to be facing every African state. Thus, in the current 21st century, Africa seemed to be housing more regional organisations than in any other continent and most African countries are members of more than one regional integration initiative (Maimela, 2013). The discourse on regional integration stands on the assumption that countries that are close to each other in terms of location and who have closely related socio-political, economic and security challenges may gain from bringing together their efforts and working together towards addressing their common problems because such collective effort gives birth to mutual interdependence and stronger development. Beyond this, regional integration also brings about expanded economic space for the countries involved in it which brings about healthy competition, efficiency and accelerated growth among the countries. Thus, advocates of regional integration believe that there is strength in numbers and a united front is stronger than individual efforts whether in economy, politics or security.

The move towards regional integration in Africa is triggered and powered by several factors such as the desire for attaining wider economic, social and political development and consolidation of such developments as well as the push coming from globalization which no nation is free from. However, the most important factor that threw up the idea of regional integration in Africa is the problem of post-colonialism which characterized and still characterizes Africa as a continent. Being a continent coming out from colonialism in the 1960s and 70s, Africa was characterized by weak and dependent economy, inexperienced leaders and suffering from increased development crises which threatened the survival of African countries right from independence. Thus, scholars, political analysts and political leaders agree that regional integration is very germane to efforts at combating the glaring underdevelopment issues in many countries of Africa. This is because socio-economic, political and structural inadequacies that are abundant in Africa cannot be properly addressed without collective commitment and synergy among African states. However, what is not absolutely agreed upon by African leaders is the best approach for achieving regional integration in Africa.

The acceptance of regional integration among African leaders since the post-independent Africa has resulted in the proliferation of regional bodies and frameworks in Africa over the years. Such regional groups include but not limited to: the African Union (AU) which serves as a bigger umbrella for other groups, East African Community (EAC), Common Market for Eastern and Southern Africa (COMESA), Economic Monetary Community of Central Africa (CEMAC), Southern African Development Community (SADC), Economic Community of West African States (ECOWAS), Community of Sahel-Sahara States (CEN-SAD), Southern African Customs Union (SACU), Arab Maghreb Union (UMA), West African Economic and Monetary Union (WAEMU). These bodies continue to put efforts together to tackle common continental and regional problems facing Africa. The effectiveness of these regional groups in achieving the African development and unity is a matter that has been under serious debate in different quarters. The long speeches and campaigns by African leaders and technocrats in favour of regional integration and collective prosperity of Africa has over the years seemed to be mere rhetorics as

African leaders appear to cherish more their individual countries' sovereignty and national commitments than regional efforts and allegiance.

The African Continental Free Trade Area (AfCFTA) represents one of such regional integration efforts by African countries to cooperate with each other and create a common friendly environment for trade and services to be exchanged among them under certain legal frameworks. The AfCFTA was founded on the legal framework provided by the African Union (AU) formerly known as the Organization of African Unity (OAU) which was founded in 1963, a period immediately after the independence of most African countries. Gérout et al (2019) maintained that the nature of the African regional integration at that period was more of mere political declarations than real commitment. This was followed up by the Monrovia Summit of 1979, the Lagos Plan of Action of 1980, and the Abuja Treaty of 1991. It is important to note that these regional integration efforts failed due to economic crises that befell the continent of Africa at different times and for the fact that they created impediments to the main idea of regional integration partly due to the conflicting and overlapping interests of the different regional bodies in Africa. Subsequently, the merging and consolidation of different regional economic zones into bigger free trade agreements eventually created a viable path for establishing a continental customs union. This also laid a strong foundation for the establishment of the The African Continental Free Trade Area (AfCFTA). According to Gérout et al (2019), the AfCFTA in 2018 put in place a legal framework for a unified free trade area in the whole continent of Africa with a strong integration plan. AfCFTA also represents, according to African Union (2020a), remains an important and major project of the African Union's Agenda 2063 which targets achieving a sustainable and inclusive development in the entire Africa.

Conventionally and expectedly, the AfCFTA should bring so many benefits to the African continent if fully and effectively implemented. Such benefits include: attracting foreign direct investment (FDI) to Africa, supporting intra-African trade, driving competitiveness and efficiency among member countries of Africa, reduction in cost of economic activities and improving value chains across Africa. According to African Development Bank (2019) as well as the World Bank (2020), the expected economic growth which would come from the AfCFTA is also going to expand job opportunities and reduce poverty rate and impact across Africa. More so, the AfCFTA is expected to be the global largest free trade area to have been concluded as it relates with the number of countries who are the participants. It will further culminate in an estimated gross domestic product (GDP) that is greater than USD 2.5 trillion with up to a market of 1.2 billion people who are spread across 55 member states of the African Union (United Nations Commission for Africa [UNCA], 2018). According to the World Bank (2020), implementing the AfCFTA will help remove up to 30 million Africans from extreme poverty and also increase the incomes of close to 68 million people that currently live on less than \$5.50 a day. Again, it is expected to increase Africa's income by the year 2035 and also add same about \$76 billion to the income of other parts of the world. More so, the AfCFTA is expected to shoot up Africa's exports by \$560 billion especially in the area of manufacturing. It will add a boost to the wages of skilled workers by 9.8% and unskilled workers by 10.3% while at the same time pushing up bigger wage gains for men by 9.9% and 10.5% for women. As at 2018, the average tariffs rate for exports within Africa has remained at 6.1% which places it higher than tariffs paid on exports outside Africa. Thus, the cost doing businesses in Africa is highly affected by higher tariffs (UNCA, 2018). The AfCFTA is expected to address this problem by gradually eliminating tariffs and non-tariff barriers (NTBs) on trades among African countries, thus facilitating intra-African countries' trade and giving the

continent the opportunity of also enjoying the benefits of a larger market. It is expected that AfCFTA will boost intra- African trade by up to 52.3% by reducing other non-tariff barriers and also removing import duties. This will surely provide significant boost for various stakeholders in Africa: businesses and consumers across Africa to trade and reap the benefits and also provide a solid support for sustainable development Africa (UNCA, 2018).

In spite of these humungous gains derivable from the AfCFTA, there are, however, fears that Africa lacks the capacity and political will to realize these noble goals. Gérout et al. (2019) has however submitted that these expected economic benefits from the various economic integration efforts are never guaranteed but are dependent on the strong commitment and efforts of the member state to abide by the regulatory frameworks and also being ready to face other challenges there in. Ojo (2021) has already pointed out that as at January 1st, 2021 marking the commencement of trading under the AfCFTA agreement, 54 countries out of 55 African Union nations have signed the AfCFTA agreement while 36 states have also deposited their instrument of ratification. However, out of these 54 states, only three states: Egypt, South Africa, and Ghana have done the expected in line with the custom requirements on putting in place the required infrastructure for trading. The implication is that it is only three states that are ready and qualified to trade under the liberalized AfCFTA terms in the entire African continent.

The achievement of the AfCFTA agreement has a lot of hurdles it is bound to face. These challenges include but not limited to the difficulty of implementing the pact across regions of Africa where the member countries already belong to regional bodies and groups with existing conflicting agreements, the challenge of neo-colonialism in Africa where African countries are subservient to Europe, America and even currently Asia as China's trade with Africa as at 2021 valued at \$254 billion is close to four times larger than U.S. trade with the continent which is valued at \$64 billion (Cook and Wong, 2023). and are ready to do the bids of these developed economies, the issue of several international policies and protocols arising from the Covid-19 pandemic, the closure of countries' borders on the grounds of protectionism, weak infrastructural base and capacity to combat smuggling and other illegal practices across borders, the weakness of the African countries' institutions and unwilling leaders arising from the post-colonial legacies in these African countries, the continuous threats by jihadist to free and peaceful movement of goods and persons across the continent, bureaucratic corruption and the lack of mutually beneficial policies among African states resulting partly from the structural imbalance existing among small and large economies existing in the continent.

Based on the above stated problems of the AfCFTA, this study conducts a prognostic study into the future to point out some foreseeable challenges that will likely form a clog in the wheel of the AfCFTA. We have chosen to delve into the weak nature of African states arising from the post-colonial nature of these states as well as the thriving neo-colonial links these African states still maintain with their colonial masters as two major areas of concern in relation to effectively achieving the implementation of the AfCFTA. To achieve this, we have adopted the Post-colonial state theory and the Neo-colonialism theory. Data for the study were collected from secondary sources while the data collected were analyzed using content analysis method.

2. Conceptualization of Post-Colonial State

The post-colonial state is a concept that is used to refer to new nation-states that have passed through colonialism and emerged from it by the gain of independence from their colonial masters

especially after the Second World War. These post-colonial states most of the times are modeled after their colonial masters' political formations. Post-colonial states are generally characterized by various forms of political and economic crises arising from bad political leadership as well as weak infrastructural base. Their economies are also characterized by dependency as their economies are disarticulated while they rely largely on aid from their former colonial masters for their survival.

3. The Nature of the African Continental Free Trade Area (AfCFTA)

The African Continental Free Trade Area (AfCFTA) is framework of operation and agreement among African countries under the umbrella of the African Union (AU) being an effort towards regional integration at the continental level. The agreement generally is on trade in goods, investment, trade in services, competition policy, and intellectual property (AfCFTA, 2018, Art.6). The negotiations between African countries on the foundational agreement of the AfCFTA took off in June 2015. Such negotiations were also completed in March 2018. The AfCFTA was then established in 2018 by the African Continental Free Trade Agreement, which has 43 parties and another 11 signatories, making it the largest free-trade area by number of member states, after the World Trade Organization, and the largest in population and geographic size, spanning 1.3 billion people across the world's second largest continent (Crabtree, 2018).

Out of the 55 African countries, 44 signed the Agreement establishing the AfCFTA in 2018 at a summit in Kigali, Rwanda. The establishing Agreement for the AfCFTA came into implementation in May 2019 with fifty-four signatory African states and another twenty-eight also ratified the Agreement as of October 2019). It entered its operational phase following a summit on 7 July 2019, and officially commenced 1 January 2021. AfCFTA's negotiations and implementation are overseen by a permanent secretariat based in Accra, Ghana (Dahir, 2019). The major point of departure of the AfCFTA is to remove tariffs on most goods that are not tariff free but this will be done in phases over about fifteen years period (Loes, 2018). On January 13, 2022, the AfCFTA took a major step towards its objective with the establishment of the Pan-African Payment and Settlement System (PAPSS), which allows payments among companies operating in Africa to be done in any local currency (World Bank, 2022).

The AfCFTA is relying on the already existing African Regional Economic Commissions' free trade areas as its building blocs and the major driving objectives are trade liberalization and socio-economic development. It also replicates some of the nature of the World trade Organization (WTO) among which is its guiding principles. AfCFTA is also guided by some operational principles which are reciprocity, non-discrimination, enforceable commitment, safety valves and transparency (Ajibo, 2019). Generally, Article 3 of the agreement establishing the African Continental Free Trade Area States the general objectives of the AfCFTA as follows:

- (a) To introduce one market for goods, services, made possible by movement of persons to strengthen the economic unification of the continent of Africa and also in line with the Pan African Vision enshrined in Agenda 2063 which is achieving an integrated, peaceful and prosperous Africa.
- (b) To provide a market for goods and services that is liberalized by means of continuous negotiations;
- (c) To support the transportation of natural persons and capital and push forward the building of investments on the developments and initiatives in the RECs and State Parties;
- (d) To put in place the sub-structure for establishing a Continental Customs Union in future;

- (e) To encourage and achieve inclusive and sustainable socio-economic development, structural transformation and gender equality in the State Parties;
- (f) To improve on the competitiveness of the economies of State Parties in the global market and within the continent;
- (g) To support the development of industries through regional value chain development and agricultural development, diversification and food security;
- (h) To address the issues concerning overlapping and multiple memberships and also quicken the continental and regional integration processes.

Will the above objectives be achieved under the AfCFTA? Only time will tell as we discuss some of the foresee challenges facing the AfCFTA below.

4. Theoretical Nexus: the Post-Colonial State Theory and the Neo-colonial Dependence Theory

The literature on postcolonial political and economic trajectory consists of a great number of schools of thought. There were schools that focused on economic and trade relations between colonial masters and the colonized and those that focused on the growth and weakness of the institutions in the colonized territories in the colonial and post-colonial periods. More so, some of the literature also are concerned with the influence and impact of world institutions which are products of the colonial masters on these colonized states and then the school that are just concerned about historical colonialism. It is within these schools of thought that we locate the neo-colonialism and post-colonial state theories.

5. The Post-Colonial State Theory

The origin of the theory of post-colonialism has been traced to Edward Said who is considered to have laid the foundation. He traced the history of the colonization of many regions across the world by Europeans, the effects of colonialism on the different aspects of the colonized people's lives and the manifestations of these in the Western literary and philosophical heritage (Said, 1978). Said argues that the effects of colonialism are still inherent in the colonized territories in the form of corruption, chaos, coups, civil wars, and different forms of bloodshed. Said believed that the current status quo is a reflection of past events and one cannot study the present lives of the colonized territories without looking critically at the colonial period in those territories. He further maintained the history of the colonized territories and that of their colonizers cannot be easily separated and the colonizers have played great role in shaping the current status of these colonized territories.

The post-colonial theory is employed to explain the effects of colonialism on the historical, cultural, social, economic and political life of territories and people who were colonized by Europeans. Post-colonial theories are set of theories with a central argument that achieving political independence by the colonized territories did not amount to achieving total independence from the colonial masters rather it was mere political pronouncement and drama. This is because colonialism has left various legacies in these colonized territories which make the continuous linkage of the economies of the colonized and the colonizers years after the independence of these colonized territories making further development and freedom from suppression almost unattainable by these post-colonial states. Loomba (2005) succinctly stated this when he said that the colonial powers never left their colonies without continued influence over them through a systematic control spanning through their social, cultural, educational and economic relations. These theories also try to chart a new course of action for the post-colonial states to extricate

themselves from the grip of the post-colonialism. Postcolonial theory, thus, tries to make the voices of the colonized people to be heard and at the same time tries to show how colonialism has shaped a lot of things around the colonized people and territories.

The post-colonial state theory is a fall-out from the post-colonial theories. It is a theory that analyzes the status and activities of post-colonial states from the perspective of the colonial experiences. The post-colonial state theory maintains that states which have experienced colonialism in the past are continuously being shaped by their colonial experiences as well as existing linkages and it will be difficult for these states to move forward economically, socially, politically and otherwise without proper separation from these colonial linkages. Thus, the Classical Marxist theory of the State in the context of post-colonial societies is anchored on the historical experiences of these societies which springs from the structural changes resulting from these experiences and class formations as well as the nature of political and administrative institutions established in these societies. Thus, to understand the nature of the post-colonial state in Africa, one needs to understand the economic, social and political circumstances under which independence was handed over to these states, the nature of the elite to whom power was handed over as well as the policies made by these elites. We employ the post-colonial state theory in this study to explain that the AfCFTA is most likely to face the challenge of the inability of Africa member countries to fully implement the framework as a result of their weak nature arising from their colonial experience.

6. The Neo-Colonialism Theory

Neo-colonialism literally means new form of colonialism. It refers to the nature of relationship that has continued to exist between the post-colonial states and their colonizers years after independence was granted to these states. Historically, the theory was coined by Jean Satre who was a socialist philosopher (Fatouros, 1965). Satre was trying to analyse the relationship between Algeria and its colonizer, France. He argued that the economic relations between France and Algeria which was exploitative would not greatly change. This postulation of Satre was further buttressed by Kwame Nkrumah in his book: *Neo-Colonialism, the Last Stage of Imperialism* published in 1965. Nkrumah focused his analysis on Ghana and argued that the economic relations colonizers and former colonies remain the same after independence and the prices of raw materials which were supplied by the colonized territories remain low while that of the finished goods supplied by the colonizers remain very high.

Smith (1977) as cited by Williams (2014) further expanded the theory by explaining that natural resources constituted major players in the spread of neo-colonialism coupled with the role of international organizations like the World Bank, the International Monetary Fund (IMF), the World Trade Organization (WTO), the Organization of Oil Exporting Countries (OPEC) and others. Again, neo-colonialism was further ignited supported continuously by the desire of the former colonizers to continue to have access to natural resources in the territories of their former colonies. Thus, the former colonizers encourage postcolonial territories to liberalize their economies so they would have smooth access to trade with them and have access to their resources. In the process of trade and economic engagements, these post-colonial territories are no longer being coerced through military means but instead through economic means through the modern international organization and institutions who form the enforcement mechanism.

More so, this new form of colonialism named neo-colonialism is most of the terms wrapped with the cover of aid to the former colonies offered most of the times through the same international institutions as discussed above. Through these aids and the conditions that are attached to them, the post-colonial states, which Africa is part of, become modern slaves to the Western developed economies who are also the old colonial masters. This encourages the state of dependence of the post-colonial states on the former colonizers and has also created political stooges of the colonial masters in the post-colonial states among the political office holders and the elite who have formed alliance with the Western economies and have also facilitated this economic exploitation because of personal gains. One of the greatest problems this brings to the post-colonial states is that it keeps them in perpetual debt and subservient status that they continue to relate with the Western economies from a weak status. Most African countries today are wallowing in huge debts as a result of this neo-colonialism. This started immediately after the independence of these African countries. The amount of debt they owe across the world continues to rise on daily basis. Most troublesome is that these debts require huge amounts just to service them annually, not to talk about repaying them. Thus, African countries spend major chunk of their revenue only to service foreign debts which keeps them in perpetual poverty. Nkrumah (1965) thus called neo-colonialism the ‘worst form of imperialism’. *“For those who practice it, it means power without responsibility, and for those who suffer from it, it means exploitation without redress”*. We therefore postulate that with neo-colonialism in Africa, achieving the aims of the AfCFTA may become an uphill task as these neo-colonial ties in Africa will surely act as a weakening and divisive factor among the African member countries.

7. The Post-Colonial African State and the Dilemma of AfCFTA

The hitherto existing African states are more or less the brain-children of European colonization. The asymmetric relationship that manifested in subservient disposition and imperialistic tendencies of Africans and the Europeans respectively have molded and remolded the post-colonial African states as reflected in the post-colonial states theory. As such, the attainment and sustainability of the AfCFTA is strongly dependent on these post-colonial states to wriggle out of the neo-colonial tendencies that have characterized the post-colonial African era. The AfCFTA faces a lot of challenges which casts some doubt on whether the agreement will likely achieve its objectives or not. We set out in this section of our study to discuss some of these challenges especially as it relates the problems emanating from post-colonialism and neo-colonialism.

One of the major factors that casts doubt on the future of the AfCFTA is the weak nature of Africa’s productive capacity arising from colonial trappings and further perpetuated by neo-colonial forces. To begin with, trade is unequivocally a product of production, in the sense that one can only trade what one produces, therefore, the larger the production capacity, the larger the trade propensity. Unfortunately, Micro, Small and Medium-sized Enterprises (MSMEs), constitute about 80% of Africa’s private sector with a very minute large scale production enterprises. According to Strange (1988), Africans remain at the receiving end in the global economy based on his concept and analysis of ‘Production Structure’, in the international economy. Empirically, the World Bank (2010) reported that in 2008 the world’s GDP totaled \$60.5 trillion, with the high income countries producing \$43.2 trillion or 71% of the total, middle and low-income countries produced \$17.4 trillion or 29% of the total while low-income countries themselves produced only \$500 billion or just 0.8% of the world’s total output. The private sector is positioned as the “engine of economic growth”, which allows for reasonable expectations that it would come alive to the challenges of

building capacity to produce for local consumption and scale up exports under the AfCFTA. With this seemingly epileptic and deplorable condition of production in Africa, trade under AfCFTA is hampered. Indeed, this ugly situation is traceable to the premature integration of African economy, through colonialism into the western capitalism which is more or less exploitative and imperialistic. Essentially, it manifested in what Ake (1981) described this scenario as disarticulation of economy where an economy lacks backward and forward linkages in the production process. The incoherent and disarticulated posture of the colonial economy reared its ugly head and spread its tentacles to the post-colonial period. This is possible because the petit and national bourgeoisies that inherited powers from the colonial masters learnt the selfish administration practices and unleashed same to the post colonial African states. As the colonial masters' guiding principles in administration of the colony was how to cart away the resources of the colony for the development of the mother country, the post colonial African leaders, who inherited leadership positions adopted similar and incoherent infrastructural administration, where the leaders allocate resources to the cronies and selfish use. These activities of the post colonial African leaders engendered weak industrial base that will enhance production for trade. Using rice production, Norman and Kebe (2006) illustrated thus: in 2003, Africa produced about 15.08 million tonnes of paddy rice on 10.23 million ha – 3.3 and 6.11% of the world's total rice production and rice area, respectively. West Africa accounts for 70.4% (approx. 8.74 million ha) of rice area. The major contributing countries are Nigeria (47.9%), Guinea (5.20%), Côte d'Ivoire (5%) and Mali (4%). East Africa accounts for 16.1% of rice area. The major contributing countries are Tanzania (6.0%) and Madagascar (3.19%). Central and Southern Africa countries account for 7.5% of rice area in Africa. The major contributing countries are Democratic Republic of the Congo (4.05%) and Mozambique (1.8%). This low production capacity is not restricted to rice but reflected to other products of human needs. The table below further illustrates the production capacity of the regions or classes of the world. It compares the world regions and shows the level occupied by the AfCFTA countries in the global arena.

Table 1: Production and Investment Capacities Regions (in billions of US dollars)

S/N	Regions/Classification	1980	1990	2000	2004	2008
1	East Asia (including China)	1	9	116	106	186
2	India	0.08	0.2	4	6	42
3	Central and South Africa	7	8	88	64	121
4	European Union	21	97	680	223	503
5	United States	17	48	314	136	316
6	Middle East and North Africa	-	2	7	27	114
7	Sub-Saharan Africa	0.3	1.7	7	17	66
8	Developed Countries	47	172	1,118	414	962
9	Least Developed Countries	0.5	0.6	4	13	33
10	World	54	207	1,381	735	1,697

Source: UNCTAD, FDI/TNC database at www.unctad.org/fdistatistics

Decipherable from the table is that the lowest production and investment capability countries of the world are found in the least developed countries where majority of AfCFTA members are classified. With the low level of production capacity, it becomes difficult for the AfCFTA countries to produce adequate quantity and diverse goods that can be traded and exchanged among them. This will likely force these African countries to still look outside Africa for these products which will eventually hamper the regional trade deals within AfCFTA economic circle.

Another important factor to be considered as possible obstacle to the AfCFTA is the weak and corrupt political institutions in Africa arising from colonial experiences, the Rentier systems and the neo-colonial linkages. During the colonial periods, the African elites and bureaucrats mingled with the colonial masters but never acquired the ingredients of managing a state and pulling it through development. Thus, at independence, the state which was handed over to the African elites were not only disarticulated economically but was also politically weak while the African elites were also weak knowledge-wise in terms of governance. Thus, the European colonial masters handed the mantle of African leaderships to their loyal servants (African elites), who were advertently or inadvertently charged to retain the leadership position and reciprocate the positive gestures by keeping seamless link with the colonizers. This scenario is this was the birth of neo-colonialism in Africa. This is evident in the foreign policy formulation of the postcolonial African states, where the leaders articulated and fashioned their countries' foreign policy to be pro-west. This literally and practically implies that what guides the activities of the states in cross border relationship is satisfaction of the needs of the west and the maintenance of socio-political and economic links between the colonizers and the colonized. Essentially, the social, political and economic lives of the post-colonial African states are through imperialistic tendencies indirectly attached and subjected to the dictates of the western world. The neo-colonialism link is further strengthened through political interference in the choice of leaders of African states who continue to serve the interest of their western godfathers. These weak leaders and their weak states are further pushed by the west to do away with all forms of economic protectionism and embrace free trade principles in order to open ways for further European trade with Africa which is mired in exploitation. The AfCFTA will not likely going to thrive in these exploitative relations between Africa and Europe.

More so and very related to the above is that the AfCFTA will likely not serve the interest of the West and so will face the challenge of receiving kicks from different angles especially from European and Asian trading partners of most African states. The 'Divide and Rule' system practiced by the Europeans in Africa which helped them in conquering African territories remains a valid tool in the hands of European countries which they will willingly use to divide African countries against the success of the AfCFTA if the agreement does not favour them. According to Schmieg (2020) as well as Kappel (2020), the idea of implementing the AfCFTA agreement has been generating a lot of crises in Europe, because it has been construed in a different way. Issues surrounding which category of products that will enjoy free tariffs and product origin have remained shaky. Another area of uncertainty is on services that will also enjoy free tariff as that area has not enjoyed any attention yet. Some of the controversies emanate from the already existing post-colonial and neo-colonial links and agreements already established between European countries and African countries which European countries already enjoy and which could be threatened by the AfCFTA. Such existing agreements include the economic partnership agreements (EPAs) with the European Union; the European Free Trade Association (EFTA) or Mercosur. Others are Free Trade Agreements (FTA) being negotiated with the United Kingdom, between the SACU and India, and also with the United States. Even though FTAs between African countries and countries outside Africa are still possible as stated in Article 4 of the AfCFTA Protocol on Trade in Goods, as long as they do not "impede or frustrate the objectives" of the AfCFTA, areas of conflict cannot still be totally ruled out. When this issue arises, the crises of allegiance become a critical decision which throws up dilemma for African countries. Furthermore, when the AfCFTA is compared with such agreements existing in Europe, there are

disparities noticed. Thus, the economic liberalization moves to jettison the pre-world war classical mercantilism under General Agreement on Tariff and Trade (GATT) has two basic principles such as reciprocity and non-discrimination. Trade concessions were reciprocal, that is all member nations agreed to lower their trade barriers together. This principle was conceived as a way to discourage or prevent nations from enacting unilateral trade barriers. The loss in protection of domestic industry was to be offset by freer access to foreign markets. Designed to prevent bilateral trade war, the principles of non-discrimination and the Most Favoured Nation (MFN) trading status required that imports from all countries be treated the same whereby import from one nation could not be given preference over those from another (Balaam & Dillman, 2011). The above principles of GATT and the corresponding resolutions in different rounds of GATT and the metamorphosed World Trade Organization (WTO) were at variance with the objectives of AfCFTA thereby impeding the needed cohesion for realization of its set goals. This is one of the major challenges awaiting the success of the AfCFTA.

Next in the list is the weak status of regional bodies like African Union, Economic Community of West African States and other continental and regional bodies which are supposed to drive the AfCFTA as a result of post-colonial issues and neo-colonialism. It is already established before now that the AfCFTA is a brainchild of the African Union (AU) which is an effort towards creating a regional integration in Africa and as well creating a framework after the World Trade Organization (WTO). More so, AU is the major continental Intergovernmental institution which binds and speaks for African countries at the world stage just as the European Union (EU). Thus, the AU is expected to be a very strong and independent body that will be able to speak and negotiate from a strong position with the European Union and other such Continental bodies. However, AU does not seem to have that needed strong footing to not only command obedience from African countries but also negotiate strongly with fellow continental bodies from other world regions. This reason behind this is not far-fetched. The African Union is a conglomeration of weak post-colonial states which individually are also entangled in the web of neo-colonialism. Based on the above premise, the African Union battles with two challenges emanating from one source while implementing the AfCFTA: the challenge of coordinating weak member countries and being able to push them to abide by the AfCFTA terms of agreement and at the same time being able to prevent other regional Intergovernmental Organizations (IGOs) from interfering negatively in the objectives of the AfCFTA. European countries like France, Britain and even the USA have been accused by different analysts as standing behind various sit-tight and autocratic leaders in Africa in the guise of Democracy which has contributed to a great extent to the return of military coup d'état in Africa in recent times (Sudan, Mali, Tunisia, Guinea, Sudan, Niger, Gabon, Burkina Faso). One important question to be asked regarding these coups is: What is the role of the African Union in these coups especially in the area of preventing further coups and also addressing the coups that have already occurred? The African Union seemed to be either confused and overwhelmed or weak and compromised that it lies lifeless in the midst of problems. The AfCFTA will surely be facing serious challenge of effective functionality under the weak regional IGOs.

The last but not the least in the issues facing the AfCFTA is the weak economic systems of member countries linked to colonial and neo-colonial experiences. These economies are totally disarticulated with little linkages from production of raw materials to manufacture of finished products. Colonialism prepared these economies for neo-colonialism by ensuring that the African economics remain weak and unable to be fully industrialized. This is to ensure that the

international division of labour whereby African are the producers of perishable raw materials while the Western developed economies are the producers of finished goods. Thus, Africans sell their raw materials at very cheap prices to the developed economies and the developed economies transform these raw materials to finished goods and supply same to African at a very exorbitant rate. This perpetuates poverty and dependency in Africa as African countries remain beggars to the Western developed countries. With the above situation, the goods to be traded in Africa within the AfCFTA will be largely perishable goods and raw materials which almost all Africans have. This will hamper long term trades and value for products will be limited by over-supply of certain products. This will eventually open rooms for the Western developed economies to intervene and interfere in African affairs and the neo-colonialism cycle continues. This is going to pose serious threat to the AfCFTA.

8. Summary and Conclusion

This study focused on the African Continental Free Trade Area (AfCFTA) as an effort towards regional integration in Africa. The study set out to offer a prognostic analysis of the establishment and implementation of the AfCFTA offering insight into the expected challenges which the AfCFTA would face in future. The study became necessary following the failure of the AfCFTA to adequately take off and operate effectively many years after its establishment. The study was guided by two research questions: (1) Does the undue economic advantage and control of African economy by their former colonial masters hamper the AfCFTA? (2) Does the weak nature of the post-colonial African states militate against the success of the AfCFTA? We demonstrated clearly that the economic advantage and control of African economy by their former colonial masters definitely hampers and would continue to hamper the AfCFTA due to various the vestiges of colonialism and the continued neo-colonialism tendencies of the Europeans and Americans. Again, we also demonstrated that the weak nature of the post-colonial African states actually militate against the AfCFTA and will continue to militate against it. This is so because a weak state cannot effectively its sovereignty in the committee of nations and so when the political and economic pressure from the Western developed economies come upon these weak African states, it becomes difficult for them to withstand and so achieving the AfCFTA becomes problematic. It is therefore established in this study that the AfCFTA faces and would continue to face in the future various challenges which are very closely linked to post-colonialism and neo-colonialism in Africa.

In conclusion, therefore, the AfCFTA is a very interesting and welcome move from the African Union towards establishing an organization in the semblance of the World Trade Organization (WTO) in the African continental level to help harmonize, expand, ease and accelerate trade and exchange on goods and services within the continent. However, if not well handled and coordinated, the AfCFTA may not effectively serve its noble purpose. It therefore behoves on African leaders at various levels to rally round the AU as the driving force of the AfCFTA, strengthen their weak areas economic and political-wise. More importantly, they should not allow the postcolonial and neo-colonial ties with the Western developed countries and the USA including the modern links with Asia countries to confuse and also strangle the good initiative of the AfCFTA in African land.

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IV.III Satisfying Needs, Building Capabilities: The Contribution of Trade to Sustainable and Inclusive Socio-Economic Development

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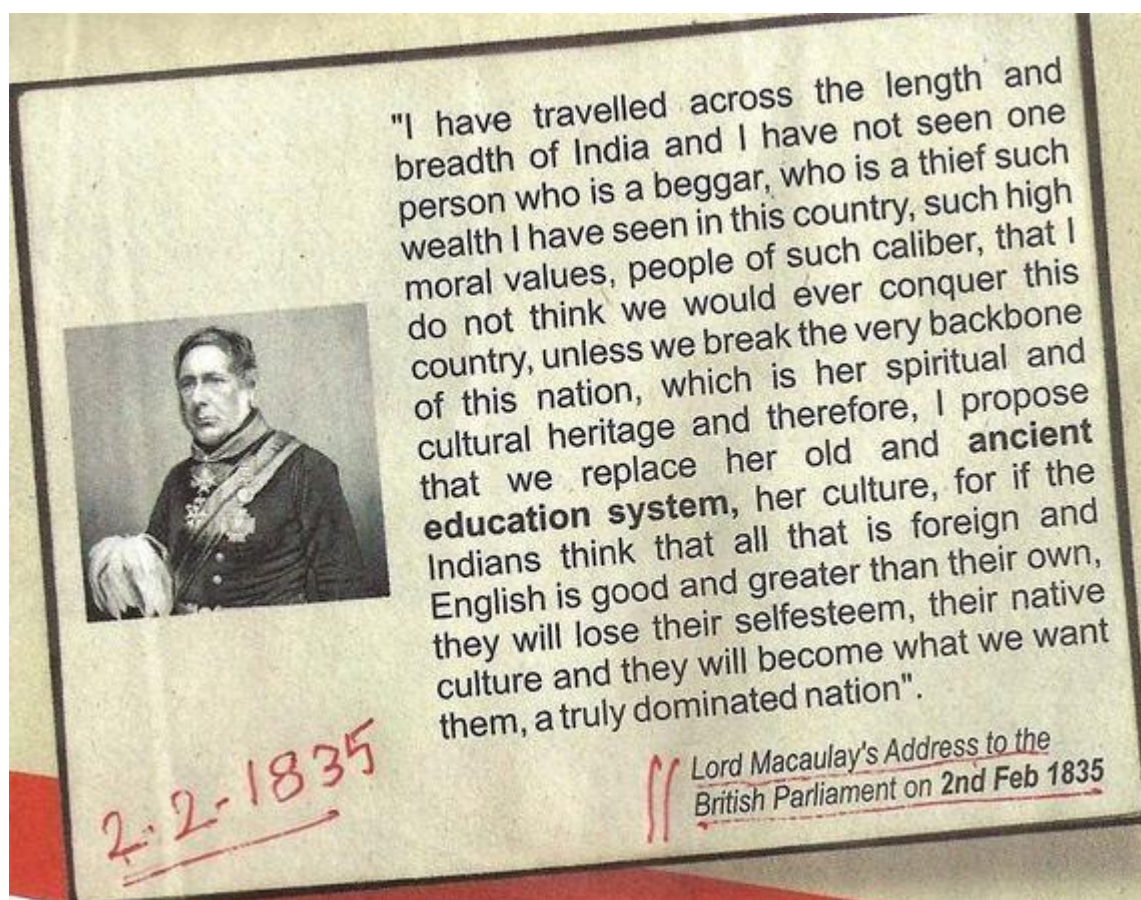
Abstract

Development has often been analysed in terms of macro-economic indicators such as the Gross Domestic Product (GDP), the availability of infrastructure, goods and services, or technological advancement. However, in many developing countries there seems to be a discrepancy between macroeconomic indicators and the quality of life of the populations. This dichotomy between macroeconomic indicators and the quality of life of people points to the inadequacy of using macroeconomic indicators as measuring tools for sustainable development. Macroeconomic indicators measure the economy as it is despite the fact that sustainable development has a futuristic dimension. The United Nations World Commission on Environment and Development (WCED) known also as the Brundtland Commission (1987) defines sustainable development as "[d]evelopment that meets the needs of the present without compromising the ability of future generations to meet their own needs." This definition was linked with the awareness that economic growth cannot continue indefinitely as indicated by Meadows and his collaborators (1972) in their seminal work *The Limits of Growth*. This paper argues that development is a process of modernization that finds its roots in the development, structuring and culture of modern societies in Europe. This raises the question whether there are no other avenues for development outside European modernity. The second argument is that sustainability starts with the well-being of individual human beings i.e. sustainably developed people are (1) those whose needs are satisfied following Abraham Maslow (1970)'s theory of needs for instance, and those (2) who have opportunities to develop their capabilities (Nussbaum 2001). By capabilities, I refer to what Bernard Lonergan (1990) calls "four levels of consciousness", namely: the emotional/experiential (*pathos*), intellectual (*logos*), evaluative (*ethos*), and practical (*praxis*). This approach to development takes into account the multifaceted nature of development processes but also the need to link development to well-being as sometimes the levels of poverty and homelessness in affluent economies is really appalling. The contentious relationship between aid and trade needs to be re-examined given the inequalities and the violence embedded in international natural resources governance systems but also the ecological continuity between the inorganic, the organic, the social and the artificial as capitalism as an economic system continuously destroy its sources of wealth, namely, ecological systems (nature) and human beings (labour). There is a need for a new tool for measuring sustainable development. This tool should take into account the satisfaction of individual's needs and the development of the capabilities of individuals, families and human communities and natural ecosystems instead of focusing on macroeconomic indicators which most of the time are averages and do not reflect real distribution of wealth and opportunity for self-development on the ground. This paper aims at conducting a feasibility study that tool and to suggest a prototype for further development and implementation.

1. Introduction

This paper was inspired by a series of paradoxical experiences especially the discrepancy between macroeconomic rankings of countries and the quality of life of people. In 2007, I had an opportunity to travel to the United States of America for an academic conference at the University of Texas in Austin. In the process, I visited a relative in Buffalo, New York where I witnessed dilapidated and abandoned houses after the collapse of the coal industry. Youths with red eyes warmed themselves at drums where they burnt plastics and my host explained to me how the cost of housing and heating has become beyond the reach of the majority and that sometimes water was frozen in pipes or the pipes burst owing the increasingly low temperatures. Coincidentally, the renowned preacher Joyce Meyer, has indicated that in the United States of America, there are 500000 registered churches and that actually there are also 500000 street children. Logically, the problem of street children could be simply resolved by one church taking care of one child. I came across a catholic charity which was taking care of the homeless and it occurred to me that the level of homeless in the United Nations of America is appalling.

Buffalo with dilapidated and abandoned houses is only 150 kilometers from Manhattan where the headquarters of the United Nations is hosted. As I witnessed firsthand poverty in an affluent economy, the best economy in the world, what came near my mouth was “what the f** with development if there are still homeless people and street children in developed economies.”. It occurred to me that a colonial explorer had noted that in pre-colonial India there were no beggars and no prisons and so forth.



Although there are controversies over the authenticity and the accuracy of the so-called Lord Macaulay's Address to the British Parliament (Wood, 1958). It points to a world where "no one is left behind" as President Mnangagwa of Zimbabwe pointed out in his recent re-election campaign. There are speculations among African scholars that the speech was not actually about India but about Africa (Odusola, 2021).

This discrepancy between macroeconomic indicators and the quality of life has been also noted by Former governor of the Reserve Bank of Zimbabwe (RBZ), Gono (2008) when he recounts the terrified and desperate faces of Americans stranded on rooftops during a cyclone despite the "high-level" picture of prosperity that the world has come to associate with the US through the digital convenience of satellite television, print media and internet platforms". The American experience is not an isolated case. As Gono (2008) observes:

One gets the same perplexing dichotomy when analyzing the dire quality of life in some villages of the troubled Middle East, in the bulk of rural Asia, Eastern Europe and the Far East among other areas. There, children walk stark naked, some living in virtual swamps with no food or decent shelter. And yet when you look at their formal macroeconomic variables as the world has been conditioned to believe, these economies are glossed over as belonging to countries "that have sustainable macroeconomic parameters", and with positive real growth rates. But tell that to the suffering masses in those countries with no food to eat and no roof over their heads.

In other parts of the world:

Elsewhere here in Africa, we see daily pictures of virtually starving millions (DRC i.e. the Democratic Republic of Congo) in October/November 2008) stuck in the jaws of sprawling refugee camps running away from war and civil strife, with nothing to their names by way of material possessions. Again when you flip the pages of macroeconomic indicators, one finds those countries with "healthy" inflation numbers, well in line with the so-called "steady-state zones" of macroeconomic stability.

This paper argues that reducing development to macroeconomic indicators neglects important aspects of human beings such as physical and mental health. The definition of "sustainable human development" in terms of satisfying the needs of individual human beings and providing them with opportunities to develop their abilities avoids two paradoxes. The first paradox is when a minority of developed persons are found living in underdeveloped societies. This creates inequalities that can be detrimental to social stability and sustainability leading to crime in the short term and civil unrest in the long term. The privileged may resort to strategies of repression and social isolation of the underprivileged as they consider the latter as a threat to their "stability" and an embodiment of crime and vice ("Do not go to Mbare, they will steal your car" A young man from an affluent family told me and I directly concluded that he associates poverty and crime especially theft.). The second paradox points to situations of marginalisation and social exclusion in developed countries with people who cannot satisfy their basic needs or develop capabilities amidst prosperity and opulence. Resources may be available but inaccessible owing to an interplay of economic, social, cultural and political forces. Gono (2008) also noted total lack of preparedness when a natural disaster strikes raising the awareness that sustainable human development should include aspect of resilience of both human communities and natural ecosystems if a disaster were to strike.

2. Development as Modernity

2.1 A Crisis of Authority in Late Middle Ages

The current standards of understanding development are based on a process called modernity which implied in Europe abolishing the privileges of the clergy and the nobility and replacing a feudal economic system based on land tenure and agriculture by a capitalist system based on manufacturing. There were several misinterpretations of the prevailing social order with the mistakes of the clergy being taken as God's faults and societies becoming increasingly anti-clerical and secular. Therefore, development as a normative science and assumingly a linear process should be understood in the context of normative epistemology and modern science because as rejections of supernaturalism, normative epistemology and modern science lend each other tools and claim to be the great contributors to the progress of humanity. In addition to their rejection of supernaturalism, one salient feature of supernaturalism and scholasticism that modern science and normative epistemology oppose is the presentation of knowledge as something hidden belonging to esoteric mystery schools in pursuit of universal and free education as it was advocated by French revolutionaries in the 17th century. A precedent had been set by the invention of the print press by Guttenberg which made the bible accessible to the masses. This approach that locates knowledge in an atmosphere of mystery is rooted in an older philosophical debate that opposes reality to appearance. Epistemology as philosophy of knowledge should, of course, tackle knowledge of reality (and not just knowledge of appearances) but the concept of reality itself remains problematic. It is subject to changing paradigms. For instance, referring to the metaphysical dualism that dominated scholasticism, Cornwell (1991) pointed out that, during the middle ages: Philosophy ... treated ideas as if they had the same sort of reality as a child's coloured building blocks. It was held that there was a real distinction between a thing's substance and its observable appearances – shape, size, texture; that a thing's essence could be distinguished from its existence; that ideas like justice, beauty, truth, had a sort of separate existence in a universalized world of pure forms, independent of individual minds and actual objects and actions. It was thus easy, without the aid of sense experience, that a supernatural realm, far more important and durable, lay beyond the veil of appearance.

The metaphysics of supernaturalism is dualistic. By assuming the existence of two worlds, one supernatural and another natural, supernaturalism locates reality in the supernatural world and the natural world is reduced to mere appearance. The epistemological implication of supernaturalism is that knowing implies accessing a hidden reality. Accessing this hidden reality is possible either through this reality manifesting - i.e. revealing - itself or through some intermediaries that can act as bridges (pontiffs) between the natural realm of appearance and the supernatural realm of reality. This need for mediation explains why in the pre-scientific period revelation and the mediation of religious authority were accepted means of accessing knowledge and truth. In terms of development, On the one hand, this point of view has been condemned as obscure and as making people obsessed with "eternal life" instead of working for material wellbeing and providing free labour to the clergy as sacrifice in exchange of sanctification or indulgence but also may explain partially the frequent visit to the traditional healer or to the prophets by Africans in order to address social and economic woes. Most African countries are dominated by religious effervescence and a proliferation of churches, pastors and self-styled prophets and miracle-makers who claim to solve all problems be they emotional, financial, economic and political. However, few scholars associated these intellectual debates with societal challenges such as wars, rudimentary health care facilities, low levels of hygiene, reduced life-expectancy, and the proximity of death made people preoccupied with "eternal life" and rarely questioned the social privileges of the clergy as society was perceived as an organic-divine order which distributed resources and power through in a top-down pattern through absolute monarchs.

The shaking of the supernatural assumptions that supported scholasticism left Descartes in doubt. Minds of philosophers and scientists were left to wary as clerical status as a knowledge function was challenged by the rise of an urban professional groups and the influence of lay theologians” (MacGrath, 1987). Erasmus, for instance, played a great knowledge role without coupling it with clerical status. According to McGrath (1987):

The impact of the rising professional groups in cities throughout Europe in the late fifteenth century was considerable. No longer could a priest expect to satisfy his urban congregation by reading a Latin sermon as an adjunct to the reading of the mass – an intelligent and fresh sermon was required, if the priest was to be seen to justify his position within society. No longer could he expect to justify his privileged position in urban society merely by reference to his calling. At a time of economic depression, there was widespread criticisms of priests, who were both supported by the public, and exempt from their taxes. This increasing anticlericalism must not, however, be seen as a reaction against the Christian religion, but merely as a growing dissatisfaction with the role and the status of the clergy within an increasingly professional urbanized, yet still Christian, society. Similarly, the rising hostility towards scholasticism in theology must not be thought to imply a decline in popular interest in religion, but actually reflects both a growing theological competence on the part of some of the laity (and Erasmus may serve as an example), and increasing interest in non-academic forms of religion (often expressed in sentimental or external forms) on the part of others.”

Supernaturalism’s belief in a universe that is ultimately grounded in God’s act of creation creates a situation where knowing to universe implies often referring to its origin. Moreover, this understanding of the universe with referring to its origin i.e. God’s creation makes clerical status not only a religious function but also a knowledge function. In fact, in the context of the late medieval thought McGrath (1987) pointed to “the apparent inability to distinguish catholic dogma from theological opinion”. This coupling of religious and knowledge functions as mediation to the supernatural creates a situation where the body of knowledge does not make a difference between theological debates and cosmological theories. At this stage, the disciplinary distinctions and autonomy that modern scientific disciplines currently enjoy are not clearly delineated and the separation of the sacred and the secular which is a normal feature of modern culture is not yet established. Nevertheless, development in modern terms is a secular process managed by humans for the sake of satisfying human needs. Nevertheless, in the context of early modern societies being a clerk meant working in an office in a public administration, a privileged position as compared to manual labourers who worked on farms or in factories. This may also explain the tendency in developing countries for unemployed youths with minimal formal education or those who failed to make in liberal professions may find “preaching the word of God” (becoming pastors) a convenient shortcut to clerical work.

In the context of the late medieval age, the role of epistemology can be defined as an attempt to assess how supernatural reality reveals itself in natural appearance. Even in context where concepts such as “natural law” are used (by Thomas Aquinas, for instance) medieval naturalism is different from the modern naturalism that opposes supernaturalism. Medieval naturalism upholds that natural laws are inscribed in nature by God through the act of creation. The perfection of these laws as manifested by order, simplicity and regularity in the universe is a manifestation of God’s own perfection. From the point of view of medieval naturalism, regular and ordered

processes such the regular succession of day and night, the regularity of seasons, the harmony and rhythm of the heartbeat and so forth are considered as manifestations of God's perfection. Modern naturalism, on the other hand, rejects altogether supernatural beliefs. Moreover, it assumes that the universe is an autonomous and automatic system which needs to explanation or justification outside itself. Therefore, laws of the universe, according to modern naturalism, are not manifestation of God's perfection, but "universal" laws. Modern naturalism, therefore, aims at explaining natural phenomena in the universe by referring to universal laws and not the will of a divinity or special people who are believed to access of hidden realm of supernatural reality.

Supernaturalism, therefore, can be rejected on empirical and rational grounds, but its epistemological consequences i.e. founding knowledge on revelation, religious authority and tradition did not pave the way to scientific methods smoothly. The crisis that generated modern science and normative epistemology was first and most of all a crisis of authority. This aspect is most of the time overlooked by the supports of a a-historical universalistic approach to epistemology that attempts a rational reconstruction of the epistemological enterprise as a series of arguments and counterarguments. McGrath (1987) pointed out that:

the later medieval period may be regarded as characterized by a two-fold crisis of authority. First, a lack of clarity concerning the nature, location and exercise of theological authority at a time of rapid intellectual development led to considerable diversification of theological opinions, and confusion concerning the status of these opinions.

This doctrinal diversity and confusion explains Descartes' search for new and ultimate foundations. Descartes looked for foundations because he was standing at on a shaky ground. For more than ten centuries, scholasticism had played the role of normal science. It had generated fruitful philosophical debates based on crucial philosophical distinctions such as substance vs. form, knowledge vs. opinion, actuality vs. potency, substance vs. accidents, essence vs. existence, faith vs. reason, reality vs. appearance, eternity vs. time, and the soul vs. the body. This dualistic pattern still prevails in contemporary philosophical debates where distinctions such as rationalism vs. empiricism, idealism vs. positivism, principles vs. facts, ideas (concepts) vs. objects, theory vs. practice, regularly occur. The shaking of the supernatural assumptions that supported scholasticism left Descartes in doubt. Minds of philosophers and scientists were left to wary as clerical status as a knowledge function was challenged by the rise of an urban professional groups and the influence of lay theologians. Erasmus, for instance, played a great knowledge role without coupling it with clerical status. According to McGrath (1987):

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competence on the part of some of the laity (and Erasmus may serve as an example), and increasing interest in non-academic forms of religion (often expressed in sentimental or external forms) on the part of others.

Moreover, the maze of mystery that surrounded knowledge functions was dissipated. On the one hand, “the introduction of printing was at least a catalyst, and also an agent, of intellectual and social change (McGrath, 1987). Printing made available to the laity the bible and devotional books that were previously restricted to the clergy. Among professional groups and lay theologians, “there was a new interest in studying both scripture and the fathers directly, rather than through a ‘filter’ of glosses and commentaries”. (McGrath, 1987). Therefore, the main contribution of the reformation to the emergence of modern science and normative epistemology is a certain disintermediation of knowledge. This disintermediation implied reliance on one’s rational abilities rather than on interpretation by religious authority. Moreover, this disintermediation of knowledge created conditions for the replacement of religious authority as a source of knowledge by personal experimentation. It is worthy noting that in the late middle age and early modern times, religious and knowledge functions were still entangled. Personal experimentation was encouraged by people of various abodes independently of the position they held on questions of knowledge and truth. Martin Luther, for instance, encouraged personal experimentation by urging his followers to read the scriptures themselves instead of relying to the interpretation by religious authority. Ignatius Loyola, on the other hand, tried to get the best of both personal experimentation and authority by subjecting his followers, the Jesuits, to lifelong lengthy periods of study and yet imposing them under oath strict obedience to the leaders of the Jesuit order.

2.2 The Structuring of Modern Societies

The structuring of modern societies bore the germs of current development, social, economic, cultural and environmental crises. The rejection of supernaturalism led to the rejection of the sacredness of nature and human beings. Karl Marx pointed out that capitalism destroys its sources of work namely nature and labour i.e. human beings (Moore, 2014). The structuring of modern societies was based on mechanical principles i.e. the reduction of reality to matter in motion and the transmission and transformation of energy as a mode of production unlike medieval who linked motion with supernatural powers. The steam engine and other material sources of energy and motion (water or wind) moved us from an era of supernatural animation, where motion and action were described in terms of a spiritual power, the soul or “*anima*” in Latin, to an era of automation where motion and action are described in terms of material bodies self-moving through the effects of energy (a derivative of matter and motion). In this context, humans become cogs in complex production processes where emotion was repressed or presented as hindrance to reason while rationality was reduced to quantity, order, simplicity, regularity, hierarchy, proportion, symmetry, quantification, logical inference, and linear or sequential mental processes (algorithms), qualities that modern physicists assumed were embedded in the order of the universe and that deviating from them was abnormal.

Modern social scientists tried to impose on human societies the same characteristics that assumingly natural scientists had observed in the universe hence the predilection for formalization and quantification creating a situation where “what could not be counted did not really count” although statement attributed to Albert Einstein states the contrary i.e. “Everything that can be counted does not necessarily count; everything that counts cannot necessarily be counted.”

(O'Neill, 2006). This may explain at least partially, the origins of thinking of development in terms of numbers. Social structures also changed, in Protestant Europe, protestants accumulated wealth as they mocked Catholics who went to the monastery to work for salvation as they themselves considered their jobs as their vocation (God's calling). Weber & Kalberg (2013) described in detail how protestant ethics contributed to the rise of capitalism as anti-clerical protestants saw no difference between working for God and working for themselves. Unlike Catholics who went to the monastery to work for salvation and eternal life, protestants considered their jobs as their vocation and found no difference between working for God and working for themselves. They measured faith, holiness, salvation and God's blessing through material well-being. The attribution of the clergy's faults to God destroyed the moral fabric of the Medieval society and in addition to the rejection of supernaturalism and subsequently the sacredness of both nature and human beings and a hypothetical reward in heaven. This led to the secularization of the sacred as moderns believed only in one world (a universe, they called it) which needed no justification or explanation outside itself and relationships were to be based on self-interest, reciprocity, or threat of mutual destruction rather than the alterity, reciprocity and charity warranted by a hypothetical reward in heaven or God's command for people "to love one other as God loved them". They sought theories of human nature which rejected the biblical narrative of creation and hypothesized a state of nature where humans would live naturally without authority and regulation. Although Sarton (1962)'s belief in the natural role of science seems exaggerated, the scientific model shaped in various ways what emerged as "the human science".

All the schools of human sciences were in search of a scientific theory of human nature and social organization. Freud (2014)'s psychoanalysis, for instance, was an attempt to understand our mental processes without referring to invisible entities such as the soul, angels and demons. Every detail of our behaviour could be explained as the interaction of an instinctive *id* under the pressures of a moralizing and regulating *super-ego* to create an adaptive ego. The process was not always perfect, because some repressed instinctive forces such as sexual desires (*eros*) and desires of destruction (*thanatos*) could lead to neurosis. Freud's views with a central role of sexuality in human relations and individual behaviour still offend some Christian-minded individuals and groups but it is part of the process of the secularization of the sacred where in addition to its reproductive role, sex plays a role as a means of exchange and actually a commodity. Those who advocate for equal reproductive rights for women and same sex relationships may not be aware of Freud's disentanglement of sex from religion and its ritual use in esoteric secret societies as a sacred ritual but also changing patterns of family structure and individual behaviour in industrialized societies where the traditional centring of life around the family is replaced by centring life around factories with massive rural-urban migration with people living where there are jobs instead of where they have relatives.

Skinner (2002), the father of scientific behaviourism, radicalized the position of his predecessor Watson. In his search for an objective and universal understanding of human behaviour, Skinner established a rigorous method of collecting and analyzing data. As Stevenson (1981) has noted: Skinner's commitment to Watson's behaviourist program is so rigorous that he believes, and argues here, that all reference to inner events, whether physiological or mental, must be excluded not only from the data, but from the explanatory theories of a scientific psychology.

Skinner (1973) emphasis on responding to external stimuli eliminated from human behaviour any reference to ‘inner’ life that the medieval associated with “spirituality” and “conscience” i.e. the repository of moral principles, reflection, self-examination and guilt. The modern person was presented as an autonomous, free and rational individual who knows his and her interests and who was free to pursue them while the community was a by-product of the interaction of rational and self-interested individuals based on reciprocity, domination, competition, violence or threat of mutual destruction. Several scholars have taught and wrote about behaviourism but they rarely indicate that the theory was developed in a book entitled *Beyond Freedom and Dignity* (Skinner, 1973) where Skinner (1973) denies humans a special place in nature and traditional qualities such as freedom and dignity and upholds that humans – like other animals – act and react through operant conditioning i.e. response to external stimuli. It is interesting that in development literature the concept of stimulating development was used (Chatterjee et al., 2018, Kitchen & Marsden, 2009, Okafor & Arowoshegbe, 2011). This implied that development can be imposed from outside by government bureaucrats or international organisations.

Thomas Hobbes (1667), after witnessing the civil war in England had a very pessimistic perception of human beings (*homo homini lupus*, man is wolf for man) and this implies that a state of nature without any authority and regulation would lead to a war of everybody against everybody (*bellum omnium contra omnes*). In his view, for harmony in society (what he called the commonwealth) humans should be forced to be good by a strong authority, The Leviathan. The Leviathan would create a situation where individuals would be forced to leave their individual interests and surrender their power and ability for violence to the state. Thomas Hobbes is the originator of the idea of an all-powerful state which has the monopoly of violence. From a development point of view, Hobbes (1667) would support centrally planned development programmes to which citizens would be compelled to adhere to in fear of punishment by civil and military authorities. This approach to development used to occur through 5 years development plans in former socialist countries where the central government would determine what to produce and in which quantities.

Jean-Jacques Rousseau (1667) has an opposite view which somehow romanticized human nature by postulating that humans were naturally good but their natural innocence was destroyed by envy and competition in the process of socialisation. Rousseau was of the view that humans are capable of freely entering into social contracts surrendering their individual will to the general will and designing institutions by mutual agreement. For Rousseau (1664) no one should be ruled without his consent and where individuals would be able to exercise their will either directly or through elected representatives. According to Rousseau (1664)’s social contract tradition, development should be an agreed upon democratic process where people would choose the type of development they want and how to achieve it. This in my view goes beyond “participative development” and creates a situation where individuals and communities are actors are architects and beneficiaries of their chosen pathways to development.

2.3 The Contentious Relationship between Labour and Capital

The socio-economic transformation brought by the industrial revolution triggered unprecedented levels of mass production. However, mass production did not solve the problem of poverty as the focus on the economy changed from feudalism based on land tenure to capitalism based on manufacturing. This situation disturbed traditional family lifestyles in Europe with lifestyles traditionally focused around the family to increased urbanization and migration to industrial poles where factories ran on mechanical machines day and night.

The main contentious issue here was the relationship between labour and capital and Karl Marx expressed this discontent in his book *Das Kapital* (The Capital) and suggested solutions in the *Manifesto of the Communist Party*. Marx was not the only one intrigued by the condition of workers in industrialised areas. In 1891, Pope Leon XIII issued an encyclical letter entitled *Rerum Novarum* which was translated in English as *On Labour* where he describes the new context brought by industrialised and the plight of workers in such as context. He reaffirmed the dignity of work against a biblical narrative in Genesis that describes work as a curse from God after Adam and Eve had sinned (Duffy & Board, 2006). Pope Leo XIII (1891) upheld the principle subsidiarity which suggest that decisions should be made at the level of the people who are affected by the decision (a reaction against increased centralization of decision-making industries and the prevalence of absolute monarchy as the dominant political system in Europe). Pope Leon XIII (1891) also affirmed the principle of solidarity which was a half century later upheld as freedom of association in the Universal Declaration of Human Rights.

Karl Marx (2013) on the one hand suggested the collective ownership of the means of production through the state. A centrally planned production system based on five year plans that would be issued by the state, a classless society based on a dictatorship of the proletarians. Proletarians were a working class who had nothing to supply to industry except labour as opposed to the bourgeois class that owned the means of production (capital) and were perceived by Marx as oppressive and exploitative. In this context, the contentious relationships between the owners of the means of the means of production or capital and the labour led to the emergence two antagonistic social classes. On the one hand there were those who dwelt in the suburbs or mountains (“bourgs” or “Bergen”) in Dutch and German or the “bourgeois” and the proletarians who supplied them with labour.

At the other end of the continuum was the capitalist system which upheld a naturalistic view of social organization and assumed a divine-organic social order where God distributed power and wealth in a top-down pattern through absolute monarchs (Filmer, 1949). Filmer’s views were opposed by John Locke (1967) who associated the distribution of property with labour. According to John Locke (1967) the role of the state was to protect property and for him property included life, liberty and estate. In the twentieth century, proponents of capitalism upheld private ownership of the means of production, distribution of goods and services through “free” markets, deregulation of the economy instead of centralized planning by the state, free exchange between individuals instead of organized collective work on state owned farms and factories.

This ideological chasm creates a situation where the main political and social debate in the twentieth century was the conflict between labour and capital resulting in the Bolshevik revolution and the creation of the Soviet Union by Lenin in 1917 and various attempts to implement socialism in other parts of the world such as in China, North Korea, various nations in East Europe such as Bulgaria, Romania, Hungary and the birth various liberation movements in South America and the emergence of an increased concern for the poor in the Roman Catholic with a liberation theology championed by theologians such as John Sobrino and Leonardo Boff which many believe inspires Pope Francis advocacy for a church which is close to the poor.

2.4 The Paradoxes of Development in Africa

In Africa, the agenda of de-colonization was defined in negatives implying restoring the dignity of black people by easing the burden of poverty, disease and ignorance. Despite commendable efforts in the areas of education, health and industrialization, the decolonization agenda lacked substance and amounted in many African countries to the Westernisation of the ruling elites. These

elites kept linkages with the colonial power through travel, education (Cambridge vs. Zimsec), the media and lifestyle. In addition to the Westernization of the ruling elite, post-colonial Africa faced a difficult choice of which economic system to adopt. Most Africa countries attained independence during the Cold war. Hence, they had to choose between socialism and capitalism. There was a non-aligned movement but it was weak and was “non-aligned” only in theory. Some countries adopted for a capitalist system but this was a misnomer because those countries adopted capitalism when their main problem was actually “capital”. They still relied on foreign aid to balance their budgets and to provide basic services. One could wonder how someone becomes a “capitalist without capital.”

The linkages between capitalism and colonialism have created sympathies for socialism among liberation movements. During liberation struggles, the combatants adopted the egalitarian principles embedded in socialism i.e. the ideal of a classless society through the use of the title “comrade” and slogans such as “we are workers, not servants” (tiri vashandi...). This also was a category mistake because it implied transplanting to Africa an ideology which has been developed elsewhere. Both capitalism and socialism were offshoots of the industrial revolution. The industrial revolution created a situation the medieval feudal system based on land tenure collapsed and life was now centered on industries rather than families. The industrial revolution also accelerated the process of urbanization in a way that several thousands of rural peasants moved massively to industrial areas to look for jobs.

Transplanting socialism to Africa implied a form of anachronism which would imply that historical and socio-economic development in Europe could be replicated. Being anti-capitalism did not necessarily make one socialist. There is no logical link between the two in a way that one becomes the negation of the other. Moreover, at independence most African countries did not have a critical mass of laborers which could constitute a social class similar to the European proletarians since industrialization was a prerequisite to “proletarianisation”. It became somehow, difficult to implement socialism in a context dominated by peasant farmers who practiced subsistence agriculture and who were in the biggest majority illiterate. Moreover, at independence, most African leaders who subscribed to a socialist ideology lived capitalist lifestyles. Ushewokunze (1984) finds that allegations of racism and tribalism were pretext by the ruling elite to maintain their privileges as people with similar economic conditions lived in harmony across races and tribes. In Ushewokunze (1984)’s words:

Today, we must guard against a trend where the few take over power from the white minority and exercise it for the black minority. And they cover our eyes so that we do not realise that they are buying land, houses and business premises for themselves and for their families. To do all this, they use tribalism and regionalism. These people will tell you that the struggle over our national resources is between the Shona and the Ndebele, between Zezuru and Karanga, or between white and black. That is a big lie. You will find the rich Ndebeles, Shonas, Karangas, Zezurus and whites drinking and eating together, and living in the same suburbs. And quite happily you will also find the poor living together without recourse to tribe, race, region or such other divisive tactics used by the rich to oppress the poor. Neo-colonialism is when the few rich blacks and whites team up to run the old colonial economic structure for their own benefit and for international capital, forgetting that our political independence was brought about through sacrifices of the peasants and workers who still remain poor under neo-colonialism.

In this context, the agenda of de-colonisation was coupled with an agenda of modernization which implied “formal” education and the provision of modern infrastructure and services such as schools, roads, hospitals, railways, electricity and so forth. The agenda of modernization hit a snag when postcolonial states found that they had achieved political independence without economic independence. The means of production remained in the hands of capitalists mainly through multinational corporations and most states found themselves with no financial, human and technical capacity to modernize their economies.

Several options emerged. Some countries opted for seeking technical assistance from former colonial powers who would send “expatriates” to build roads, dams, schools, hospitals with the money used being borrowed from bilateral or multilateral “partners”. In other countries, governments decided to “nationalize” foreign owned businesses in order to increase the participation of locals in the economy. The most dramatic case was in Uganda where Idi Amin asked all the Asians to leave the country within 24 hours. Similar initiatives occurred in Zaire (now the Democratic Republic of Congo) and Tanzania. Most of the nationalized businesses were characterized by mismanagement by political cronies who applied the adage that “what belongs to everybody, belongs to nobody”. Most of them lacked the necessary expertise and management experience and were appointed either through political clientelism or family relationships (nepotism). The third option was to export raw materials since the newly independent states had no human and technical capacity to transform the raw materials into manufactured goods which could be sold on the market. This creates a situation where newly independent states depended on market volatility or sold their raw materials through auctions creating a situation where the price of raw materials was fixed by the buyer.

In other words, in Africa, development implied a strategy of ex-filtration and insulation of an elite minority through formal education and access to commodities and amenities that most of people associated with the colonial masters such as speaking the language of the colonial masters, access to modern education and electricity, possibilities of travelling to the colonial masters place or permanently migrating there. In many instances members of the ruling elite have been accused of “capturing” the state, overpricing state procurement processes in exchange of bribes, leading luxurious lifestyles with resources from the fiscus, and turning proceeds from the exportation of natural resources to personal use. Most African states are ‘unfinished projects’ as at various levels of society leaders seemed to be preoccupied by self-enrichment instead of service provision and some of them ended amassing fortunes when populations could not satisfy their basic needs. This led to depleted educational and health facilities while leaders spend millions sending their children for education abroad or getting healthcare themselves. Sometimes, these services are funded by tax payers money through exorbitant government allowances for officials and “government scholarships” which are never advertised and where selection processes and criteria are not publicly known and auditing processes are never conducted. This leads to frustration, protests, revolutions, military coups and sometimes perilous migration adventures where thousands of African citizens risk everything in order to cross the Sahara desert and the Mediterranean sea in the hope of better living conditions.

In several countries corruption became endemic and comes in various forms, from the “handshake” between a taxi driver and a policeman to the centre of the statecraft with allegations of misappropriation of public funds, tribalism and nepotism, sex for jobs in both the private and the public sector and sex for grades in schools and universities, dubious procurement processes and

complex networks of corporates and politicians whose corrupt activities rarely get the attention of the public.

While Donald Trump remarks about s*hole countries are disparaging,²⁷ his definition of a failed state is quite interesting. Donald Trump defined a failed state as a state where criminal become politicians and where politicians become criminal. This implies a situation of lawless where in periods of peace state agents turn themselves into the law itself and violate openly the same laws they are supposed to enforce without any hope for prosecution or justice for the victims. In periods of civil unrest, informal networks of non-state led armed groups have more power than state institutions spreading fear and terror and bypassing formal state networks. These networks can spread across border and judging by the type of military equipment they use, they may be benefitting from sponsorship from powerful nations.

Despite the outcry for environmental protection, people who live in symbiosis with natural ecosystems are considered as underdeveloped and “living in the bush” while development is portrayed as separation from nature and society living in concrete reinforced residences amidst electronic and mechanical gadgets far from the intrusion of mosquitos, bugs, goats and chickens. This strategy of ex-filtration and insulation was purposefully entertained by the colonial masters. In addition to the Address to the British Parliament by Lord Maclauy cited at the beginning. Instructions given by King Leopold II of Belgium to nuns and priests who were doing missionary work in the Democratic Republic of Congo is eloquent. It says:

“Reverends, Fathers and Dear Compatriots: The task that is given to fulfill is very delicate and requires much tact. You will go certainly to evangelize, but your evangelization must inspire above all Belgium interests. Your principal objective in our mission in the Congo is never to teach the niggers to know God, this they know already. They speak and submit to a Mungu, one Nzambi, one Nzakomba, and what else I don't know. They know that to kill, to sleep with someone else's wife, to lie and to insult is bad. Have courage to admit it; you are not going to teach them what they know already.

Your essential role is to facilitate the task of administrators and industrials, which means you will go to interpret the gospel in the way it will be the best to protect your interests in

that part of the world. For these things, you have to keep watch on disinteresting our savages from the richness that is plenty [in their underground. To avoid that, they get interested in it, and make you murderous] competition and dream one day to overthrow you.

Your knowledge of the gospel will allow you to find texts ordering, and encouraging your followers to love poverty, like “Happier are the poor because they will inherit the heaven” and, “It's very difficult for the rich to enter the kingdom of God.”

You have to detach from them and make them disrespect everything which gives courage to affront us. I make reference to their Mystic System and their war fetish – warfare protection – which they pretend not to want to abandon, and you must do everything in your power to make it disappear.

Your action will be directed essentially to the younger ones, for they won't revolt when the recommendation of the priest is contradictory to their parent's teachings. The children have to learn to obey what the missionary recommends, who is the father of their soul. You must singularly

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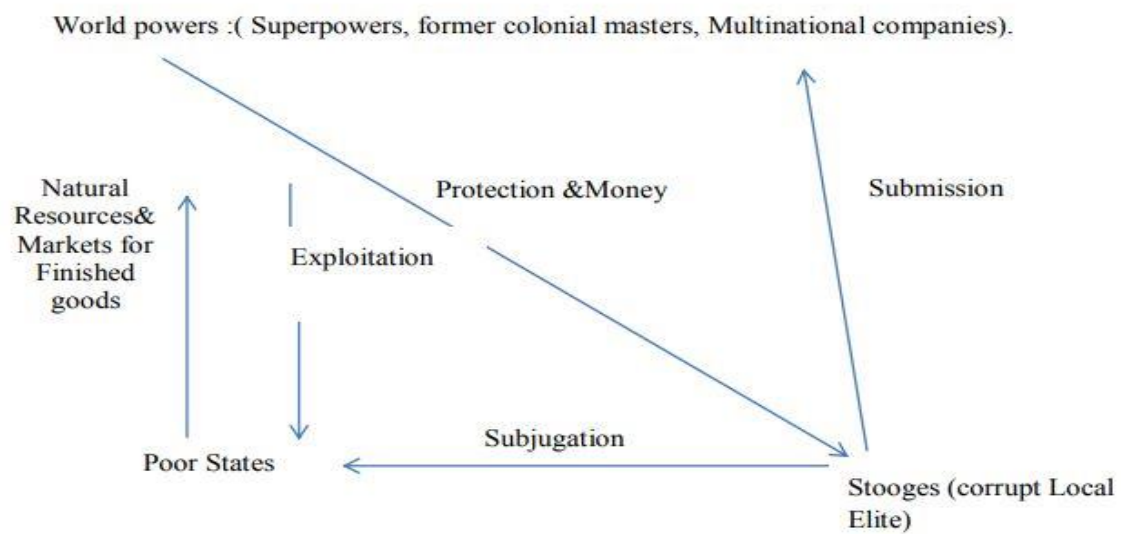
insist on their total submission and obedience, avoid developing the spirit in the schools, teach students to read and not to reason. There, dear patriots, are some of the principles that you must apply. You will find many other books, which will be given to you at the end of this conference. Evangelize the niggers so that they stay forever in submission to the white colonialists, so they never revolt against the restraints they are undergoing. Recite every day – “Happy are those who are weeping because the kingdom of God is for them.”

Convert always the blacks by using the whip. Keep their women in nine months of submission to work freely for us. Force them to pay you in sign of recognition-goats, chicken or eggs-every time you visit their villages. And make sure that niggers never become rich. Sing every day that it's impossible for the rich to enter heaven. Make them pay tax each week at Sunday mass.

Use the money supposed for the poor, to build flourishing business centres. Institute a confessional system, which allows you to be good detectives denouncing any black that has a different consciousness contrary to that of the decision-maker. Teach the niggers to forget their heroes and to adore only ours. Never present a chair to a black that comes to visit you. Don't give him more than one cigarette. Never invite him for dinner even if he gives you a chicken every time you arrive at his house.²⁸

Development in Africa meant modernization in the Western sense with an increased culture of consumerism and primitive accumulation of material wealth to the detriment of social harmony and community development. This perpetuated a neo-colonial and neo-patrimonial system which protect the interests of the colonial masters and the ruling elites. This may explain partially the current surge in military coups in French speaking West Africa and the almost natural animosity against first families and members of the ruling elites among African opposition parties, civil society activists and the African non-state allied diaspora. Burimaso (2013) represented the neo-colonial system as in **Figure 1**.

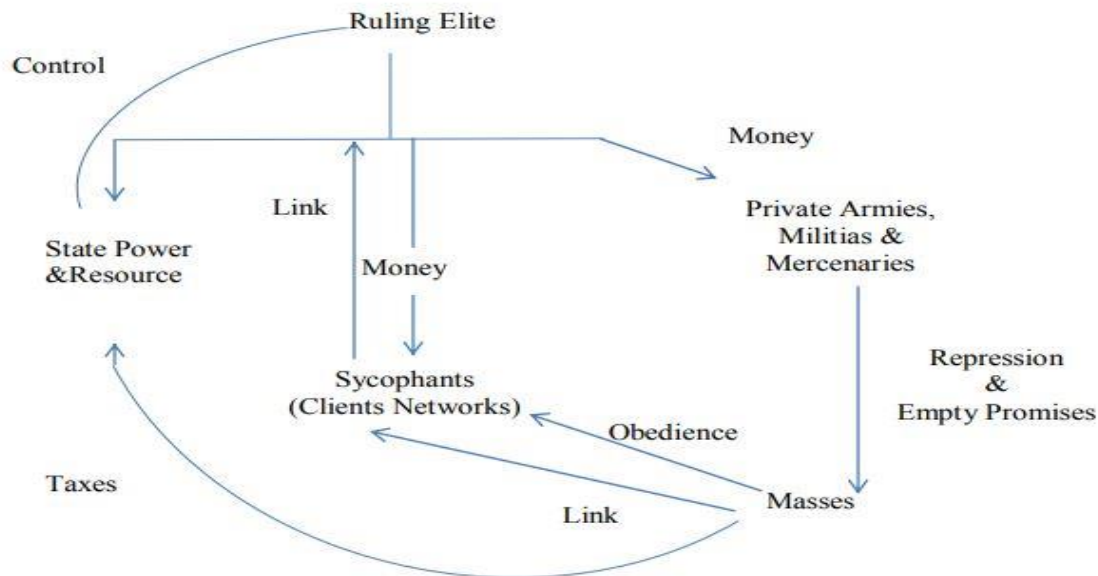
²⁸ <https://www.fafich.ufmg.br/~luarnaut/Letter%20Leopold%20II%20to%20Colonial%20Missionaries.pdf>

Figure 1: The Neo-Colonial System

This process implies a situation where despite several decades of independence world powers and multinational corporations have an influence in the political affairs of African postcolonial states. Civil society then appear at as an interface between universalistic pretentions to the improvement of human rights and governance and at the same time the local contexts subject civil society activists to a restricted space for civil liberties but also for economic opportunities. In this context, civil society operates in a context of hybrid legitimacy. On the one hand, it has to package its claims and activities in an internationally acceptable discourse of human rights and equality between citizens but also struggle for democracy, on the other hand, it fights for space and recognition with the ruling elites who claim to have a popular mandate to defend “national interest” against a neo-colonial agenda which weakens the African postcolonial state in order to access natural resources. Economically, civil society has to justify why it should be funded instead of direct bilateral and multilateral cooperation where international donors fund state institutions directly or Foreign Direct Investment (FDI) by multinational corporations but at the same time civil society finds difficult civil society activists remain depend on international partners for funding but also they find sanctuary in former colonial masters or in superpowers in contexts of repression adopting an attitude of submission to donors similar to the ruling elite’s submission to the economic and political diktat of powerful nations keeping African states in a situation of dependence for manufactured goods but also for financial, diplomatic and military support in cases on popular insurgency.

At the local level this neo-colonial system is supported neo-patrimonialism as represented in **Figure 2**: a system where the ruling elites control the masses through sycophants and political clients. Moreover, the ruling elites control the masses through private armies, militias and mercenaries who are paid from money obtained from the sale of precious minerals. The masses receive empty promises and are repressed if they raise their voices. The ruling elite controls state power and resources and sometimes money planned for public works is converted to private use.

Figure 2: The Neo-Patrimonial System



3. The Contribution of Trade to Sustainable and Inclusive Socio-Economic Development

3.1. The multifaceted Nature of Development

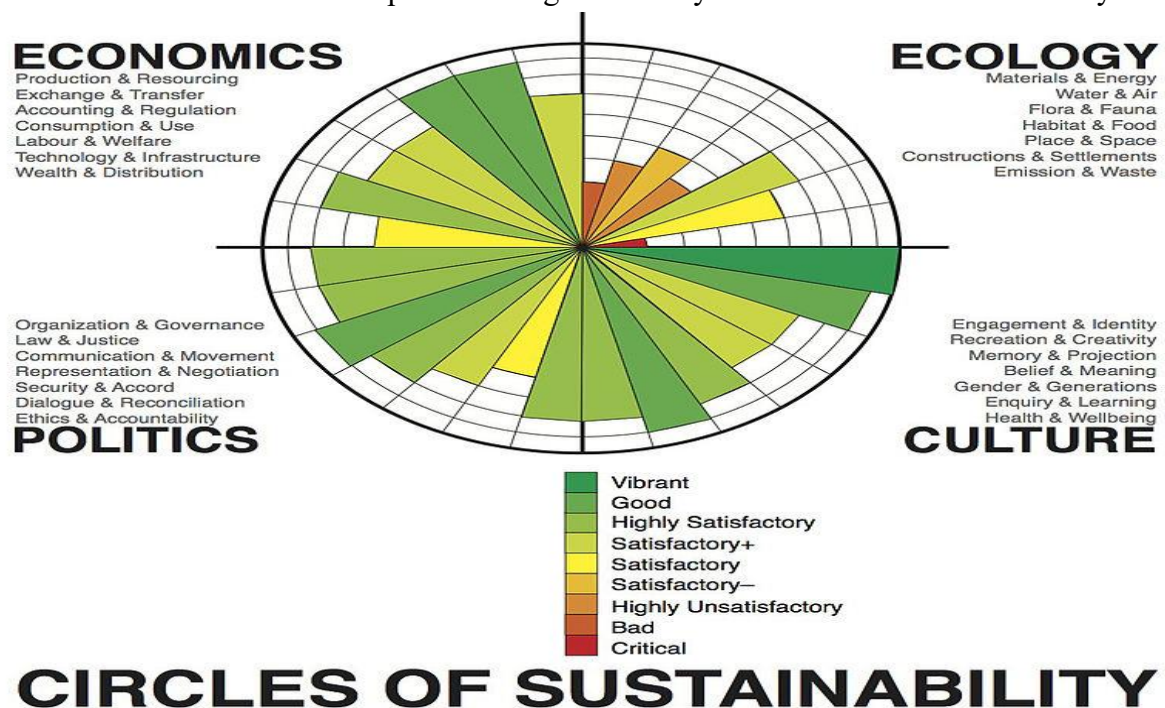
Instead of defining development in terms of macro-economic indicators such as the GDP etc, there is a need to begin from the beginning. Development is not about faceless numbers but about real human beings trying to make a living sometimes in uncertain and unclear circumstances. The United Nations World Commission on Environment and Development defines sustainable development as "[d]evelopment that meets the needs of the present without compromising the ability of future generations to meet their own needs." This idea of meeting needs is important and should be taken seriously but it needs to be complemented by the need for developing one's capabilities. Moreover, development has be linked with well-being unlike current approaches where people focus on macroeconomic indicators. Sustainable development is a multifaceted process which involves economic, social, ecological and health which can be tackled through a multidimensional approach involving technical aspects and with issues of equity and access to opportunities for self-development and social mobility.

In addition to the aid vs trade debate, there are other contentious issues such as the relationship between anthropocentrism and ecocentrism in a context of growing environmentalism.

The rising question is whether "economic growth" is the problem or the answer in view of the challenges of attaining sustainable development. Economic growth can be both the problem and the answer to the challenges of sustainable development. Economic growth has often been analysed in terms of macro-economic indicators such as the Gross Domestic Product (GDP), the availability of infrastructure, goods and services, or technological advancement. However, there can be a dichotomy between these indicators and the wellbeing of individual human beings. South Africa, for instance, is classified as a "first" world economy, although the majority of its population lives in abject poverty. The United Nations World Commission on Environment and Development (WCED) known also as the Brundtland Commission (1987) defines sustainable development as "[d]evelopment that meets the needs of the present without compromising the ability of future generations to meet their own needs." This definition was linked with the awareness that economic growth cannot continue indefinitely as indicated by Meadows and his

collaborators (1972) in their seminal work *The Limits of Growth*. Sustainability, in my view, starts with the well-being of individual human beings i.e. sustainably developed people are (1) those whose needs are satisfied following Abraham Maslow (1970)'s theory of needs for instance, and those (2) who have opportunities to develop their capabilities (Nussbaum 2001). By capabilities, I refer to what Bernard Lonergan (1990) calls “four levels of consciousness”, namely: the emotional/experiential (*pathos*), intellectual (*logos*), evaluative (*ethos*), and practical (*praxis*). Human beings are both the actors and beneficiaries of sustainable development and the concept itself remains incomplete unless the human element is added. This paper uses “sustainable human development” rather than “sustainable development”. An individual person who has developed her emotional, intellectual, evaluative and practical abilities can have an impact on society through creating material goods and challenging unjust social structures. In other words, sustainable human development is not only a scientific challenge but a democratic issue as well (Boulanger 2008). Sustainably developed persons create material goods, social networks, principles and values that make human living possible and sustainable both socially and environmentally. A developed person dynamically integrates substantive, structural, behavioural, and functional/teleological processes. By integrating these processes a person whose needs are satisfied and whose capabilities are developing achieves sustainable development at the level of intimacy, family and personal development, institutions such as the markets or the state, values, aesthetics, art and creativity, technology, and ecology.

Sustainable Human Development covers a variety of issues and areas which rank from ecology, economics, politics and culture (Paul et al. 2015). While some authors emphasized an integration of economic, social and environmental issues (Adams 2006). Magee et al. (2013) provided a model of sustainable human development through what they called “circles of sustainability”



Source: Magee et al. (2012), 'Reframing social sustainability reporting: towards an engaged approach' *Environment, Development and Sustainability*, vol. 15, pp. 225–243.

More sustainable human development was associated with health. This approach to sustainability can be represented as follows:



The diagram above points to the need to integrate an environment which supports natural ecosystems but still allows viable economic activity and also support healthy communities. This goes beyond the perceived antagonism between the conservation of natural ecosystems and economic activity. In practice, several efforts were made to mitigate the negative effects of human economic activity on natural ecosystems. Sustainable agriculture (Falk 2013) includes permaculture, agroforestry, mixed farming, multiple cropping, and crop rotation and implies the adoption of cleaner technologies (Andersen 1997, 1999). In practice numerous sustainability standards and certification systems have been established (Manning 2011 & Reinecke 2012)

3.2 The Role of Trade in Inclusive Development

The topic on the role of trade in inclusive development is faulty by design. It implies a paradigm shift from aid to trade as suggested by the Clinton administration in the 1990s. Dambiso Moyo called foreign aid “to Africa”, “dead aid” as “foreign”, “aid” failed to bring the transformation of economic processes and social relations. There are a lot of inaccuracies and inconsistencies on both academic and public debates on who is helping who. For instance, most African states are ‘unfinished projects’ as at various levels of society leaders seemed to be preoccupied by self-enrichment instead of service provision and some of them ended amassing fortunes when populations could not satisfy their basic needs. This leads to depleted educational and health facilities while leaders spend millions sending their children for education abroad or getting healthcare themselves. Sometimes, these services are funded by tax payers money through exorbitant government allowances for officials and “government scholarships” which are never advertised and where selection processes and criteria are not publicly known and auditing processes are never conducted. This leads to frustration, protests, revolutions, military coups and sometimes perilous migration adventures where thousands of African citizens risk everything in order to cross the Sahara desert and the Mediterranean sea in the hope of better living conditions. However, the debate about migration remains incomplete as long as it is limited to the migration of humans. There is a need to take into account the migration of things. Natural resources such as

timber, gold, oil, diamonds, and artifacts are also migrating. This is the case of rural-urban migration in Africa where migration patterns follow movements of commodities such as agricultural produce from rural areas where they are produced to urban areas where they are sold and consumed “en masse” (Byerlee, 1974). There are similarities between migration routes and major trade routes (Getahun, 2013, Harzig & Hoerder, 2013).

The phenomenon of migration is lined to dysfunctional international governance systems which act as push factors as ordinary citizens do not benefit from proceeds of natural resources exportation and ruling elites live luxurious lives through importing manufactured products from these proceeds. There is a direct relationship between migration and natural resources governance systems. Ruling elites are extension of global governance systems which exploit natural resources from developing countries as raw materials and export manufactured goods to the same countries at exorbitant prices. This crisis in global governance is manifested in the way “developed” countries entertain dictators and sycophants by giving them access to state of the art health and educational facilities for themselves and their children while they have failed to build quality educational and health systems in their own countries despite the fact that they are paid and given budgets to do so.

Not only are natural resources traded this way but cultural resources as well. This is done not only through television broadcasts which portray the developed world as a world of abundant resources and permanent entertainment unlike developing countries which are represented in terms of devastation, war, diseases, poverty and starvation. For instance, in Hollywood movies, the United States of America broadcasts more its entertainment industry based on sex, weapons and money than its agricultural and manufacturing industry. This creates some neglect for industries such as agriculture, manufacturing, and mining which supply raw materials to the “developed” world to the detriment of human communities and natural ecosystems in the “developing” world.

The recent surge of military coups in French speaking countries in Africa is a clear reaction against a colonial pact which stipulates that 85% of the export proceeds of those countries have to go through the French treasury as payment for infrastructure built during the colonial time and young military officers most of them who were born in the 1990s after the Economic Structural Adjustment Programmes (ESAP) did not benefit from any educational, healthcare or transportation infrastructure built by France are questioning that state of affairs. The recent revelation that France used to buy Uranium from Niger at 0.34 Euros per kilogram and that the price of Uranium rose to 200 Euros when Niger refused to sell and is trying to cut ties with France would have ended in criminal condemnations in functioning governance systems.

This may explain the call by the Economic Freedom Fighters (EFF) party in South Africa for economic independence in addition to political independence. This is not a new idea in the 1960s Kwame N’krumah coined the term “neocolonialism” to describe the situation where several African states accessed political independence but businesses remains in corporations from the former colonial master. Nationalist leaders such as Sekou Touré of Guinea, Kwame Nkrumah of Ghana, Thomas Sankara of Burkinafaso, and Robert Mugabe of Zimbabwe faced hostility from the West and were either overthrown with the complicity of former colonial powers or put under economic sanctions. There are instances in West Africa where basic services such as water and electricity are provided by French companies and heads of state are still renting the former residence of the colonial administrator and paying rentals to France. The colonial inheritance is also reflected in the romantic choices of political leaders from Gabon, Cote d’Ivoire, Senegal have

French wives although some of them may be in polygamous marriages owing to their Islamic background. The colonial inheritance is not only economic but cultural, they would easily agree that French is a language and that their African languages are dialects and some of those countries import everything from France including bread and cabbage. A typical “good” breakfast in Zimbabwe would have “English” tea, sausages, beans, sugar beans, and bread) and one of the criteria of intellectual excellence would be how good one can speak English. These attitudes are still prevalent. Recently, a student at Africa University has been bragging that the shoes she will wear on graduation day were bought in the UK by a cousin who lives there; and among Mutare parents in Zimbabwe there is preference for crèches run by whites even when they are not professional educators.

3.3 Beyond Anthropocentrism and Ecocentrism

Another contentious issue is the relationship between anthropocentrism and ecocentrism in the context of increasing environmentalism. Following the Brundtland Commission (1987) definition of sustainable development as "Development that meets the needs of the present without compromising the ability of future generations to meet their own needs," two trends developed namely anthropocentrism and ecocentrism. Anthropocentrism is the belief that human beings are the central or most significant species on the planet (in the sense that they are considered to have a moral status or value higher than that of other animals), or the assessment of reality through an exclusively human perspective. From the point of view of sustainability, anthropocentrism creates the beliefs and behavioural patterns that give humans the moral right to exploit natural resources for their sustenance. This creates a relationship of domination and exploitation which is at the origin of unsustainable patterns in the interaction between human and non-human beings. Major religions such as Christianity and Judaism, claim that this relationship of domination and exploitation is God-given since humans are created in the image of God. Anthropocentrism would give precedence to economic growth over sustainable development.

Ecocentrism denies any existential divisions between human and non-human beings. According to the ecocentric school of thought, there is no sufficient grounds to argue that humans are either the sole bearers of intrinsic value or possess greater intrinsic value than non-human nature. Therefore, instead of a relationship of domination and exploitation, the interaction between human and non-human beings should be viewed in complex and symbiotic patterns. As Rowe (1994) has pointed out:

The ecocentric argument is grounded in the belief that, compared to the undoubted importance of the human part, the whole ecosphere is even more significant and consequential: more inclusive, more complex, more integrated, more creative, more beautiful, more mysterious, and older than time. The "environment" that anthropocentrism misperceives as materials designed to be used exclusively by humans, to serve the needs of humanity, is in the profoundest sense humanity's source and support: its ingenious, inventive life-giving matrix. Ecocentrism goes beyond biocentrism with its fixation on organisms, for in the ecocentric view people are inseparable from the inorganic/organic nature that encapsulates them. They are particles and waves, body and spirit, in the context of Earth's ambient energy.

However, some proponents of anthropocentrism do not see any antagonism between anthropocentrism and ecocentrism (Jorgenson & Dietz 2015). On the one hand, putting the human

person at the centre does necessarily have detrimental effects on the environment. On the other hand, humans cannot destroy the environment without destroying themselves in the long-term. In final analysis, humans can protect themselves by protecting the environment; otherwise, they may expose themselves to natural disasters such as floods, landslides, soil erosion which affect economic activities such as agriculture. Furthermore, depletion of the environment implies a decrease in the natural resources that support economic activity.

3.4 Linking Sustainable Human Development and Human Well-being

Economic growth can be the problem to sustainable development if it reduces human needs to their economic dimension i.e. “making money” or polishing macroeconomic indicators. Some African governments adopted controversial Economic Structural Adjustment Programmes (ESAP) which were detrimental to local economies. They astutely focused on polishing macroeconomic indicators in order to satisfy development partners (the donor community) and get more aid instead and loans but destroyed key sectors such as education, healthcare, and the local industry in the process. Privatisation of state owned enterprises led to the streamlining of the workforce leading to unprecedented levels of unemployment while suppression of government subsidies make key basic services such as education, healthcare, clean water and lighting in accessible to the majority. In some situations, government failed to provide basic hygiene services leading to water-born diseases and epidemics like cholera. Paradoxically, some members of the European Union such as Greece and Spain are being asked to adopt the measures which did not suggest in Africa and in other parts of the world as they face severe economic crises.

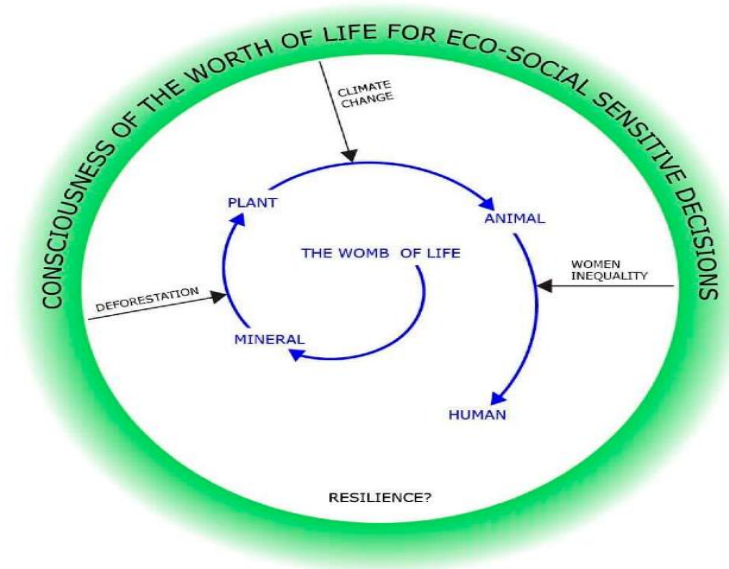
Human economic activities can harm individual human beings and communities when population displacement is a precondition to economic activities such as mining. There can be massive violation of human rights in war-torn and natural resource rich regions (in search of precious minerals) and other human degrading practices such as child labour, modern slavery, human trafficking for labour or forced prostitution purposes, inadequate disposal of dangerous industrial waste, political interference and destabilisation of societies for commercial reasons.

3.5 In building Systems Resilience in both human communities and natural ecosystems

In a comparison of ecological and human community systems using the concepts of ecological resilience, adaptive cycles, and panarchy Gunderson,(2010) noted that 1) Both systems demonstrate the multiple meanings of resilience—both in terms of recovery time from disturbances and the capacity to absorb them. 2) Both systems recognize the role of diversity in contributing to resilience. 3) The comparison highlights the role of different forms of capital and 4) the importance of cross-scale interactions. 5) The comparison reveals the need for experimentation and learning to build adaptive capacities. This constitutes a paradigm shift from the separation of economics from ecology. For Gibson-Graham et al., (2016) the modern hyper-separation of economy from ecology has severed the ties that people have with environments and species that sustain life. A first step towards strengthening resilience at a human scale involves appreciating, caring for and repairing the longstanding ecological relationships that have supported life over the millennia. The capacity to appreciate these relationships has, however, been diminished by a utilitarian positioning of natural environments by economic science. Several suggestions have been made such as building urban resilience with nature-based solutions (Bush & Doyon, 2019). Alshafei & Faqra (2023) have suggested that green infrastructure can contribute to building resilience in the context of a pandemic. In their view, urban agriculture and community

gardens that can increase the adaptability of the city. Carmen et al. (2022) underlined the role of social capital in building resilience. Similar views are shared by Roque et al., (2020) and .Building community resilience in a context of climate change: The role of social capital

According to Zabaniotou et al., (2020) economic and environmental interventions in the Anthropocene have created disruptions that are threatening the capacity of socio-ecological systems to recover from adversities and to be able to maintain key functions for preserving resilience. The authors suggest a workshop-based methodology for developing a vision and an approach to the inner processes of creation that can be used to increase resilience, to cope with societal vulnerabilities and to develop the tools for future planning at local, regional and global scales. This methodology is supported by multidisciplinary discourses from climate science and sustainability, to psychoanalysis, linguistics and eco-philosophy which contributed meaningfully to the transdisciplinary approach for enhancing resilience. They suggest a change of philosophical outlook which implies a continuity from the womb of life, to the plant, to the animal and to the human. This vision, in their opinion, from anthropocentrism to In the framework that they suggest, a consciousness of the worth of life for eco-social sensitive decisions. This change of outlook leads to decisions that are of paramount importance for equity, sustainability, resilience, and healthy, dynamic eco-systems. Zabaniotou et al., (2020) represented their approach as follows:



According to Fattahi (2012) it is a global justice concern that those who suffer most from climate change have done the least o cause it. Rizvi et al., (2014) suggested a no-regret adaption approach which implies The no-regret focuses on maximizing positive and minimizing negative aspects of nature based adaptation strategies and options. No-regret actions include “measures taken by communities [and/or facilitated by organisations] which do not worsen vulnerabilities to climate change or which increase adaptive capacities and measures that will always have a positive impact on livelihoods and ecosystems regardless of how the climate changes. Moreover, the no-regret approach implies involvement of stakeholders from various levels coupled with indigenous and scientific knowledge, at different stages of implementation decreases the likelihood of maladaptation and promotes ownership and sustainability. the no-regret approach also acknowledge that climate change and variability impact men and women differently due to their differential roles, thus ensuring gender integration and the inclusion of all segments of society, including ethnic groups and minorities, are extremely important steps at all stages of decision

making for no-regret actions as well as long-term adaptation planning. According to the originators of the no-regret approach ‘do no harm policy’ must be part of any no-regret planning and subsequent long-term adaptation planning to ensure that social, economic, and ecological wellbeing is not compromised at any stage of implementation of no-regret actions and avoiding any maladaptation. Moreover, in order to appraise the effectiveness of available options, it is important to undertake economic analysis to facilitate decision making before investing scarce resources meant for enhancing community climate resilience. This is because when implementing agencies undertake no-regret actions requiring high financial costs, they are extremely hard to maintain or replicate by communities on their own. In case of inevitability of any such measure to address a prioritized vulnerability by local community, the utmost care must be taken to engage local government and relevant authorities for future financial input. Another key component of the no-regret approach is awareness raising and participatory vulnerability assessments in order to ensure that communities learn the importance of no-regret implementation. Being involved in participatory monitoring and evaluation also further increases knowledge, provides options for required changes as well as ensures sustainability and a strong foundation for future climate resilience planning.

Other authors such as raised the question whether Ecosystem based Adaption (EbA) is effective. Reid et al., (2019) noted that stakeholders perceive EbA as able to improve the resilience or adaptive capacity of local communities or reduce their vulnerability to climate change. This was the case at all project sites, even though not all project activities contributed directly to this. All case studies were thought to provide a multitude of social co-benefits, including livelihood or health improvements and provision of water for productive use. Carabine et al. (2015) are of the view that there has been a growth in interdisciplinary science around ES and there is growing evidence that ecological services support human resilience. Resilience of human communities and natural ecosystems can be enhanced by nature-based solutions (Cortinovis et al, 2022, Calliari et al., 2022, Seddon, 2022, Stefanakis et al., 2021).

4 Conclusion: The Ecological Continuity between the inorganic, the organic, the social and the artificial

The aim of this paper was to assess the contribution of trade to sustainable human development. This paper indicated that the question is not about choosing between “aid” and trade as the debate is often set in the context of developing countries but a need for a change of ethos given the fact that contemporary trade patterns are rooted in a capitalist systems which destroys both nature and human beings. Modern rationalism adopts an attitude of domination and exploitation of human beings and natural ecosystems assumingly through God’s mandate as it assumed in Judaism, Islam and Christianity or through the superiority of reason as humans are believed to rely of created wealth rather than relying on natural ecolystems. The modern ethos puts profits over people and the planet and utility over harmony, peace, sustainability, resilience and magnanimity. This ethos which inspired by wars puts people, communities and corporations in a dog-eat-dog competition where the winner takes it all. The violence is not only against humans who are displaced by corporations in search of precious minerals but also the whole planet is wounded by excessive agricultural exploitation, mining, pollution of air and water beds and an overall increase in planet’s earth’s temperature leading to climate change. There is need for a new ethos which takes into account the ecological continuity between the inorganic, the organic and the artificial.

This continuity can be understood by reverting to Wiener (1948) 's definition of information as an organising principle hence defining information as self-organising matter and energy. In defining information as patterns of (self-)organizing matter and energy, one becomes aware of the role of control in maintaining living systems alive. That is why Wiener does not actually separate information and control is his description of a cybernetic model as a science of information and **control** in the animal and the machine (Wiener, 1948). There are actually striking similarities between Fuchs-Kittowski's "levels of information" and Beniger's "levels of control." Both Fuchs-Kittowski and Beniger locate the first level of information or/and control the macromolecular level (DNA) where for Beniger life is generated through genetically based sociality (many animal species) following an intermediate stage where replicating molecules generate diversity according to their level of success in reproducing exact copies. For Beniger, the first level of control corresponds to the stage of organic life. At all stages of control, Beniger distinguishes processors i.e. spatial arrangements and programming i.e. the presence of instructions or programs that guide subsequent behaviour. A program, according to Beniger, is "any prearranged information that guides subsequent behaviour."²⁹ This information at the macromolecular level of the DNA is genetically programmed. Control, on the other hand, is "purposive influence towards a predetermined goal."³⁰ By looking at levels of control (or levels of information in Fuchs-Kittowski's vocabulary) in terms of processors and programming, Beniger points to the fact that at the macromolecular level, molecules are not just material entities but that by bearing genetically inherited programs they are geared for change and not any change but change that is pre-determined by the genetic heritage. In other words, spatial arrangements of macromolecules enable these macromolecules to effect control i.e. to fulfil predetermined goals. The dialectic of information and control therefore, implies that living organisms are oriented both past and future oriented. The, genetically inherited programs tend to maintain some physiological and behavioural patterns that individual organisms have inherited from their species but at the same time the ability to fulfil predetermined goals imply that these behavioural patterns can change as goals change and that actually in the long term even the physiological patterns can also change. Adaptation to changing goals therefore implies a possibility of change either at the structural (physiological) level or at the behavioural level. This potential for change therefore calls for models that not emphasized embodies of information is structures that can change not only in their structuring but in their functioning. This is what Fuchs-Kittowski calls a "no-substance-understanding."³¹ A no-substance understanding implies that: Information is not a non-physical substance, a 'thing' whose identity is independent of any physical body to which it may temporally be 'attached'. Information must be understood as a specific effect and as a relationship.³²

Therefore, looking at information as a special effect and as a relationship implies giving up a top-down approach that postulates that reality is constituted at the highest abstract level by substances that are exemplified by individual kinds. These substances are often associated with similarities that members of a species share. These similarities are believed to be unchanging or the more unchanging they are, the more substantial they are considered to be. This a vestige of some ancient philosophical approaches that associated reality with permanence and change with appearance. However, a bottom-up approach that defines information as (self)-organizing matter and energy

²⁹ Ibid., p. 39

³⁰ Ibid

³¹ Ibid., p. 417.

³² Ibid., p. 418.

upholds that information is not an epiphany of essences but the outcome of processes in the physical worlds where energy is not just a derivative of matter in motion but a constituent of reality as a guarantor of change, growth or decay. That is why at the first level of control that Beniger associates with organic life, the macromolecules are not passive material entities which would play of fundamental particles like those sought by physical chemistry but integrated entities and processes that embody their material constituents, the order in which these constituents determine the macromolecules structures and the ways through which these macromolecules fulfil predetermined goals by following genetically inherited programs. A similar pattern can be observed as the second level of control i.e. culture.³³ At the cultural level control is effected through culture-based social structures which reinforce learned behavioural programs that are stored in the vertebrate brain.³⁴ At this level Beniger and Fuchs-Kittowski still agree on the role that spatial arrangements of neurons and their impulse play in determining levels of information and/or control.

However, Beniger does not make provision for the spatial of objects in the environment. For Fuchs-Kittowski, it is the spatial arrangements of objects in the environment that is at the origin of the consciousness of objects. The consciousness of objects in the environment is at the origin of the traditional epistemological problem of distinguishing objects from subjects. Beniger, by skipping this aspect, locates controls at the spatial arrangement of signs, in language for instance - the fourth level of information – without explaining how these signs have been formed in the first place. Beniger is right in stating that the vertebrate brain is the processor of learned behavioural programs that are themselves controlled by programming stored in memory.³⁵ However, these learned behavioural patterns are not independent of genetically inherited programming which could have emerged on a long time scale from the direct interaction of former members of the species with spatially arranged objects in their environment. This interaction can explain the abilities in most animal societies of identifying useful and harmful substance, the development of means of locomotion and communication that allow the access to useful objects and the avoidance of the harmful ones, the organs and strategies of defence against harmful predators, the choice of habitats that are conducive to growth and reproduction, sedentarization or migration patterns that allows survival through remaining in useful habitats and leaving harmful habitats, the size of the populations in the same habitat, and the physical size and dexterity of individual kinds which allow either individual survival or survival in groups of different sizes. Beniger, therefore, locates culture from the point of view of the way it is assimilated by individuals unlike Fuchs-Kittowski that places communication of meaning in social interaction before the consciousness of Self and Values which lead to the communication of meaning in interpersonal interaction, creation of values.

In other words, Beniger locates culture at the level where individual members of species have self-appropriated learned behavioural programs unlike Fuchs-Kittowski who places self-appropriation at the highest level of information after the consciousness of society. This difference at which level of control and/or information culture occurs implies a difference of priority for Fuchs-Kittowski and Beniger. By omitting the consciousness of objects in the environment, Beniger takes for granted the fact that sociality is always (or already) mediated. However, Fuchs-Kittowski, upholds

³³ Beninger, p. 103

³⁴ Ibid

³⁵ Ibid

a principle of “no immediate instructive interaction”³⁶ According to this principle: “[it] is insufficient to view the generation and use of information only in terms of a reception of available information from the outside world in order to get a representation.”³⁷ This is so because, at the first level of control, the vertebrate brain as a processor is not a black box, through inherited genetic programs on the other hand, it is influence by the long terms history of the species to which it belongs because this history determines not only its physiological constitution but also its inborn behavioural patterns that every member of a species share with other members. At the second level of control the vertebrate brain on learned behavioural programs that are acquired for the case of humans through early education and experience and that are developed and adjusted through adult life. The influence of the long-term past of a species and the short-term past (experience) of individual on the constitution and the functioning of organs such as the vertebrate brain leads to a rejection of the definition of the human mind with categories that are borrowed from a metaphysical dualism that associate reality with permanence and change with appearance. Human minds change not only as processors (vertebrate brains) but also in their programming. The latter, in humans for instance, changes because of genetic inheritance, experience and education.

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³⁶ Ibid

³⁷ Fuchs-Kittowski, p. 419. Emphasis in the original.

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V.IV The Dispute Settlement Mechanism under the African Continental Free Trade Area as a preserve of elites – a missed opportunity for regional integration in Africa

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1. Introduction

Unlike some of the African Regional Economic Communities (RECs), the Dispute Settlement Mechanism (DSM) of the African Continental Free Trade Area (AfCFTA) leaves little room for non-state actors. For instance, the East African Court of Justice (EACJ) is a highly accessible court that has developed a substantial body of jurisprudence, strengthening the rule of law in the region. In contrast, the disputes under the AfCFTA DSM can only be initiated by states. Modeled after the DSM of the World Trade Organization (WTO), the AfCFTA DSM is not significantly different from the dispute settlement mechanisms established under typical Regional Trade Agreements (RTAs). It seems to share similar assumptions, such as a depoliticized rule-based trade regime as an engine of economic growth, and the establishment of case law overseen by an Appellate Body as an authoritative reference point for decision makers.

In the present paper, I will argue that the state-centered design of the AfCFTA DSM is a mistake. It is insufficient to fulfill the aspirations of Agenda 2063, particularly with regard to inclusive growth and people-driven development. It also misses the objectives which the AfCFTA itself sets out. Therefore, it should be reformed, and granting access to individuals should be the key element of the reform.

2. The basic characteristics of the AfCFTA DSM

While the establishment of the AfCFTA DSM is provided for in the *Agreement Establishing the African Free Trade Area* (2018, art. 20), its structure as well as the applicable procedure are described in detail in the *Protocol on Rules and Procedures on the Settlement of Disputes* (The Protocol, 2018). As both – the structure and the procedure – have been thoroughly analysed in the literature (Akinkugbe, 2020; Bore, 2020), I will focus here only on DSM's basic characteristics. First, the system strikingly follows the model established under the WTO *Dispute Settlement Understanding* (DSU, 1994), repeating even some of the provisions verbatim. Second, like the WTO system, the DSM and the AfCFTA does not allow for access by private individuals, business actress, or NGOs in the sense that they have no competence to initiate a dispute, for example suing a government for excessive non-tariff barriers (NTBs) before an AfCFTA panel in accordance with article 9 of the Protocol or even initiate a consultation process, as provided for by Protocol's article 7. The right to initiate a dispute is reserved for states only. Third, the system places a premium on the confidentiality of proceedings, and fourth special consideration is given to procedures of alternative dispute resolution, such as consultations, good offices, or arbitration (art. 8). However, even concerning these two aspects, there is not much difference compared to what is established under the WTO.

3. Objectives of the AfCFTA dispute resolution mechanism.

According to article 4 (1) of the Protocol, the DSM's central concern is the security and predictability of the trading system. The provision goes on to clarify DSM's two main objectives: first, the preservation of rights and obligations of State Parties and, second, clarification of the existing provisions of the Agreement. In addition, article 4 (2) seems to suggest that a "satisfactory settlement of a dispute" is an overarching objective. This language seems to be rather restrictive and aimed at curtailing the DSM's ability to proactively develop the law of the AfCFTA, at least at first glance. This is quite surprising, given AfCFTA's developmental focus discussed later. Suffice to say that the AfCFTA's declared objective of "sustainable and inclusive socio-economic development" (AfCFTA Agreement, art. 3 (e)) requires the adjudicative body to perform complex balancing exercises, for example between trade liberalization and environmental policies. Such balancing will inevitably involve some degree of judicial law-making. Even if the DSM is directed by the Protocol to focus on the dispute at hand, it is difficult to imagine that "clarifying" such far-reaching concepts will not lead to the emergence of case-law which will guide the actions of the state parties. This idea is also fundamental to the establishment of a standing judicial body, which is the Appellate Body in the case of AfCFTA (The Protocol, art. 20).

An international adjudicator may be a partner of the state parties in developing the law: while the state parties would set out abstract norms in the treaty text, the adjudicator would fill these norms with more tangible content while deciding real-life disputes. The emerging case law would then act as focal points (Guinsberg, 2005, p. 643) and guide the actions of governments and non-state actors. The law-making role of the adjudicator is stronger while deciding about application of principles or broad commitments to certain values and political concepts which require clarification in confrontation with the facts of the dispute (Milej, 2018, p. 122). It becomes weaker when dealing with clear-cut rules that, for example, reflect bargains typical for trade deals. But in any case, the potential of the adjudicator to develop the law is limited, if it cannot test the legal texts in specific factual settings. And this is what happens, when the adjudication is not accessible to individuals, which means to those who are the actual users of the law.

4. The rationale for denying standing to private parties

Various reasons have been advanced in the literature for denying locus standi to private parties under the AfCFTA. Regarding the trade agreements in general, and the AfCFTA is a trade agreement, it has been observed that denying standing to individual is a common characteristic of such agreements (Kuhlmann, 2022, p. 13). The disputes arise between states, because trade concessions which the states mutually extend to each other form a basis for the international trade. However, what could also play a role is the path-dependency of the DSM under the WTO. It was first established by Article XXIII of *General Agreement on Tariffs and Trade* (GATT 1947). Pursuant to this provision, it was for the contracting state parties to investigate complaints of "nullification or impairment" of benefits expected under the Agreement, to recommend resolutions of disputes, and to authorize retaliatory sanctions in the event of failure to adopt the recommended measures by the state concerned. Due to the impracticality of having the governments of the contracting state parties examine all the complaints, panels of experts soon took over this role (Trebilcock & Trachtman, 2020, p. 26). It is important to note that at that time, the international institutions and especially the international courts and other quasi-judicial bodies were still a preserve of states. An individual recourse to international adjudication is quite a new phenomenon in the public international law. And it was still in its infancy when the dispute

resolution system under GATT was developing (Vicuna, 2001). The WTO agreement cemented and strengthened the panel system, which was already well established at that time, and added to it the Appellate Body, to ensure the consistency of the case law (Bacchus & Lester, 2019). The historical record shows that a standing organ is better positioned to ensure such consistency than adjudication bodies established ad-hoc (Milej, 2022, p. 360). And naturally, the WTO system has become a point of reference for other free trade agreements, now also including the AfCFTA.

The state-centric regime of dispute settlements offers some advantages for the governments. When only governments have the authority to initiate disputes, they also retain control over the docket of the dispute settlement body, thereby maintaining a certain degree of control over its case law too. It is not an accident that the SADC Tribunal is to be reconstituted only for inter-state disputes after being effectively abolished following a judgment triggered by an individual complaint (Cowell, 2013). And even if it's true that it is individuals or companies who trade and not the states, as the argument goes, not much harm is done to the traders, as they can still push the states to take action on their behalf. (Erasmus, 2021).

Another noteworthy point is made by *Strange* (2015, p. 3). According to him, the evolution of the WTO system represents a history of depoliticization of trade disputes. Such depoliticization was pursued allegedly to meet the objective of establishing a rule-based international legal order, as opposed to the original design of dispute settlement based more on political negotiations and conciliation (Trebilcock & Trachtman, 2020, p. 28). Especially at the heyday of neoliberalism, the trade rules seemed to take precedence over wider societal projects. Their application began to be regarded as a purely technocratic matter not involving major political choices. Consequently, also the settlement of trade disputes appeared as a mechanical exercise of application of rules, for which Montesquieu's "mouth that pronounces the words of the law" would be the most appropriate adjudicator. This is evidenced to some extent by the Appellate Body's textualist approach to treaty interpretation (Zang, 2006). Clearly, under such assumptions, it did not make much difference, whether individuals are allowed to access the DSM or they are not.

However, as *Strange* (2015, p. 3) admits, this is no longer the prevailing perception of the international trade rules. The "political" is back. There has been a growing awareness that trade commitments need to be balanced against human and labor rights, as well as the requirements for climate action and environmental concerns, including the rights of indigenous communities. This is also evidenced in AfCFTA's commitment to sustainable development. And such sophisticated balancing exercises might and actually do require that the voice of those whom they affect be listened to.

But there are also reasons for the retention of the state-centric DSM system which are specific to the African context. The mostly widely cited reason is the apathy (Akinkugbe, 2020, p. 140) or reluctance of the African States to bring disputes against each other. The track record of African states in utilising the WTO DSM is poor (Bore 2020, p. 253). According to *Erasmus* (2022), African governments consider litigation offensive. The preference is towards consensus-based, informal ways of settling disputes. This is evidenced by the experience of the RECs where inter-state disputes are rare too. And the experience from the RECs also shows that even the African business communities are reluctant to judicialise trade disputes (Gathii, 2019). Although the

judicial organs of the RECs have been in place for quite a long time, the cases involving cross-border trade issues are very few. The dockets of those organs comprise mostly human rights cases. And it is in this regard, that the African regional courts can show significant achievements (Gathii, 2020). It is legitimate to question why an individual complaint procedure should be established at the AfCFTA level if as similar one is not utilized for trade disputes at the level of RECs.

However, where does this reluctance of the business community come from? One reason may be the perception that court decisions would remain unimplemented, a perception which is particularly strong with regard to the decisions of international courts (Gathii, 2019). Another reason might be the heavy reliance of business actors on the goodwill of the government, given its substantial role in the economy and its capture by rent-seeking political elites, as discussed further below. A fallout with the politicians could result in the demise of a business. Under these conditions, the member of the business community might, for example, indeed think that there is much less risk in addressing an NTB in an amicable manner with the government officials, than openly challenging the government in a court of law.

5. A case for non-state actors' locus standi

According to *Jan Klabbers*, the law of international organisations was developed on the assumption that Member States and international institutions coexist in a vacuum where only their relations matter (Klabbers, 2023, p. 95). Leaving the question aside, if the AfCFTA can be regarded as an international organisation, its institutional set-up and the DSM in particular, is reflective of this thinking. However, as the same author observes, the “states” often act as vehicles for other interests (Klabbers, 2023, p. 90). And, as will be discussed, those interests are not necessarily the interest of actors that the AfCFTA seeks to promote, such as SMEs and innovators, who operate mostly in the informal economies. It is the interests of the gate-keeping elites colluding with multinational companies which are more likely to be promoted by the “states”.

5.1. Making private actors visible

To start with, it would be an illusion to say that the private actors have no access to the DSM, because the standing is formally limited to states. This applies both to the WTO and AfCFTA. As already mentioned, the access depends rather on the ability of the private actors to push a government to institute a dispute in order to safeguard their interests. And this ability is a corollary of those actors' economic power. It is therefore the economic power on which the individual access to the dispute settlement mechanism ultimately depends. This would mean that the state-centered system privileges big business actors to the detriment of SMEs. This is particularly true in the African context. Quite tellingly, “a lack of domestic mechanisms for the private sector to communicate trade-related grievances” is considered to be one of the reasons why many developing states shy away from using the DSM under the WTO (University of Ottawa, 2023, p. 17). A good example of multinationals using their power to advance retrogressive agendas under the cover of disputes formally initiated by states is the *Australia — Plain Packaging* case (2020). A dispute challenging Australian measures aiming at curtailing the deadly tobacco consumption pandemic through plain packaging laws was initiated by a number of developing states and Ukraine (which later withdrew from the dispute) and the panel report was appealed before the WTO Appellate Body by Dominican Republic and Honduras. The driving force behind the dispute

was, however, the tobacco industry, which simultaneously used also other fora to safeguard their profits at the expense of people's life and health (Jarman, 2013, p. 377).

Somerville (2017) and Burgis (2016) argue that in the African states the economic power is often fused with political power and belongs to a tiny "gatekeeping" elite (Somerville, 2017, p. 141; Burgis, 2016, p. 8). The gatekeeping elites develop networks of patronage while deriving their profits from the intersection between the national and the global economies (Somerville, 2017, p. 395). Both authors have documented quite a number of such cases. For Burgis, the central problem of many African economies is their reliance on mining and export of natural resources. He describes mechanisms aimed at ensuring that profits from these exports, instead of being equitably distributed within the local population, are directed to multinational companies. These companies, in turn, transfer a portion of these profits to the local gatekeeping elites. Such machinations can take various forms; for instance, by ensuring that local gatekeeping elites hold stakes in the local outlets of multinational corporations and concealing those stakes through corporate structures and shell companies registered in tax havens (Burgis, 2016, pp. 190, 192, 232). Under the conditions of state capture by the gatekeeping elites, doing business amounts often to a struggle for patronage (Burgis, 2016, p. 188). And this applies also to cross-border trade.

The AfCFTA has a potential to disrupt those networks, at least to some extent. The rationale behind the project is to develop regional value chains, rather than relying on the exports of primary commodities to the Global North, which is a source of Eldorado for the gatekeepers (Odhiambo & Milej, 2023, pp. 118-119). Such project requires, however, an empowerment of those willing to engage in inclusive intra-African trade, rather than those living off the collusion with the multinationals and patronage networks. Put simply, the state-centric system favors individuals within patronage networks. They are the ones with access to the political tools required to initiate a dispute, excluding those outside these networks. Paradoxically, thus, the DSM under the AfCFTA works against those, whom AfCFTA seeks to promote – the indigenous African businesses, especially the SMEs.

Based on the foregoing, one may say that the AfCFTA DSM makes the private actors invisible, and yet it is the private actors, and not the governments, who engage in cross-border trade and is the private actors for whom the system is supposed to work. And importantly, a lack of regulation of access does for private access does not mean that private actors will not have it. It means that only the most powerful, those who have the means to influence government decisions will. In the African context, this may also mean big multinational companies, their African branches, or the local cartels linked to them and run by the gate-keeping elites.

5.2. Making of a Community

AfCFTA's goals are ambitious. It is not a standard trade agreement, but – as pointed out by *Katrin Kuhlmann* and *Akinyi Agutu* – a unique agreement that is breaking a new ground in advancing a trade model focused on sustainable development (Kuhlmann & Agutu, 2020, pp. 756-757). This is, first, because of AfCFTA's quite far-reaching objectives which include for example "deepening the economic integration of the African continent in accordance with the Pan African Vision of 'An integrated, prosperous and peaceful Africa' enshrined in Agenda 2063" (AfCFTA Agreement, art. 3 (a)) or "sustainable and inclusive socio-economic development, gender equality and

structural transformation” (AfCFTA Agreement, art. 3 (e)); and, second, the broad scope of the agreement, encompassing not only trade in goods, but also other areas, such as investment, intellectual property rights and traditional knowledge or fair competition (Kuhlmann & Agutu, 2020, p. 762). But even an objective of creating regional value chains, which seem to be of purely economic character at first glance, has, as suggested above, a meaningful anti-colonial and emancipatory edge in that it disrupts the post-colonial trade model of exporting raw materials to the Global North without substantial value addition.

Given the AfCFTA’s ambitious agenda, it is to be expected that a complex web of interactions between various actors such as traders, business communities and lobby groups, Non-Governmental Organisations (NGOs), Community Based Organisations (CBOs), national and regional regulatory bodies etc. will be created or the already existing transnational networks will be strengthened (Strange, 2015, p. 13). This is because many interests are hidden below the surface of “state sovereignty”. Jan Klabbers gives an example of World Intellectual Property Organisation (WIPO), whose creation is traceable to concerns raised by famous French writer, Victor Hugo. Hugo realised that he was not making profits from translation of his works outside France (Klabbers, 2023, p. 88).

Regional integration is mainly about businesses and other non-state actors interacting with each other across borders and creating transborder networks. Georges Scelle saw in this multiplicity of cross-border exchanges the true source of international law, as opposed to the mainstream positivist conception of “state consent” (Thierry, 1990, p. 201). Such transborder networks which do not necessarily involve the central governments might be powerful drivers for regional integration, as they may formulate integration agendas that go beyond the mere minimum on which governments exchanging mutual concessions are willing to agree (Cheserem and Milej, 2018). Consequently, an ambitious integration programme, and the AfCFTA is ambitious, must look beyond government bureaucracies and bring non-state actors on board. This is also an aspect of trading system’s legitimacy which, as underscored by Strange, requires responsiveness to some form of a community (Strange, 2015, p. 8). And the gate-keeping elites might not have the capacity or even interest in mediating the transborder community’s formation and maturing.

Looking at the AfCFTA as a community requires a dispute settlement mechanism which is not just an agent of the state parties. The SMEs who actually suffer under red tape and various NTBs may not be locked out. And as mentioned earlier, the DSM may be an important avenue for the development of the trade rules, as it tests those rules against the real-life scenarios, especially the predicaments of small-scale traders, that can be brought to the DSM. This is crucial in the African context, where the larger portion of the economy operates informally, and where SMEs serve as an important source of employment (Akinkugbe, 2020, p 144; Masabo, 2018, pp. 191-192). At least business lobby groups or NGOs and CBOs should be given access to the DSM, as they can offer an alternative to the bureaucratic view of the world or even worse, a view of the world of the gate-keeping elites. Otherwise, elitist, cartel-based and government-centered capitalism will thrive, as there will be no international institutional mechanism capable of challenging it.

A more inclusive approach to the dispute settlement would also increase the AfCFTA’s legitimacy ensuring that its evolution through caselaw is more responsive to the broader community (Strange,

2015, p. 6). This is also what the experience from the RECs and the WTO would suggest. Otherwise, the AfCFTA DSM may even fail to identify the non-tariff barriers that hinder inclusive growth and also to open a forum to promote sustainable development concerns, such as land rights of indigenous communities, climate justice, labour rights and health, which cannot be easily subsumed under the free trade agenda and which are often at odds with the interests of gatekeepers and multinationals.

5.3. Learning lessons from RECs and WTO

Even if it is correct to say that the level of REC tribunals' utilisation to resolve trade and investment disputes has been low, this does not necessarily mean that private actors should not be granted locus standi on the AfCFTA level.

First and foremost, the individual recourse has proved to be of great importance from the already discussed standpoint of legitimacy. Put simply, the AfCFTA must be owned by actors who use the opportunities it creates and are governed by the rules it sets out. The input legitimacy (Strange, 2015, p. 6) would require that those actors be given a voice. However, the legacy of regional integration in Africa is mostly elitist in that the integration agenda is an outcome of conversations between the agents of executive power branches of the respective Partner States; in case of the EAC, the elitist legacy is even traceable to colonial institutions (Milej, 2023).

The AfCFTA replicates this pattern. The AfCFTA Agreement not only excludes individuals from the DSM but also does not provide for any direct input from any parliamentary body, whether regional or domestic, despite such aspirations expressed in the Treaty Establishing the African Economic Community (Abuja Treaty, 1991) – the first comprehensive treaty framework for the regional integration in Africa. This means that the opportunities for the actors governed by the regional integration laws, particularly the smaller ones, to channel their views to regional institutions are not easily available. In fact, individual access to judicial organs has proven to be the primary avenues for such input in the RECs, and the regional courts stand out as one of the critical institutions especially when compared to domestic ones, for promoting the agendas of opposition and civil society, and holding governments accountable (Gathii, 2020a). And it is not an avenue which can be taken for granted. As observed by *Bore* (2020, p. 246), out of all African RECs only three – the EAC, ECOWAS and COMESA – have active judicial organs that allow for individual references. In addition, the EACJ has experienced significant political backlash, while the SADC Tribunal, which originally had jurisdiction to hear individual complaints, was, as mentioned, stripped of this jurisdiction and for some time even effectively disbanded.

Mihreteab Tsighe (2019) points out the success of the AfCFTA DSM will eventually depend on its visibility and confidence. One may add that the confidence also depends on the accessibility, impartiality, the kind of remedies the petitioner is likely to obtain and the record of implementation of the rulings. It is not much different with the REC Tribunals, among them the EACJ. It is worth noting that the EACJ did not see an influx of human rights cases immediately upon its establishment. It was only with the passage of time that the civil society began to recognize EACJ's potential and how to utilize the access provisions, which may not have been intentionally generous but were still conducive, to further their agenda. The EACJ had to wait a couple of years for its first case to be filed. The regional courts had to put in considerable effort to establish a level of

confidence that would make them attractive for individual petitioners, and this process is still ongoing. More generally, this process is about enhancing the appeal of the international rule of law. As regards the EACJ, a very significant progress has been made with regard to the remedies awarded by the Court. Whereas initially, the EACJ did not go beyond a mere declaration of violation by of the Treaty obligations by a EAC Partner State, in the recent caselaw, the Court also awards damages to the aggrieved private parties (Mbori, 2020). This is in sharp contrast with the WTO – and the AfCFTA DSM in its current form – where only prospective remedies can be sought (The Protocol, art. 23). Also, and apparently contrary to the popular belief, the implementation record of the rulings of the REC tribunals is not that low; according to the studies cited by Japhet Biegon (2021, p. 425), in human rights cases 50% of the rulings of the EACJ and 66% of the rulings of the ECOWAS Court of Justice have been complied with. But importantly, the rulings ordering pecuniary damages have been complied in most cases. This is explained by the fact that the governments were more willing to pay than to take steps to remedy human rights violations (Biegon, 2021, p. 426).

Given these developments, it would be premature to give up on the REC courts as adjudicators of trade disputes between African private actors and governments. While such cases may not be numerous, they do exist, even as of now. The most prominent example is the ruling of the COMESA Court of Justice in the *Polytol* case (2013), which involved reintroduction of a customs duty for certain products in violation of the COMESA-Treaty. A more recent example from the EACJ caselaw is an application for interim orders filed by a Tanzanian glass manufacturer Kioo Ltd. The applicants challenged a Kenyan piece of legislation that introduced a discriminatory 25% excise duty on imported glass, which was contrary to the EAC Customs Union and Common Market Protocol. The orders were granted and Kenya was temporarily restrained from collecting the said duty (EACJ, 2020). Following the order, Kenya amended the legislation, definitively scrapping the duty (EACJ, 2021).

Considering the above discussion, the fact that the REC courts have not been receiving many trade disputes is not a very convincing argument for disallowing individual references in the AfCFTA DSM. In addition, the concerns that might have prevented businesses to sue governments within the framework of RECs might be, at least initially, much less compelling within the framework of the AfCFTA. It will take time to integrate the markets continentally as closely, as they are integrated within the African subregions. This means that business transactions outside one's own REC will for some time be much less frequent than those within. In other words, it is to be expected that most trade will still happen within the RECs (Gathii, 2019). Hence, businesses operating outside their RECs will not depend as much on the goodwill of foreign governments as they do on the goodwill of those within their RECs. For example, a Kenyan exporter might be less inclined to litigate against the Ugandan government compared to the Nigerian one because, on average, the Nigerian market's significance for the Kenyan exporter would be smaller than that of the Ugandan market.

And what is the rationale for using the WTO DSM as a model for the AfCFTA, rather than for example the EACJ? This question is particularly pertinent, given AfCFTA's objective to "build on on the initiatives and developments in the State Parties and RECs"? (AfCFTA Agreement, art. 3 (c)) Whereas there are objections that African business actors underutilise the judicial organs of

the RECs, the African states, as said, also do not utilise the WTO DSM. And while the EACJ's potential to become more attractive also for the business disputes is growing, the attractiveness of the WTO DSM for African states has not really improved, to say the least. The challenges the African governments (and governments of many other developing states as well) may experience while dealing with the WTO DSM include the capacity to afford legal fees and the technical expertise to participate fully in negotiations and proceedings which have become more complex over time (University of Ottawa, 2017, P. 17). The Multi-Party Interim Appeal Arbitration Arrangement (MPIA), established by several WTO members in response to the paralysis of the WTO Appellate Body, implemented various reforms to address these challenges. These reforms include limitations on the length of submissions and the length of awards (Pauwelyn, 2023, pp. 6-8). The MPIA sees itself also as a "laboratory to explore and test new ways of making WTO dispute settlement more efficient and in line with WTO Members' goals and interests" (Pauwelyn, 2023, pp. 6-8). Clearly, the WTO DSM in its current state is not a model to look up to for African States. Transplanting it into AfCFTA is also unlikely to increase AfCFTA's responsiveness to the African business community and consequently its legitimacy. An AfCFTA DSM modelled after the EACJ, which an individual can access, where the proceedings are not hidden behind a veil of confidentiality, but which may still preserve ample space for negotiations, mediation and out of court settlement would be a more promising way to go.

6. Conclusion

The DSM established under the AfCFTA Agreement in its present form does not adequately take into account the experience under the RECs and the WTO DSU. It is also difficult to expect that it will be in a position to significantly contribute the objectives of the AfCFTA and increase its legitimacy. The system needs a reform and granting access to individuals should be its core element. What is required is an adjudicative body that can be a partner for state parties in developing the law of the AfCFTA, an adjudicative body that is responsive to the needs of actors that the AfCFTA seeks to promote, such as indigenous SMEs. While thinking about a reform, one should also not shy away from innovations, such as Ghatii's proposal to establish a new trade chamber of the African Union's African Court of Human and Peoples' Rights (Ghatii, 2019). After all, the tribunals within RECs are also the result of highly innovative thinking, responsive to the local needs (Milej, 2018). Adopting the WTO model for the AfCFTA DSM clearly falls short of the aspirations for regional integration in Africa.

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VI. DEPENDABLE ECOSYSTEM AND ENVIRONMENTAL PANEL

VI.I Building a Dependable Ecosystem of the Pharmaceutical Industry amid AfCFTA

Members: Lessons Learned from the COVID-19 Pandemic

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Abstract

The World Trade Organization (WTO) regime sanctions the protection of inventions in the form of products, processes and their trade-related activities. During the outbreak of COVID-19, vaccines were invented by the pharmaceutical industry. The distribution of such vaccines exposed access inequities between the developed countries and the Least-Developed Countries (LDCs). By the first year of the distribution of vaccines, the developed countries had achieved up to eighty per cent vaccination rates, while the LDCs had less than ten per cent vaccination rates. Premised on the qualitative approach, the study undertook a desk review thereby collecting data from secondary sources, coupled with other primary data collected from the interviews conducted with the target participants. On this basis, the study examined factors that beset LDCs, particularly the Kingdom of Lesotho, in accessing vaccines during the COVID-19 pandemic. Specifically, the study aimed to identify factors that affected access to vaccines as a learning curve for the African Continental Free Trade Area (AfCFTA) implementation to build a self-sustaining and dependable ecosystem of the pharmaceutical industry in Africa. Findings: with the approach, the study found the vaccines as either expensive or inaccessible for LDCs. The flexibility provided by the TRIPS agreement have been noted for being ineffective for LDCs because of lack of manufacturing capacity by the LDCs. Also established by the study is vaccine nationalism that has apparently eroded the process of access to vaccines. Furthermore, the decision-making processes of a waiver reportedly took a long amid the raging circumstances posed by the COVID-19. As such, the study established that while implementing some of the WTO regime without any financial and technical assistance, and capacity building could be costly, operating with the Trade Facilitation Agreement (TFA), such LDCs may reduce trade costs, and thus implement the TFA.

Key Words: AfCFTA, WTO Regime, Access to Medicines in Africa

1. Background

1.1 Introduction

In 2020, the international community faced a global public health crisis caused by the Coronavirus (COVID-19). COVID-19 is a communicable disease that resulted from the SARS-CoV-2 virus (World Health Organisation, 2022). Some people who contracted the COVID-19 virus recovered without any medical attention. However, other people, especially those with underlying diseases, became seriously ill and required medical attention. Anyone could die from the COVID-19 virus (World Health Organisation, 2022), the scourge which claimed millions of people within a short period.

COVID-19 was reported in December 2019 in Wuhan City, the province of Hubei, China. It spread and became a global public health crisis in 2020. On 30th January 2020, the World Health Organization (WHO) announced COVID-19 a public emergency that affects many people worldwide (World Health Organisation, 2023). By the 21st day of November 2022, there were 634,522,052 confirmed cases of COVID-19 and 6,599,100 deaths reported to the WHO (World Health Organisation, 2022).

As the virus was spreading rapidly, the global community grappled with implementing policies to curb the spread of and to find treatment for the virus. One of the measures taken to address the pandemic was the production of COVID-19 vaccines and related treatments. The development of vaccines involved different parties such as universities and research institutes, the public and private sector, including non-governmental organisations (NGOs). Some of these parties were based in the United States (US), China, the United Kingdom (UK), Germany and Taiwan (GAVI, 2022).

In as much as all countries needed vaccines, it was mostly only the developed countries that could manufacture them. The manufacturing of vaccines involved intricate processes that required a huge financial investment, research and development (R&D) capacity, supplies of key ingredients, and high-tech manufacturing processes (Economic Corporation and Development, 2021). Some of these processes were beyond the realm of the least developed countries (LDCs).

The processes of developing the vaccines necessitated the notion of Intellectual Property (IP) rights. IP is protected by international and national legal regimes. The World Trade Organization (WTO) through the Trade-Related Aspects of Intellectual Property Rights (the TRIPS) Agreement provides substantive and procedural standards of protection for global IP. It covers copyrights and related rights, trademarks, designs, patents, layouts, undisclosed information, and geographical indications. It outlines obligations and enforcement, administration procedures, sanctions, border measures and dispute settlement. The Agreement further provides for flexibilities that can be used by its members to balance any conflicts between IPRs and other rights (Dos Santos, Cubed & Ouma, 2022). Such a flexibility includes parallel imports, general exceptions, compulsory licensing and transitional periods (TRIPS, 1995).

1.2 The Problem Statement

Vaccines were manufactured in a space of a year. However, the challenge that beset the world was the quick manufacturing of vaccines, with sufficient quantity to be distributed congruently between the rich and poor countries to address the pandemic crisis facing the international community. In the first year of the distribution of vaccines, although almost ten million vaccines doses were administered around the globe, the distribution exposed inequities between the

developed countries and LDCs. The high-income countries achieved seventy-five per cent to eighty per cent vaccination rates, while low-income countries achieved less than ten per cent vaccination rates (Pilkington, Kestra & Hill, 2022, p.10). Challenges facing access to vaccine and distribution exposed inequities caused by several factors. One of the major factors was a controversy over Intellectual Property Rights (IPRs) including patents. Such challenges marked predominant barriers to accessing vaccines in LDCs, even though the TRIPS Agreement protecting IPRs provides for flexibility in terms of balancing IPRs and public health in promoting access to medicines.

1.3 The Purpose of the Study

The purpose of the study was to examine the challenges that beset LDCs, particularly focusing on Lesotho, in accessing vaccines during the COVID-19 pandemic. The study aimed to identify factors affecting access to vaccines as a learning curve for the African Continental Free Trade Area (AfCFTA) in attempt to build a self-sustaining and dependable ecosystem of pharmaceuticals. Considering each state's political economy, key to the study have been ways of improving trade, economic growth and welfare. The study thus set to answer the following questions: What are the factors for inequities and/or barriers to accessing to COVID-19 vaccines in LDCs? Is a waiver effective in balancing the conflict? What are the legal, economic and practical pathways for AfCFTA to consider in implementing IPRs and health policies?

1.4 The Significance and Limitations of the Study

The COVID-19 pandemic can be seen as having added to the already existing, and advancing inequities in accessing essential medicines, and/or vaccines. Such inequities could be attributed to policy decisions and laws made by industries and governments and the international community through their organisations' decisions, and agreements. In the ensuing, the very policies and laws cannot address exigent emergency circumstances such as COVID-19. In Lesotho, likewise, the policies and laws have to date not addressed concerns of trade-related IP and health. These concerns were exposed by the difficulty with which the country met in attempting to access the COVID-19 vaccine for the Basotho. The study, therefore, is thus anticipated to add to the existing body of knowledge, literature, following the experience of Lesotho in accessing vaccines at the time. Drawing on this research, future studies could focus on the right to development and the duty of state parties for co-operation. Further studies may also analyse the Protocol on IPR to the Agreement establishing the AfCFTA.

1.5 Literature Review

The patent system, as provided for by the TRIPS Agreement, has led to a controversial divide between the developed and the lesser developing countries since its inception (Batra, 2022). Following the TRIPS Agreement, the patent system provides exclusive rights to the patentees for a period of twenty years (TRIPS 1995, Art. 33). Abbas articulates that the patent system grants a provisional monopoly to the patentees to secure them exclusive rights against competitive challenges during the term of the patent (Abbas, 2019, p. 53-60). Chen clarifies that these monopolies, recognised by the patent system, create barriers to equitable and inexpensive access to the COVID-19 vaccines (Chen, 2021, p. 30). Concurring, Batra further argues that studies projected high surges in prices for patented medicines (Batra, 2022). Taking the point further, Arup and Plahe state that Azido thymidine, the first patented medicine for HIV/AIDS patient was

set at \$10,000 annually, per patient, and attracted protests for being overpriced and inaccessible for the people living with HIV/AIDS in Africa (Arup & Plahe, 2023, p.40).

Anh Le and Samson disagree with the assertion that IPRs are the real barriers to accessing vaccines. They argue that the real barriers to accessing vaccines are the manufacturing capacity, supply chains, export restrictions and manufacturing know-how. For the authors, the idea that vaccines will be made cheaper and quicker in dismantling the patent system is unsupported because there are no such things as generic vaccines. Rather, second-generation vaccines that still have to go through clinical trials are therefore unlikely to be low-priced like generic medicines (Anh Le & Samson, 2021, p. 192-204).

According to Mercurio and Upreti, IPRs are considered assets for pharmaceutical companies and that relinquishing them would affect investments in the pharmaceutical sector, whose business strategy relies significantly on IPRs and limited income streams from IP collections (Mercurio & Upreti, 2022, p. 649). In Mercurio and Upreti's view, to claim that the pharmaceutical industry depends on patents for subsistence and disregarding or wearying the system would impact on the future of Research and Development (R&D) and the supply of drugs (Merges, 2011, p 279).

From Arup and Plahe's perspective, other factors act as barriers to accessing vaccines. Examples are lack of manufacturing capacity, lack of regulatory competence and procurement power all of which should be met to facilitate access to vaccines (Arup & Plahe, 2023, p.42). Some Scholars have also identified other various factors affecting access to essential medicines. For instance, Mercurio and Upreti identified technical and logistic problems, vaccine distribution, and vaccine hesitancy as barriers to the vaccines (Mercurio & Preti, 2022, p. 649). Also corroborating, Light and Lexchin observe that corrupt politicians, coupled with inability to sustain a cold chain impede any access to the vaccines (Light & Lexchin, 2021, p 502). Further noticeable (De Felice, et al, 2023) is the factor of the geopolitical status quo (De Felice, 2023, p.1-10). The European Union (EU) maintained that infrastructure, supply chains and production abilities are the major stumbling blocks (Dos Santos, Cubed & Ouma, 2022).

1.6 Research Methodology

The study adopted the qualitative approach, in which both primary and secondary data collection methods were used. On this basis, the semi-structured interviews were conducted, following a stratified purposive sampling method for the study participants. The Government of Lesotho, through the Departments of Pharmaceuticals(Pharmacists), Family Health (Head of Family Health) and Legal Department, were interviewed to gather information on the pharmaceutical capacity and access to the COVID-19 vaccine in Lesotho. The documentary sources such as international agreements, statutes, contracts, books, encyclopaedias, journal articles, command papers and law commission reports, websites and blogs, and newspaper articles were used and analysed. The textual, thematic, and frequency distribution analysis method was used.

2.1 The Patents Regime Under the WTO

2.1.1 A Synopsis of the TRIPS Negotiations

The Patents regime is regulated by the TRIPS Agreement. In 1986, the contracting parties to the Generalised Agreement on Tariffs and Trade (GATT) accepted the negotiating agenda that included IP, and reforms in the agricultural and textiles sector (World Trade Organization, 2023). The 1986 Punta del Este Declaration initiated 'trade-related aspects of IPRs negotiation.' The developed countries, represented by such economies as the US, the EC, Japan and Switzerland,

demanded the agreement on trade-related aspects of IPRs. Such an agreement was one of the significant goals entrenched in their domestic trade policies. The case in point is the US Generalized System of Preferences and Special 301(GSPS), also influenced by their pharmaceutical industries (Field, 2015). According to Catherine Field, who was negotiating the TRIPS Agreement on behalf of the US, the US experienced a surge of new technologies and international business in the 1970s and 1980s. However, owners of such technologies faced challenges in enforcing their IP rights, especially the remedies that discouraged infringement. Therefore, perceiving IP as the future for US high-tech businesses and a source of economic growth, the US main objective was to achieve a robust agreement on IPRs (Field, 2015. p. 131-132).

The US-led developed countries' bloc proposed and substantiated the need for pharmaceutical patents. This was met with an opposition from Brazil, India and other developing countries (Batra, 2022, p. 4). The main concerns of these developing countries were that the practical aspects of IP protection would detrimentally affect access to affordable medicines (Batra, 2022, p.3). The then LDCs contracting parties were Bangladesh, Tanzania and the Democratic Republic of Congo (DRC) (Jayashree & Leticia, 2017, p. 4).

The negotiations concluded with the TRIPS Agreement, which constituted the legal regime for the World Trade Organization (WTO), which came into being in 1995 (Field, 2015). The TRIPS Agreement is considered to be the most comprehensive agreement covering both the procedural and substantive subject matters. Of significant reference are the administration and enforcement of IP, as well as the settlement of disputes over IP in the WTO. According to the TRIPS Agreement, patent holders are given sole rights to preclude third parties from "making, using, offering for sale, selling, or importing" inventions. The eligible term of patent protection is at least 20 years (TRIPS 1995, Art. 28.1 & 33).

The TRIPS Agreement accords the WTO members an opportunity to implement its provisions through what is called 'TRIPS flexibilities.' The flexibility allows members to balance conflicting rights, such as patents and public health through their domestic laws and policies. Such a flexibility includes, but is not limited to transitional periods 'Bolar' or limited exceptions and compulsory licensing (TRIPS, art 66.1, 27, 31 & 31bis).

Despite the flexibility as provided by the TRIPS Agreement, the statistics have revealed the disparities in accessing vaccines between the developed countries and LDCs during the COVID-19 pandemic. There are currently forty-six countries classified as LDCs, thirty-three of which are from sub-Saharan Africa (United Nations Development Programme Africa, 2021; World Trade Organization, 2023). Some of these LDCs are Members of the Africa Continental Free Trade Area (AfCFTA). By August 2023, forty-seven signatories of AfCFTA had deposited their instruments for ratification (Tralac, 2023). As such, in what follows are the LDC countries facing challenges in accessing vaccines during the COVID-19 Pandemic.

2.1.2 Vaccine Affordability

Since the TRIPS Agreement grants the WTO members twenty years' exclusive rights to patented inventions, the patentees enjoy such rights without any competition. They, therefore, have the monopoly to control prices for the patented products (Atik, 2009). The anti-competitive practices might embrace abusive patenting such as blocking generic entry and unwarranted pricing (United Nations Report, 2016, p. 23).

The price of health technologies is determined by various factors, including but not limited to the size of the market, the results of the negotiations with public and private insurers, and IP, to mention but a few. Thus, the patent holders bear a significant power over end prices compared to the usual open market such that in some countries prices of innovative health technologies have increased rapidly compared to a consumer price index (United Nations Report, 2016, p.21). Despite the discounted and tiered pricing strategy for COVID-19 about the pharmaceuticals used for the LDCs, the prices were still high for LDCs and were likely to prolong the global pandemic (Light & Lexchin, 2021, p. 503).

In February 2022, eleven per cent of the population in Sub-Saharan Africa (SSA) were vaccinated, while more than sixty per cent were vaccinated in the Organization for Economic Cooperation and Development (OECD) countries (Glassman et al, 2022, p. 14). The costs of vaccination in twenty-five SSA countries surpassed an annual per capita public spending on health (Glassman et al., 2022, p.6). Vaccines were therefore either inaccessible or high-priced in low-middle-income countries (Access to Medicine Foundation, 2022, p. 21). The LDCs were, thus, primarily dependent on the COVAX vaccine-sharing arrangement (The United Nation, 2023). COVAX is a global initiative co-led by the Vaccine Alliance (GAVI), the World Health Organization WHO), and the Coalition for Epidemic Preparedness Innovation (CEPI). The initiative aimed to hasten the development and distribution of COVID-19 Vaccines and to spearhead the equitable global supply of vaccines (Access to Medicine Foundation, 2022, p. 28). GAVI, on the other hand, is a PPP-funded by institutions, governments, private individuals, corporations, organisations and foundations (The Vaccine Alliance, 2023). GAVI leads COVAX (Médecins Sans Frontières, 2022). Lesotho accessed most of their vaccine doses through donations, a year later, that is 3rd March 2021, and through the World Bank funding (United Nations, 2021 & Ministry of Health, 2023).

2.1.3 Lack of Transparency in Vaccine Costing

The pharmaceutical companies kept the manufacturing costs of the COVID-19 vaccine a secret (Light & Lexchin, 2021, p.502). As a result of the undisclosed pricing strategies or manufacturing costs, educated guesses have estimated that the net manufacturing costs for a hundred million doses range from US\$ 0.54 to US\$ 0.98 a dose, while others have predicted US\$1.18 to US\$ 2.00. However, Pfizer prized a dose to the large European purchase agreements \$25.15 and Moderna \$25.50 (Light & Lexchin, 2021, p.503).

According to the Advanced Purchased Agreement (APA), signed by Janssen, AVAT and Africa Union (AU) in 2021, the AU Vaccine price dose of the initial vaccine was the 10USD on an unquestionable global not-for-profit (Advanced Purchased Agreement, Clause 5.1). The APA specifically indicates that the pricing cannot be probed or questioned (Advanced Purchased Agreement, Clause 7). The vaccine price excluded all other costs, including duties, fees, or other compensations concerning the allocation, maintenance, distribution, storage, transport, administration and management (Advanced Purchased Agreement, Clause 5.6). Lesotho acceded to the APA agreement funded by the World Bank (Ministry of Health Lesotho, 2023).

Although the principles of the WTO require the negotiations to be transparent, apparently, on the ground, trade and investment are negotiated in secrecy. Accurate information on the costs of R&D, production, and distribution of health technologies could augment both innovation and access,

ensuring fair prices, costs of R&D, marketing, production and distribution, with the prices of health technologies having to be clear (United Nations Report, 2016, 33).

2.1.4 Vaccine Nationalism

The WTO members have the right to adopt protectionist measures by imposing export restrictions to protect the health and safety of their nationals, and to retain products in a local short supply (GATT, 1974, art. (2)(a), XX (b) (e) (j)) and to ensure the quality of exports to protect life and health (Agreement on Technical Barriers to Trade, 1995, art. 2.5). The LDCs highly depend on imports to secure access to, and availability of medical supplies, as most of them cannot manufacture them (World Trade Organisation, 2020). Vaccine nationalism has shown to be socially and economically counterproductive as it decreases the chances for developing countries to access vaccine supply, thereby increasing the risk, duration and recurrence of COVID-19, and stretching and causing more deaths (Riaz et al., 2021, p. 1).

The US Defence Production Act of 1950 provides for the assessment of certain medical items to be reserved for the production of vaccines for its nationals. This initiative affected the availability of special inputs such as plastic tubing, filters and special bags for the manufacturing of the vaccine (Anh Le & Samson, 2021, p.198). During the pandemic, the EU restricted the export of COVID-19 vaccines for a limited period of six weeks. This was to ensure timely access to vaccines for its citizens. However, lower-middle-income countries that were on the COVAX (AMC) list, including Lesotho, were exempted from the limitation (World Trade Organisation, 2023). Prioritising domestic production, the US also declared limitations on the export of important raw materials for the manufacture of COVID-19 vaccines (Ibrahim, 2021, p.10).

Ashraf, Muhammad and Shafiq allege that countries like China and India donated their domestic vaccines following their policy purposes that had the effect of sidelining COVAX, pushing equity, fairness, and emergency needs aside to prioritise private, bilateral interests over global efforts to get rid of the pandemic (Ashraf, Muhammad & Shafiq, 2021, p. 42). India became the fundamental supplier of COVAX with generic vaccines exported to developing countries and LDCs. After India was hit hard by the COVID-19 second wave, they not only stopped the supply of vaccines to COVAX, but they also had to start importing vaccines despite the commitments undertaken and the contracts signed with external customers (Peters & Prabhak, 2021). In the ensuing, the LDCs countries that depended on COVAX became affected, more especially between February and May 2021, during which they were supposed to receive their vaccines. Africa was expecting sixty-six million vaccine doses. However, by the end of May 2021, they had received just over eighteen million doses from COVAX (Médecins Sans Frontières, 2022, p. 7).

2.1.5 Lack of Manufacturing Capacity

The TRIPs Agreement recognised that LDCs have economic, financial and administrative constraints. It further recognises that LDCs need to create a technological base to transition to implement the Agreement (TRIPS, 1995, Art. 66.1 and Preamble). LDCs are considered to have inadequate or no manufacturing capacity in the pharmaceutical sector (Doha Declaration, para 6). The TRIPS, therefore, exempted LDCs from implementing its provisions for 10 years, subject to renewal (TRIPS, 1995, art. 66.1). This has been extended until 2034, while the transition period for pharmaceutical patents has been extended to 2033. At the time further extensions were sought in 2012, with Haiti, on behalf of LDCs, contending that LDCs had not developed productive capacity, nor had they integrated into the world economy (Azam, 2016, p. 240).

Apparently, in the past two decades since the coming into effect of the TRIPS Agreement, LDCs have failed to attain a viable technological base to fully implement the TRIPS Agreement. The failure was underscored by their inadequate manufacturing and limited access to medicines during the HIV/AIDs and COVID-19 pandemic. Thus, LDCs gain nothing from transitional periods if they lack manufacturing capacity. They still have to import pricy vaccines from developed countries or generic vaccines from other countries provided they are available and they can afford them. Like one of the LDCs, Lesotho not only lacks manufacturing capacity, but it also lacks licensed pharmaceutical manufacturers, quality control testing as there is no law-establishing authority to regulate pharmaceutical manufacturers in the country (Ministry of Health, 2023).

2.1.6 Failure to Utilise Transition Periods

Some African countries refrained from amending legislation in compliance with TRIPS flexibility (Dos Santos, Cubed & Ouma, 2022, p. 1-7). The Lesotho's Industrial Property Order (the Order) of 1989, as amended in 1997, regulates pharmaceutical patents. Section 5(1) of the Order provides that an invention shall include a new inventive step of industrial application. Patents are granted fifteen years, extendable by five years (Industrial Property Order, 1989, Sec 14(1) & (2)). According to Section 5 of the Order, an invention can be of an industrial application if it is used in any industry. Such an industry covers pharmaceuticals for five years (Industrial Property Order, 1989, sec 5 (7)).

2.1.7 Reluctance in Using TRIPS Flexibility

LDCs have also been reluctant to use TRIPS flexibility such as compulsory licenses. Factors for such reluctance include the bureaucratic nature of the notification and cumbersome processes of traversing the laws of the state medicines through compulsory licensing (Dos Santos, Cubed & Ouma, 2022, p. 1-7). During the negotiations of the waiver proposal by India and South Africa, the EU and other developed countries opposed the waiver, arguing that compulsory licensing and other flexibilities will not suffice (Bacchus, 2020, p. 3). India and South Africa, on the other hand, maintained that countries with no manufacturing capacity will face institutional and legal difficulties using the flexibilities, coupled with compulsory export licensing and cumbersome and lengthy processes (Bacchus, 2022, p. 3).

According to Labonte and Johri, the flexibility which is significant, applies to different circumstances and products, though it delays the ability to scale up production for the COVID-19 vaccine (Labonte & Johri, 2020). The compulsory license system under Article 31bis of the TRIPS Amendment was once used by Rwanda and Canada in July 2007. Rwanda was importing drugs for the treatment of HIV/AIDS. It took approximately three years to complete the deal (Vincent, 2020, p. 19). Although the compulsory license was successfully used by Canada and Rwanda, its processes lasted three years to complete. Such a lengthy process indicates a bureaucratic nature of compulsory licences. Therefore, it would be inappropriate and ineffective to use the licences in the circumstances of COVID-19, the scourge which needed an extremely urgent treatment, especially with countries without any manufacturing capacity mostly affected.

2.2 Public Funding Incoherencies

The public funding of health technology's Research and Development can cause incoherence, especially where the public funding was used to fund the private sector research, in which the products of such funded research are priced out of reach for both the public and private sector consumers (United Nations Report, 2016, 16). The COVID-19 vaccine development took less than

a year. Although it is generally costly to develop new medical technologies (Chen, 2021, p.7), it is claimed that the varied stages of the COVID-19 vaccine, that is in the form of research, innovative development, testing and manufacturing, were financed through governments and corporations (Light & Lexchin, 2021, p. 503). The development of vaccines was made substantially on the legacy research of coronaviruses pre-dating COVID-19. The said research was carried out in research universities and institutes, such as the Oxford University, Harvard University, and the University of Pennsylvania with public funding (Arupa & Plahe, 2023, 48). During, the Operation Warp Speed (OWS), the Public Private Partnership (PPP) initiative by the US government to enable, and hasten the development, manufacturing and distribution of vaccines, the US government gave billions of dollars to Pfizer, Moderna, and Johnson & Johnson in development grants and advance purchases, while the AstraZeneca accepted subsidies from the United Kingdom (UK), the European Union (EU) and the United States (US) (Arupa & Plahe, 2023, 49).

It has been established that in rich countries, sixty per cent of R & D investment is from the private sector while forty per cent is from the public sector and non-profit-making organisations. However, the public sector fund for R&D on diseases that mainly affect the poor accounts for two-thirds of the funding (United Nations Report, 2016).

2.3 The Practical Effect of Waiver on Access to Vaccines

Studies have recorded conflicts between WTO law and other international legal regimes as frequently caused by the underlying conflicts of interests. Such conflicts should be addressed through a political process, and thus, a waiver process has the possibility of becoming a setting for a political debate which is open for economic and public interests and perspectives with a binding effect on the WTO members (Feichetner, 2002, p.615). A waiver is an alternative process to compulsory or voluntary licensing. It is an authorisation allowing the WTO members not to comply with their usual commitments (World Trade Organisation, 2023).

As the COVID-19 was spreading and killing millions of people around the world, South Africa and India suggested a waiver of the obligations of the WTO members. The waiver involved the implementation, application, and enforcement of copyright, industrial designs, patents, and trade secrets in the TRIPS Agreement in relations to health products and technologies of COVID-19 vaccines (Mercurio & Upreti, 2020). The major reason for the proposal by South Africa and India was that pharmaceutical companies had failed to make the vaccines quickly and timely, with sufficient quantity, and with affordable prices to meet global needs (Dos Santos, Cubed and Ouma, 2022, p. 1-7).

The consensus-based negotiation processes lasted for over 20 months despite the global urgency of the matter. The manufacturing know-how has not often been revealed in patent applications, thus making a waiver ineffective (Anh Le & Samson, 2021, p.202). Arguably, a waiver can be effective if it is done within a reasonable time and with the co-operation of the patentees to disclose the know-how and the do-how. The expert mechanism has earlier advised WTO members to agree on the necessary waivers in compliance with their duty to co-operate (United Nations General Assembly, 2021).

3. The Legal, Economic and Practical Pathways for AfCFTA in Effecting IPRS and Health Policies

3.1 Regional Arrangement

In 1979, the signatories to the GATT decided to allow derogations to authorise regional or global arrangements in goods trade among the developing countries, something which has continued to apply under the WTO (World Trade Organization, 2023). The African continent established the African Continental Free Trade Area (AfCFTA) to integrate the African market by the objectives articulated in the Abuja Treaty (The Treaty Establishing the African Economic Community). The pact establishing the AfCFTA came into force in May 2019 (Echandi, Maliszew & Steenbergen, 2022, p.8). Besides, the Protocol on IPR to the Agreement Establishing the African Continental Free Trade Area (AfCFTA) was adopted by the African Heads of State on 18-19th February 2023, at the 36th African Union Summit in Addis Ababa, Ethiopia,. The adoption was meant to facilitate access to medicine and balance both the public and private rights (Tralac, 2023).

This arrangement allows continental areas emerging as political organisations to integrate as international institutions for the expression of a shared identity or purpose. Although regionalism can be seen as a building block for multilateralism, it can be viewed as functioning against the process of globalisation because a regional organisation promotes intra-trade, free trade areas, customs union and common markets, or nurture trade within its members as opposed to non-members and put in place restriction on outside members (Bloor, 2022, p.193-5).

The AfCFTA was established in cognisance of the principles of the Abuja Treaty. The Abuja Treaty is grounded on the principle of equality, independence, solidarity, collective-self-reliance, co-operation, harmonisation of policies and the protection of human rights in line with the African Charter on Human and Peoples Rights (ACHPR) (Abuja Treaty, 1994, Art. 3). Article 16.1 of the ACHPR provides that ‘Every individual shall have the right to enjoy the best attainable state of physical and mental health’, while 16.2 enjoins states to take measures of protection (ACHPR, 1981, Art. 16.1, 16.2).

The major objectives of the AfCFTA are to promote the competitiveness of economies between members and the global market. The objective has also been to promote industrial development and regional value chain and to co-operate on investment, IPRs and competition policies (AfCFTA, 2019, Art. 3(f)(g) and 4©). The emphasis of AfCFTA seems to be addressing the issue of coherence of policies, resolving overlapping trade regimes and the right of member states to achieve legitimate policy objectives in areas of public health which seemed to be the challenge in the multilateral regime.

3.2 The synergy between WTO Regime and AfCFTA Protocol

There is a synergy between the WTO Regime and AfCFTA Protocol. The AfCFTA agreement is entered into upon rights and obligations, where applicable, on the Marrakesh Agreement establishing the WTO. The AfCFTA is based on the same principles governing the WTO such as the Most Favoured Nation (MFN), National Treatment, reciprocity and consensus in the decision-making process (AfCFTA, 2019, Art. 5(g)(h)(i)(j)(k)). Just like the decision-making process in the WTO, the decision-making process in AfCFTA on substantive issues is taken by consensus (AfCFTA, 2019, Art. 14.1).

Similarly, for the WTO, the decision to grant a waiver of obligations is taken by the Council of Ministers who consider the exceptional circumstances justifying the waiver (AfCFTA, 2019, Art.

53). The AfCFTA protocol does not prevent any state parties from adopting strategies necessary to protect health (AfCFTA, 2019, Art. 26(b)). The timeframe within which a decision should be taken by consensus is not to exceed ninety (90) days. If a decision to grant a waiver is not reached, three-fourths of the state parties would make a decision. (AfCFTA, 2019, Art. 15.2). The 90-day rule seemed problematic during the COVID-19 crisis. The WTO took over a year to decide on the issue of waiver. The circumstances of extreme nature such as that of COVID-19 require dispensation with the ordinary procedural rules. It could, therefore, be argued that since the Marrakesh Agreement is silent on dealing with the expeditious timeframes of dealing with matters of extreme urgency, AfCFTA may consider such a regulation.

The WTO has implemented diverse agreements, decisions and technical assistance programmes such as trade facilitations programmes (World Trade Organization, 2021, p.3). The Trade Facilitation Agreement (TFA) came about as a move to minimize bureaucratic delays and red tape to modernise, harmonise and simplify export and import procedures across the borders. It also facilitates capacity building and technical assistance, especially for developing countries and LDCs to implement the Agreement (World Trade Organization, 2023) as much as implementing trade facilitation measures could be costly (World Trade Report, 2015, p. 62).

The goal of trade facilitation is to reduce trade costs, comprising all costs sustained in getting a product from a manufacturer to a final customer, including the transportation costs, tariffs, nontariff measures and inefficient trade procedures (World Trade Report, 2015, p. 58). It thus, has been established that if a country improves its trade techniques so that trade costs are reduced, importers benefit from a lower price, while exporters collect a higher price for the traded product. Thus, trade facilitation benefits both exporting and importing countries. (World Trade Report, 2015, p. 57). Consequently, reducing tariffs, and non-tariffs such as licences, regulations and import formalities through trade liberalisation could significantly help to reduce costs on pharmaceutical ingredients and medical technologies making them more affordable and accessible (World Trade Organization, 2023). However, for Matsipa (2022, p.4), LDCs will not gain much from having trade liberalisation because of its limited capacity, issues of governance, lack of technological and infrastructural capacity and politics. Seemingly, LDCs would need capacity building, technical assistance, and even resources to implement TFA.

3.3 Economic Trajectory of Trade-Related Aspects of IPRS of a Pharmaceutical Sector

In 1986, when the developed countries demanded the agreement on trade-related aspects of IPRs, their domestic trade policies were not only part of their goals, but they were also influenced by their pharmaceutical industries (Field, 2015, p. 7-8). Therefore, their main objective was to achieve a robust agreement on IPRs because it perceived IP as the future for high-tech businesses and a source of economic growth (Field, 2015, 131-3). According to Santos, the political economic strategy of each country not only depends on international trade regimes and TRIPs in these circumstances, but it should also depend on the government economic strategy of each country which requires material, human and political resources (Santos, 2012, p. 631-32).

Countries are at different stages of development; their economic standings are different. Thus, their strength of IP protection will be different in maximising innovation, technological progress, economic growth and social welfare (Warrad, 2013, p.46). According to Warrad, developed countries use bilateral FTAs to achieve high levels of IPRs because they are the main exporters of knowledge-intensive products. Warrad further indicates that to maximise social welfare,

developing countries require weaker IPRs than developed countries which affirms a conflict of interests between different economies in terms of IPR protection (Warrad, 2013, p.46).

In the same vein, the study argues that Africa is endowed with different economic standings. There are developed, developing and the least developed countries in Africa. Thus, the AfCFTA implementation should take into account the IPRs policy and economic priorities, and developmental strategies of each economy. The declaration on the right to development enjoins states to respect and protect the right to development in allowing states to act individually as they formulate national development policies and programmes affecting persons within their jurisdiction (United Nations General Assembly, 2021).

4. Conclusions and Recommendations

4.1 Findings and Conclusions

The WTO regime provides for the protection of IP, particularly patents in this context, through the TRIPS Agreement. The TRIPS Agreement further provides a policy space for its members to balance patents and public health. The Agreement was made with diverse objectives, of different economies, in different historic times and circumstances. Even though the Agreement provides for a policy space for its members, the policies' incongruence became glaring during the COVID-19 vaccines' distribution when IPRs conflicted with the right to health, while prioritising incentives for innovation conflicted with the need to save lives.

The study found that the vaccines were costly for LDCs such that LDCs had to depend on donations and World Bank funding. It further established that although flexibility has proven to reduce vaccine prices and facilitate access to vaccines, it was ineffective in securing prompt access to vaccines, and their effectiveness depends on a case-by-case analysis. The study established that LDCs face challenges with flexibilities because they do not have the manufacturing capacity to produce pharmaceutical products and that even if they did have the manufacturing capacity, the patent holders are not mandated to disclose their trade secrets of the know-how or show-how. Thus, the study argues that the decision on waiver was not taken within a reasonable time regarding the urgency of the matter. It further established that vaccine nationalism eroded the process of access to vaccines and trampled upon the duties of states, thus constraining any co-operation in times of crisis. The study therefore argues that it could be risky for Africa to depend on pharmaceuticals abroad, especially in critical times such as the COVID-19 crisis. The study concludes that AfCFTA implementation should avoid imposing a similar model on its members on IPRs; rather, it should permit each member state to establish policies based on their political and economic priorities to promote innovation, technology, economic growth and social welfare.

4.2 Recommendations for AfCFTA

In circumstances such as COVID-19, waiver of IPRs might be considered urgently. The Council of Ministers might determine the circumstances rendering the matter urgent. If they indeed find the matter urgent, they should consider dispensing ordinary rules as provided for in the AfCFTA Agreement. This might call for the amendment of the rules to provide for the time frames of the decision-making process on urgent issues.

With the technical and financial assistance and capacity building, the LDCs might consider hastening the implementation of the AfCFTA and TFA.

African countries can connect and build regional value chains in the pharmaceutical industries for collaboration and growth, building pharmaceutical regional networks, manufacturing and supply centres to acquire pharmaceutical manufacturing technologies and achieving economies of scale. Each member state should meet their national objectives, through policy priorities, which require relevant training, co-ordination and institutional capability. AfCFTA implementation may invest in capacitating their members on policy issues, promotion of drug production and innovation capabilities.

The proper integration of trade-related, health-related policies into IP law cuts across several government ministries is critical. These include trade and industry, economic development, science and technology, health, justice, foreign affairs, national planning and finance, to mention but a few. Therefore, power symmetry is imperative.

Member states to the AfCFTA protocol may establish public pandemic funding for research and development to facilitate an open model of innovation and hasten the progress of medical technologies. Where the region has resorted to investing in the private sector for the innovation of medical technologies, an enforcement policy on data sharing and access as a condition of grant awards should be considered.

Member states to the AfCFTA protocol may contribute to and partner in product development for the LDCs with a lower purchasing power.

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VI.II Trade and the Environment: Does climate change affect international trade in sub-Saharan African countries?

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Abstract

Trade is asserted to be the engine of economic growth. The world over engages on trade as no nation produces every commodity needed by the citizens; so, countries produce and sell to other nations, but buys from other countries. Trade helps nations to improve the growth rate of their economies by engaging in competitive productive activities. Industrialisation greatly pollutes the environment and increases the greenhouse gas (GhG) emissions. The world faces a serious problem stemming from climate change, which has become the World's biggest concern. Africa is also having a fair share of this problem. Sub-Saharan African (SSA) countries trade with one another and also trade with the rest of the world to improve their growth trajectory. But this growth did not come without a cost – climate change problems. This study aims at estimating the impact of climate change on trade in SSA countries using the random effect panel data econometrics. This model was chosen due the fact that the total residual variance can be categorized into two components: the in-between variance and the within variance, and there is a possibility of estimating shrunken residuals and also the possibility of accounting for differential through the use of random coefficients models. The findings show that greenhouse gas in (SSA) would on the average lead to rise in trade; energy methane was found to have a positive and significant effect on trade in the region; and, CO₂ emissions was negative and significantly decrease in trade in the region. We recommended that greenhouse gas needs to be controlled in order to reduce pollution to the environment by effective policy implementation; a review and/or scrutiny of Africa's trade and climate policy since some of them undermine improvements in trade and development in the region; and, carbon trading be encouraged in the region in order to discourage CO₂ emission.

1. Introduction

Countries trade with one another. Nations engage in trade because no country produces all it needs or consumes all it produces, hence countries world over engage in competitive trade with one another. Trade helps nations to improve the growth rate of their economies by engaging in competitive productive activities from agriculture, commerce, industries, financial institutions, tourism, travels, etc. Industrialization is part of productive activity which helps nations to grow fast due the fact that industrial output competes favourably in international markets for goods and services and thus generate more foreign exchange to the economy than those from the agricultural sector. But industrial growth does not come without a cost. Manufacturing industries pollute the environment – air, land, water, etc and create industrial hazards for both workers and the urban dwellers. The goal of regional integration in Africa has always been to increase trade between the continent's nations, but this worldwide trend towards shorter value chains threatens the continent's ability to produce goods and diversify its economy. Despite the fact that both protectionism and free trade are pushed as means of achieving economic development, it is crucial to evaluate both critically in light of the adaptation and mitigation of climate change.

Industrialisation greatly pollutes the environment and increases the greenhouse gas (GhG) emissions. The world faces a serious problem stemming from climate change, which has become the World's biggest concern and which will continue to be so even in the future. Global GhG emissions are driven in part by trade (Blanco et al., 2014). GhG intensity, energy intensity, population, and gross domestic product (GDP) per capita are immediate drivers of GhG emissions that contribute to climate change. The conceptual relationship between trade and greenhouse gas emissions can be stated as follows, following the three trade effects of scale, technique, and composition identified by Grossman and Krueger (1991): Composition effect: Due to country expertise in particular production areas, trade's greenhouse gas (GHG) intensity is influenced by the specialised nature of the products as well as the energy intensity of their manufacture. Trade can assist increases in efficiency gains, a technique effect. Energy efficiency improvements can result in a decrease in emissions when there is a high energy emission intensity. Scale effect: Energy and resources are the foundation of every production process. Increased trade results in higher greenhouse gas emissions if the energy used for production has a high GhG intensity, which may be exacerbated by production methods that are inefficient in terms of energy utilisation and high energy intensity products.

Africa is facing a serious climate emergency. Humanity must cut greenhouse gas emissions in half by 2030 (compared to 2010 levels) and attain net-zero emissions by the middle of the century in order to have even a one-in-two probability of stopping global warming at 1.5°C above pre-industrial levels (IPCC, 2018). Africa is predicted to endure some of the most severe effects of climate change despite making the least contribution to it (Niang et al., 2014). The continent also faces a hitherto unheard-of development challenge: how to achieve structural economic transformation (development) that raises living conditions for all while adhering to a strict carbon budget. Climate change changes the natural environment, hinders economic development, and then affects the social well-being of people. According to studies, SSA countries contribute little to global CO₂ emissions compared to industrialized countries (Nathaniel, Barua, Hussain, and Adeleye 2020b). However, the region is hit harder by climate change and the effects of global warming (Liu and Xiao 2018). Around two-thirds of the African population rely heavily on natural resources and agricultural production for their livelihoods. As a result, extreme conditions such as flooding and drought automatically lead to loss of livelihoods for a large number of Africans and

CO₂ emissions impact negatively on the infants and raises under-five mortality rates in the Africa region (Shobande, 2020).

Studies have shown that global warming is the primary cause of climate change, and CO₂ is the primary greenhouse gas that generates the warming (Liu and Xu 2018; Liu and Xiao 2018). These CO₂ emissions are said to be caused by increase in energy consumption and economic growth (Andersson and Karpestam 2013; Dogan and Seker 2016; Go kmenoglu and Taspinar 2016; Balogh and Ja mbor 2017; Green and Stern 2017). Between 1990 and 2017, there was not much of a shift in the distribution of emissions throughout Africa. Only two countries, Egypt and Nigeria, had seen an increase in their proportion of overall emissions. Total emissions within the continent appear to be mostly described by a mix of economic scale, population, and, of course, productive profile. The low percentage of Morocco in total emissions—despite being Africa's fourth-largest economy—and the relatively high share of Tanzania, which has a population that is comparable to South Africa's—could be explained by this confluence of variables.

Since 1990, African exports of products and services have grown by 197%, from \$233 billion in 1990 to \$693 billion in 2017. When viewed in a vacuum, this is impressive, but when viewed globally, it is unsatisfactory. Africa's output has grown at a slightly slower (164%) rate. This suggests that the export component of overall African output increased extremely slowly, in contrast to the development of trade in other parts of the world where the impact of regional and global value chains has caused commerce to grow significantly more than output. In both its intracontinental commerce and its trade with the rest of the world, Africa exhibits a dual export structure (ECA, 2017; Sommer et al., 2017). Only 6% of African exports are made up of mineral products, which account for more than 38% of the continent's overall exports to the rest of the world, including services. While manufacturing accounts for only 35% of exports to the rest of the world, it accounts for 66% of all trade inside Africa.

By providing a method to effectively allocate resources, usually labour and capital, international trade has historically played a vital role in economic growth (Feenstra, 2003). Production could still go on in areas with weak environmental regulations or low environmental performance, nevertheless, if externalities are not completely and consistently costed. Numerous studies on the pollution associated with international trade have been prompted by this division of consumption and production. These studies have focused primarily on air pollutants (Weber and Matthews, 2007; Wiedmann, Lenzen, Turner, Barrett, 2007), but have also examined water (Hoekstra and Hung, 2005), land (Hubacek and Giljum, 2003), materials (M ller, Wang, Duval and Graedel, 2006), and even forest products (Mayer, 2005). The significance of pollution in commerce for certain nations or small groups of nations has been underlined by these studies, as well as its scope and policy implications.

There has not been much research on how trade might affect climate policy and vice versa given the political hyperbole around the concerns of competitiveness and trade in climate policy (Bush, 2001; Grubb and Neuhoff, 2006). There may be significant economic costs involved with joining a global climate regime if a nation generates a significant portion of its exports through pollution-intensive industries (Krugman, 1994; Peters and Hertwich, 2008). A lack of engagement in the climate regime increases the likelihood that production will move more and more to non-participating nations. As is evident from the explosive increase of production in China (Peters et al., 2007; Streets et al., 2006), industries may either cease to exist and relocate to non-participating

nations or, more problematically, expanded production may take place in non-participating nations (Rothman, 1998).

From the fore-going, this study aims at estimating the impact of climate change on international trade in sub-Saharan African countries.

2. Literature Review

The theoretical literature and theoretical foundation of this study is based on the pollution haven hypothesis (PHH). This theory was propounded by Copeland and Taylor (1994), and later popularized by Antweiler, Copeland, & Taylor (2001), and Copeland and Taylor (2004). The theory is of the view that trade affects the environment. This theory has also been applied by Kheder & Zugravu (2012), Copeland (2013), Farhani, Chaibi, & Rault (2014), among others. It states that political and legislative frameworks encourage businesses to relocate in order to take advantage of less stringent environmental regulations than those in their home country, which degrades the environment (Copeland and Taylor, 2004; Kheder & Zugravu, 2012). The PHH is seen as minimal environmental protections that boost an economy's competitiveness and influence movements in international trade.

The structure, level, and technical impacts could be used to understand the consequences of trade openness on the global economy and environment (Antweiler, Copeland, & Taylor, 2001; Farhani, Chaibi, & Rault, 2014; Copeland, 2013). This theory has been applied to look at how trade openness impacts the quality of the environment and how pollution regulations have been effectively implemented. The structural impact is of the view that whenever the production of an economy changes, the demand for tradable goods produced by polluting the environment changes as well, and vice versa. It estimates variations in impact of environmental pollution given variations in manufactured goods. The impact could either be good or detrimental although, that is subject to the area of trade and the methods employed. In terms of level impact, this theory says that the growth of any economy must exert negative impact on the environment as a result of the rising activities of trade that comes as a consequence of rise in productivity. Given the rising consumption and production, the environment is being polluted the more and hence, being harmed. Technical impact advocates that advances in technology brings about varying production impacts on peoples' environments. It shows how industrial activities translate to impact the environment as trades and earnings surge. Technical impact may also be an indicator of technical advancements that could worsen environmental harm (Sun, Enna, Monney, Tran, Rasoulinezhad & Farhad Taghizadeh-Hesary, 2020).

In terms of empirical literature, studies have looked at trade and the environment in different ways. However, most of these studies were not done in sub-Saharan African countries. Very few studies have related trade and the environment or how climate change affect international trade in sub-Saharan African countries. For example, Duodu & Mpuure (2023) employed panel data obtained from 33 economies in SSA for the period 1990 to 2020 and generalized method of moment approach to find out whether imports and exports contribute in influencing foreign trade and pollution of the environment in SSA. It was found that the total trade impact makes environmental pollution to fall by 0.10% in short run and 0.79% in long run. Findings also showed that imports and exports bring down environmental pollution by 0.07% in the short run and 0.45% in the long run. It was recommended that there is need for engendering trade policies that would encourage

technologies that would be friendlier to the environment, and use energy efficient machines for manufacturing, transportation, import and export of goods and services.

In a similar study, Ayesu & Asaana (2023) tried to find out how world shipping and trade in Africa interact to determine changes in climate through the application of panel data of 31 African economies from 2006–2016 and system GMM model. It was shown by the study that world shipping and trade in Africa significantly enhance climate change in short and long periods. Again, shipping influence on climate variation increases with rising total trade. It was recommended by the study that policies geared towards making emissions to fall during world shipping should be encouraged so as to lessen the threats which climate change exerts on African economy. Again, Kyriakopoulou, Kyriacou, & Pearson (2023) used descriptive statistics to determine the influence of climate variation on foreign trade. It was shown by the study that severe weather conditions make supply chains to be severely disturbed, destroy transport infrastructure used in trading activities, and limit the travelling capabilities of the people. The study advised that policies that would address issues of renewable energy depletion, good transport infrastructure, and clean production processes should be encouraged.

In another related study, Maino and Emrullahu (2022) adopted panel data, panel fixed effect, and quantile regression models to study how change in climate affects Sub-Saharan Africa economies. It was shown by the study that an increase in temperature by 1°C makes income per capita to fall by 1.8% in SSA. Again, the study revealed that rising temperature in SSA exerts reverse impact on the improvement of income per capita, whereas findings also show that greater improvement of per capita income would aid in carbon emissions reduction for economies that have emitted higher. It was recommended that there is need for policy coordination to help control CO₂ emissions in SSA. Similarly, Andriamahery, Danarson, & Qamruzzaman (2022) examined trade and environmental quality links in SSA using panel data and dynamic panel GMM regression analysis. It was found that there is significant positive impact of trade on N₂O, ACH₄, and CO₂ emissions in UMICs, LMICs, and LICs. Further, trade was shown to have reverse effect on SSA economies environment irrespective of their level of wealth. It was suggested among others by the study that it is practically important for SSA countries to pursue policies that would help reduce emissions in the sub-region. Again, liberalization policy of domestic trade and foreign ownership negatively and significantly affect industrialization, hence there is need to pursue energy security and efficiency policies. Also, Ssekibaala, Ariffin, & Duasa (2022) utilised time series yearly data from 41 countries in SSA from 1990 to 2017 and applied bias-corrected least square dummy variable (LSDVC) regression model to study economic growth, foreign trade, and the dilapidation of the environment. The study showed that foreign trade decreases deforestation. Further, it was found that economic growth and foreign trade significantly damage SSA environment when unchecked. It was recommended that policy options geared towards the realization of the needed growth of the SSA economies without disrupting the environmental quality should be vigorously pursued by SSA governments.

Adams & Opoku (2021) in a related study employed system GMM and panel data from 22 SSA economies from 1995–2014 to determine whether trade significantly affect carbon dioxide emission. It was revealed that trade exerts positive significant impact on CO₂ emission. The policy recommendations here were that carbon dioxide emissions in SSA need to be controlled through the implementation of strict regulatory frameworks so as to stabilize investment and environmental quality, and to encourage more friendly environmental FDI attraction. Further, Keane, Mendez-

Parra, Pettinotti & Sommer (2021) applied panel data and descriptive statistics to analyse how variations trade arrangements, growth of the economy and technical progress influence Africa's greenhouse gas emissions. It was deciphered from the study's findings that Africa's trade and development were being hindered by climate change. Hence, the study recommended that there is need to review and/or scrutinize Africa's trade and climate policy since some of them undermine improvements in trade and development in the region.

In entirely different but related study, Sun, *et al.* (2020) assessed how CO₂ emissions, consumption of energy, growth of the economy, and trade in SSA economies are associated through the application of panel data and panel cointegration model. Investigation showed that long-run relationship of CO₂ emissions, consumption of energy, growth of the economy, and trade in SSA economies exist. Again, a reverse effect of CO₂ emissions was found on trade in long run. Suggestion of the study is that strict policies and its subsequent implementations in SSA should be encouraged if sustainable growth and friendly environment are to be realised. Again, United Nations (2020) in their study used time series panel data and descriptive statistics to examine whether climate change threatens Africa continuously. It was found by the study that changes in climate continuously threaten Africa's existence on yearly basis. Further, there exist significant sea-level variation in the region of Africa, with coastlines of Senegal, Benin, Togo and Côte d'Ivoire eroding by 56% which may worsen as time passes. The study recommended among others that there is dare need of climate data provision in Africa in a bid to help development planners have reliable and timely data on climate for effective planning.

In another similar study, Buenos (2017) employed descriptive statistics and time series data to look at how trade and climate change bring about challenges and prospects for LDCs, small developing countries, and SSA economies. It was indicated through the study's findings that member countries of Commonwealth, particularly LDCs, small countries, and economies of SSA, exhibited high significant vulnerability of climate change physical effects. Again, findings revealed that the regulatory and physical climate change effects significantly influence the prospects of sustainable development from the side of trade. It was suggested however that SSA countries should vigorously pursue policies geared towards trade and investment enhancement prospects virtually, in all sectors of the economy, keeping in mind lower carbon emissions and/or "green economy". Munang & Andrews (2014) further applied descriptive statistics to study trade in Africa is being affected as a result of varying worsening climate. It was found that worsening changes in climatic conditions significantly affect African economy's trade. It was recommended that African countries should strive harder to safeguard its natural resources and also make its trade volume to rise while protecting the environment.

3. Data and Methodology

3.1 Data

Data for this study were obtained from the World Development Indicators (2022) for a panel of 28 countries within the sub-Saharan African region. Countries were selected based on data availability of the variables selected for the study. Data span ranges from 2000 to 2021 and the choice of this too is as a result of data availability for the countries selected for the study.

Table 1. Description of Variables

Variable	Description	Data Source
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Trade (%GDP)	The variable measures trade as a percentage of GDP. It is used in this study as a cross country percentage of Gross domestic product (GDP), as this variable measures the effect of the ratio of trade to GDP. This will be the dependent variable in the model.	World Development Indicator (2022)
Carbon Damage	This variable measures the pollution damage from carbon dioxide. The variable is one of the independent variables in the model.	World Development Indicator (2022)
Carbon dioxide emission	This variable measures the carbon emission level from the burning of fossil fuel and cement manufacturing. The variable is one of the independent variables in the model.	World Development Indicator (2022)
Droughts/floods	The variable measures the volume of droughts and floods that occur yearly in the region. The variable is one of the independent variables in the model.	World Development Indicator (2022)
Energy methane	This variable measures the production and combustion of natural gas and coal which releases significant amount of methane into the atmosphere. The variable is one of the independent variables in the model.	World Development Indicator (2022)
Greenhouse gas	This variable measures gas that are trap as heat in the atmosphere. The variable is one of the independent variables in the model.	World Development Indicator (2022)

Source: Authors' compilation

3.2 Methods

Model Specification

The Random effects model was adopted to analyze the objective of the study, following the result of the outcome of the Hausman specification test conducted. The result suggested the use of the random effects model in place of the fixed effects model following the decision of failing to reject the null hypothesis of the Hausman test. The advantage of the random effects model is that the total residual variance can be categorized into two components: the in-between variance and the within variance. Furthermore, there is a possibility of estimating shrunken residuals and also the possibility of accounting for differential through the use of random coefficients models. The model is specified in its general form below as:

$$y_{it} = a_i + \beta x_{it} + \mu_{it} \quad (1)$$

where a_i contains a constant term and a set of unobserved heterogeneity for the various countries in the panel, i represents the cross-section of countries, t the time, β is the parameter and x_{it} is vector of explanatory variables in the model. Representing the variables in equation (1), we have;

$$\begin{aligned} trade_{it} = & a_i + \beta_1 carbdam_{it} + \beta_2 co2emi_{it} + \beta_3 droughts_{it} + \beta_4 enrgymeth_{it} \\ & + \beta_5 greenhousegas_{it} + \mu_{it} \end{aligned}$$

4. Results and Discussions

4.1 Descriptive Statistics

The study first examined the data characteristics and the nature of the variables of the model in order to inspect if the variables of the model have sufficient variation in their values. Hence, the mean, standard deviation, and minimum and maximum values of these model variables are presented in table 2. Results from table 2 indicates that all the variables of the model show sufficient variations in their mean, standard deviations values and their associated minimum and maximum values. Average CO₂ emission and greenhouse gas value in the Sub Saharan Africa (SSA) is about 22406.44 and 54395.46 respectively. This value is relatively very high indicating that the environment is highly polluted in the SSA region. The average value of 1.55 indicates that droughts are relatively very low in SSA countries.

Table 2: Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
Trade	616	66.27144	31.08374	175.79	0.7568
Cardm	616	6.89E+08	2.40E+09	2787113	1.75E+10
CO ₂ em	616	22406.44	75787.73	150	447980
Droughts	616	1.55095	1.835357	0	7.5250
Energymeth	616	26.94255	19.72753	2.10575	92.43028
Grenhougas	616	54395.46	94892.43	400	525050

Source: Authors' computation from available data using E-views 12

The first and second generational panel unit root test was estimated to test for the stationarity of the variables employed in the model. These tests were conducted to examine unit root when they are cross-sectionally dependent to each other and also when cross-sectionally independent. For the first generation panel unit root test, the Levin, Lin & Chu (2002) approach with common unit root process was adopted to test for the presence of unit root in the variables. Results from table 3 reveals the outcome of the first generation panel unit root test. It shows that the variables were stationary both at level and at first difference. Carbon damage and droughts were found to be stationary at first difference, indicating that they were integrated at order 1. While CO₂ emission, energy methane, greenhouse gas and trade were all stationary in their level form, indicating they were integrated at order 0.

Table 3. First Generation Panel Unit Root Test

Method (Common Unit Root Process): Levin, Lin & Chu			
Variables	Statistic	Prob.**	Stationarity
D(Carbon Damage)	-4.161	0.0000	I(1)
Co2 Emission	-2.680	0.0037	I(0)
D(Droughts)	-5.828	0.0000	I(1)
Energy methane	-8.047	0.0000	I(0)
Greenhouse gas	-5.248	0.0000	I(0)
Trade	-1.799	0.0360	I(0)

Source: Authors' computation from available data using E-views 12

For the second generation panel unit root test, the Bai and Ng (2004) and the Pesaran (2007) CIPS test were used to test for unit root of the variables in the model. For the Bai and Ng (2004), the

PANIC approach was adopted and the result can be found on the first panel of table 4. The test decomposes the data of the variables into two common components, the idiosyncratic and the common trends and then conducts the panel unit root tests for each of these components. The results indicate that none of the series were stationary using this approach, since the probability value of the series were greater than 5%. Hence, the presence of unit root in the panel.

To further confirm the presence of unit root suggested by the PANIC approach used, the Pesaran (2007) test was conducted using the CIPS approach and the results in the second panel of table 4 shows that we reject the null hypothesis of a unit root, as the CIPS test statistic is greater than the critical CIPS value ($-2.22 > -2.16$) for Carbon damage at the 5% level of significance, indicating no presence of unit root (stationary). The same was for CO₂ emission ($-2.77 > -2.16$), energy methane ($-2.75 > -2.16$) and greenhouse gas ($-2.56 > -2.16$) at the 5% level of significance, indicating no presence of unit root (stationary). For droughts and trade, both were found to be non-stationary at all levels of significance, since ($-1.82 < -2.16$) and ($-1.612 < -2.16$) respectively, hence a presence of unit root.

Table 4 Second Generation Panel Unit Root Test

Bai and Ng (2004) PANIC					
Variable	Number of Common Factors	Idiosyncratic Shocks		Common Trends	
		Value	Prob.	Value	Prob.
Carbon Damage	8	-2.581	0.9999	3.1026	0.9999
Co2 Emission	8	0.4872	0.9999	0.4872	0.9999
Droughts	8	-24.74	0.9998	-24.74	0.9998
Energy methane	8	-33.77	0.9825	-33.77	0.9825
Greenhouse gas	8	-5.542	0.9999	-5.542	0.9999
Trade	8	-17.14	0.9999	-17.14	0.9999
Pesaran CIPS					
Variable	Level of sign.	Critical values	CIPS-t-stat	Prob.	
Carbon Damage	1%	-2.33	-2.22	>0.05	
	5%	-2.16	-2.22	<0.05	
	10%	-2.08	-2.22	<0.05	
Co2 emission	1%	-2.33	-2.77	<0.05	
	5%	-2.16	-2.77	<0.05	
	10%	-2.08	-2.77	<0.05	
Droughts	1%	-2.33	-1.82	>0.10	
	5%	-2.16	-1.82	>0.10	
	10%	-2.08	-1.82	>0.10	
Energy methane	1%	-2.33	-2.75	<0.05	
	5%	-2.16	-2.75	<0.05	
	10%	-2.08	-2.75	<0.05	

Greenhouse gas	1%	-2.33	-2.56	<0.05
	5%	-2.16	-2.56	<0.05
	10%	-2.08	-2.56	<0.05
Trade	1%	-2.33	-1.61	>0.10
	5%	-2.16	-1.61	>0.10
	10%	-2.08	-1.61	>0.10

Source: author's computation. CIPS represents Pesaran (2007) test of the individually cross-sectionally augmented ADF statistics mean of the optimal lag length one for the various level of significance.

The Hausman test was conducted to determine between the Fixed effects model and the Random effects model which would be suitable for the analysis. The null hypothesis of the Hausman test is the individual effects are not correlated with the X'_{it} s (Random effects model) and the alternative hypothesis is otherwise (Fixed effects model). Result from table 5 indicates a random effects model, since the probability value of 0.6712 is greater than 0.05 at the 5% level of significance. Hence, we fail to reject the null hypothesis suggesting we adopt the random effects model. The result of the random effects model is presented in table 6.

Hausman Test

Table 5. Hausman Test

Correlated Random Effects-Hausman Test
Test Cross-section random effects

Test summary	Chi-sq Stat	Chi-sq df	Prob.
Cross-section random	2.3526	4	0.6712
Cross-section random effects test comparisons			
Variable	Fixed	Random	Prob
Carbon damage	0.0000	0.0000	0.8213
Greenhouse gas	0.00028	0.000242	0.4303
Energy methane	-0.6825	-0.52398	0.3568
Co2 emission	-0.0004	-0.00030	0.6045

4.1 Presentation of the Random Effects Model Results and Discussion

To investigate the relationship between trade and environment in the Sub-Saharan African (SSA) countries, the random effects model was adopted. The summary result of the model is presented in table 6.

Result from table 6 shows that greenhouse gas in sub-Sahara African (SSA) region has positive significant impact on trade. The implication of this result is that greenhouse gas emission is increasing trade in the region. This means that as more products are being produced, transportation between countries in the region continue to also increase, there is increase in the distribution and consumption of goods and services in the Sub-Saharan region. All these will likely increase trade in the region since more greenhouse gases would be emitted as all the variables increase. Hence the reason for our finding being positive and significant with trade in the region. On the average, trade will increase by 0.02% as greenhouse gas significantly increases in the SSA region. These findings are in line with that of Ayesu & Asaana (2023).

On the contrary, CO₂ emission in Sub-Saharan African (SSA) region has a negative and significant impact on trade in the region. This implies that CO₂ emission is decreasing trade in the region, the

relationship between CO₂ emission and trade is negative and significant with trade decreasing by about 0.03% in the region. This means that too much emission of carbon dioxide discourages and reduces trade in SSA region. This finding corroborates that of Duodu and Mpuure (2023).

In the same vein, energy methane was found to be positive and significant with trade in the SSA region. A 1% increase in energy methane would increase trade by 52.3% in the Sub-Saharan African region. This is expected as the production of energy methane through liquefied natural gas will increase trade in the region. More production of liquefied gas will mean countries within the SSA region will trade more liquefied gas and hence increase trade in the area. But again, it is important for the production to be regularised in order to reduce environmental pollution through the production of energy methane with the Sub-Saharan African region. This finding is in line with that of Keane, Mendez-Parra, Pettinotti & Sommer (2021). Carbon damage and droughts were found not to be statistically significant with trade in the Sub-Saharan region.

Table 6. Random Effects Result

Dep. Var: Trade

Method: Panel EGLS (Cross-section random effects)

Variable	Coefficient	Std. error	t-stat	Prob.
Carbon damage	-0.0000629	0.00158	-0.0396	0.9684
Greenhouse gas	0.000242	0.00009	2.6718	0.0077
Energy methane	0.52398	0.18352	2.855	0.0044
Droughts	0.47947	2.80862	0.1707	0.8645
Co2 emission	-0.000301	0.00014	-2.143	0.0325
Constant	73.27	8.8883	8.2441	0.0000

Source: Authors' computation from available data using E-views 12

5. Conclusion and Policy Recommendation

This study empirically investigated the impact of environment on trade in Sub-Saharan Africa (SSA), using panel data generated from 28 sub-Saharan Africa (SSA) countries for the period 2000 to 2021. The study applied the random effects model and found that greenhouse gas in sub-Saharan African (SSA) would on the average lead to about USD 0.000242 billion significant rise in trade in the region. It is recommended that the emission of greenhouse gas needs to be controlled in order to reduce pollution to the environment. This can be done through the creation of regional committees that would control such pollution. Good and adequate policy implementation framework that guides greenhouse gas emission. Furthermore, energy methane was found to have a positive and significant effect on trade in the region. On the average, trade in the region was found to increase by USD 0.52398 billion when the emission of energy methane rises. It is recommended that there is need to review and/or scrutinize Africa's trade and climate policy since some of them undermine improvements in trade and development in the region. Lastly, it was also observed that CO₂ emission was negative and significant, with about 0.0003-unit decrease in trade in the region. It is recommended that carbon trading be encouraged in the region. Countries within the region should trade carbon amongst themselves in order to discourage CO₂ emission in Sub-Saharan Africa. Trade agreements among these countries could be encouraged so as to guide trade transactions amongst countries in the region.

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VI.III Climate Change and International Trade Nexus in Lesotho

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Abstract

Given the arguable impact of climate change on international trade among different scholars, this paper found it crucial to examine the relationship between climate change and international trade in the context of Lesotho over the 1991-2021 period. The ARDL Error Correction Model is utilised to capture both the short-run and the long-run relationship between these variables. The findings show that climate change indicated by total greenhouse gas emissions has a significant and negative relationship with international trade indicated by trade openness both in the short run and long run. Lesotho is recommended to prioritise a coordinated and balanced approach to address climate change and promote international trade. This entails optimizing resource allocation to climate-related initiatives while concurrently implementing adaptive measures to safeguard agricultural productivity, diversify the export base, and sustain trade openness.

1. Introduction

In recent years, the world has witnessed the undeniable impacts of climate change, from more frequent and severe extreme weather events to shifting weather patterns (Farajzadeh et al., 2022). These changes are not only altering the way the environment is experienced but are also reshaping the global landscape, including international trade and economic development (Nugroho et al., 2023). As highlighted by (Trinh et al., 2020), the effects of climate change have the potential to disrupt supply chains, damage vital transport infrastructure, and curtail the mobility of people which are the crucial elements for the smooth international trade. This has massively caught the attention of various business actors and scholars (Biswas et al., 2022; Milovanovic et al., 2022). However, amidst the challenges posed by climate change, there are also glimpses of opportunity. As climate conditions evolve and nations implement policies aimed at combating this existential threat, the dynamics of comparative advantage are undergoing a transformation (Abbas, 2022). This transformation, while presenting risks for countries reliant on climate-vulnerable sectors, also opens up novel economic prospects. Some nations, blessed with abundant renewable energy sources such as wind and sunlight, as well as access to critical minerals essential for clean infrastructure, are finding new pathways to economic prosperity (Kyriakopoulou, Kyriacou, & Pearson, 2023).

As it stands, climate change presents both risks and opportunities for nations as they navigate the evolving landscape of international trade (Shahzad et al., 2017). Resultantly, understanding how these global changes impact specific nations is of paramount importance. In this context, Lesotho, a small developing and a landlocked country in Southern Africa, finds itself at the intersection of climate change and international trade, a topic largely unexplored in the existing literature. While several studies (Abidoye & Odusola, 2015; Berardy & Chester, 2017; Fankhauser & Tol, 2005; Farajzadeh et al., 2022) have investigated the impacts of climate change on economic growth and agricultural exports, the current paper primarily aims to examine the broader ramifications of climate change on international trade in Lesotho.

By addressing this knowledge gap, the present study provides valuable insights for informed decision-making, policy formulation as well as the proactive strategies to harness the economic opportunities emerging from the evolving global response to climate change. In doing so, the paper contributes to a more comprehensive understanding of the complex interplay between climate change and trade in a specific context that is, so far underrepresented in the literature.

The rest of the paper is structured as follows, section 2 reviews the literature while section 3 suggest the data and methodology utilized to examine the relationship between climate change and international trade in Lesotho. Section 4 provides the results and discussion while the last section concludes the paper.

2. Literature Review

This section provides the literature regarding mechanisms through which climate change affects international trade. The synthesis of the literature is given in the last paragraph of this section.

The current state of nature reflects humanity's unsustainable practices, resulting in a series of climate disasters. Initially, these events might appear universally harmful (Huynh et al., 2020; Klomp & Valckx, 2014). However, much like any significant occurrence or alteration, climate change brings about both potential advantages and disadvantages. While certain studies find adverse consequences of climate change on economic development (Klomp & Valckx, 2014),

others anticipate that they can stimulate long-term economic growth by acting as a catalyst for updating capital resources and adopting new technologies, ultimately enhancing overall productivity (Skidmore & Toya, 2002)

On the other hand, climate-related disasters can have adverse effects on international trade, given their potential to disrupt supply chains, harm transportation infrastructure, and hinder production process (Oh & Reuveny, 2010). The effects of climate change, ranging from hurricanes to floods and wildfires, can disrupt supply chains by causing damage to transportation infrastructure, factories, and warehouses. Consequently, this can lead to delays in the production and delivery of goods, resulting in financial losses for businesses and elevated costs for consumers. Moreover, (Huynh et al., 2020) provides evidence that climate disasters can also inflate operational expenses. For instance, if a disaster damages a critical transportation hub, it can substantially raise the costs associated with transportation and shipping. Additionally, the cost of capital tends to rise, with droughts, for instance, causing an increase in the cost of equity as highlighted by (Huynh et al., 2020)

Although climate-related disasters can have adverse effects on international trade, they can also give rise to trade prospects. For example, nations that have encountered such disasters may find it necessary to import goods to aid in their recovery endeavours. Climate risks can also open up trade possibilities in sectors like disaster response and recovery, renewable energy, and sustainable infrastructure. For instance, companies specializing in disaster response and recovery may have opportunity to provide assistance to affected regions and explore new business avenues. This, in turn, can create openings for businesses engaged in exporting the required goods. Consequently, climate disasters may present trade prospects or challenges, contingent upon a country's circumstances.

Concerning developed countries, it is contended that climate disasters are less likely to have adverse effects on imports and exports due to potential mechanisms. Firstly, developed countries possess ample resources for anticipating natural disasters and implementing precautionary measures like stockpiling surplus goods. Furthermore, other studies (Ma et al., 2022; Zhang et al., 2023), have demonstrated the value of decarbonization in residential and commercial buildings within the context of emissions reduction models. Similarly, in cross-country analysis, (Xiang et al., 2022) have illustrated that the carbon intensity of commercial building operations declined in 16 economies between 2000 and 2019. Within a sample of 15 OECD-developed nations, (Skidmore & Toya, 2002) indicated that the precautionary savings in these countries translated into reduced imports during times of disasters brought forward by climate change.

Secondly, in contrast to developing countries, developed nations benefit from risk-mitigation mechanisms such as coverage and government assistance, which expedite the recovery process for businesses following disasters (Gassebner et al., 2010). These mechanisms help alleviate the immediate consequences of business closures and interruption, the ability to accurately predict disasters, an uptick in precautionary reserves, and the presence of risk-mitigation mechanisms should result in reduced imports during and after climate-related disasters, potentially leading to an increase in exports.

In the context of developing nations, the scenario may diverge. As per (Burnell, 2012), climate change tends to result in heightened consumption in developing countries. Due to the lack of robust risk-mitigation mechanisms such as insurance and timely government support in these regions, businesses struggle to achieve swift recovery post-disasters. Consequently, there is an upsurge in

imports to meet local demand, accompanied by a decline in exports (Gassebner et al., 2010). Arguably, the more prolonged the recovery period for a country, the greater its reliance on imports from other nations and the lower its export capacity.

Furthermore, beyond the heightened importation of general goods and services in developing countries, there exist a potential surge in the importation of capital goods and services, such as building materials. When natural disasters devastate infrastructure, reconstruction become imperative for normal life resume. In many developing countries, construction projects heavily rely on the importation of materials from developed countries. Consequently, climate change results in increased imports for developing nations and expanded exports for developed ones (Gassebner et al., 2010). The impact of climate change on the importation of capital goods and services is notably more pronounced when these development efforts are supported by external donors as suggested by (Gassebner et al., 2010). Considering the growing pressure on developed nations to address climate-related injustices and their historical reliance on external donors during times of disasters, it is reasonable to anticipate a substantial influx of capital goods and services from developed countries.

(Shahzad et al., 2017) examined the relationship between carbon emission, energy consumption, trade openness and financial development in Pakistan. Utilizing annual time series data from 1971 to 2011 and employing the Autoregressive Distributed Lag Model was utilized to meet this objective, the findings indicate an inverted U-shaped relationship between carbon emission and energy consumption. The analysis identified a critical threshold for energy consumption per capita at 640kg of oil equivalent. Presently, Pakistan's economy operates below this threshold, suggesting that carbon emissions are likely to continue increasing gradually until the threshold is reached. This situation implies that, at the current level of energy consumption, the dominance of scale and composition effects outweighs the technological impact regarding energy utilization.

(Nugroho et al., 2023) explored the relationship between climate change and the competitive performance of agriculture in both developing and developed nations. The investigation involved the analysis of data collected from 71 developing countries and 24 developed countries spanning the period from 1990 to 2020, employing the Three-Stage Least Squares method. The findings of the study revealed that in developing countries, agriculture competitiveness tends to increase with rising temperatures, whereas in developed countries, it experiences a decline as temperature rise. Furthermore, the impact of temperature change on agricultural competitiveness is consistent across both developing and developed countries, resulting in a reduction in competitiveness. However, it is noteworthy that the agricultural competitiveness of developed countries is more susceptible to changes in temperature.

(Shuaibu, 2021) examined the potential impact of liberal trade on food productivity in Nigeria, particularly considering environmental factors like adverse weather conditions. The study aimed to determine whether accounting for trade and climate change differences plays a crucial role in explaining food productive trends. By utilizing a nonlinear autoregressive distributed lag model, the study identified the presence of asymmetry in the long run but not in the short run. Long-term assessments indicated that greater variability in rainfall tends to increase food production, while the opposite is observed in the short-term, where decomposed shocks have negative influence. Additionally, an increase in trade volume was found to positively affect food production in the long-term, whereas contemporaneous findings revealed the lower trade flows had a detrimental impact on food productivity.

Furthermore, recognizing the importance of designing, implementing, and assessing energy policies to combat climate change is increasingly recognized as a means to bolster economic growth, particularly in developing countries heavily reliant on the agricultural sector. With this being the case, (Ali, 2021) delves into an analysis of both the direct and indirect impacts of renewable energy consumption on agriculture value-added, carbon dioxide emissions, and trade openness in West African countries. To achieve this, a range of methodologies, including second generation pane; unit root tests, panel cointegration methods, and the Panel Vector Error Correction Model, were applied, utilizing the data spanning from 1990 to 2015. Additionally, a panel Granger causality test was employed to ascertain the direction of causality among these variables. The results reveal a one-way relationship between agriculture value-added, carbon dioxide emissions, and renewable energy consumption. The same applies for renewable energy consumption, gross fixed capital formation and trade openness while insignificant relationship is found between agriculture value-added and gross fixed capital formation, as well as between gross fixed capital formation and carbon dioxide emissions.

The economies of African nations are intricately intertwined with the impacts of climate change. Critical sectors that significantly contribute to their economic well-being and the livelihoods of their populations, including agriculture, forestry, energy, tourism, and coastal and water resources, are exponentially susceptible to the effects of climate change. In light of these circumstances, (Abidoye & Odusola, 2015) conducted a study to empirically investigate the connection between economic growth and climate change in Africa. The paper, based on the annual data spanning from 1961 to 2009 across 34 countries and Generalized Method of Moments, identified a detrimental influence of climate change on economic growth in the region. These findings consistent with the findings by (Akram, 2012; Fankhauser & Tol, 2005; Millner & Dietz, 2015)

Moreover, (Li & Gallagher, 2022) conducted a study to assess the vulnerability of multinational corporations' overseas investments to physical climate risks. The study revealed that on a global scale, foreign investments faced notably lower levels of physical climate risks when compared to domestic companies operating within individual countries. However, the disparities in physical climate risks between foreign and local facilities within specific countries were relatively minor. The study also focused on China, which has emerged as a major source of outward foreign investment worldwide. Interestingly, the findings indicated that foreign direct investment originating from China were significantly more exposed to risks such as water stress, floods, hurricanes, and typhoons in various hot countries when compared to investments from other foreign entities.

Lastly, the global expansion of trade has significant repercussions, primarily through the phenomenon of consumers transferring environmental pollution linked to their consumption to other nations. This process, known as carbon leakage, has profound implication for both international trade and the global economy. In a study conducted by (Yunfeng & Laike, 2010), an input-output approach was employed to estimate the quantity of carbon dioxide embedded in China's foreign trade spanning from 1997 to 2007. The findings revealed that approximately 10.03% to 26.54% of China's annual carbon dioxide emissions are generated during the production of export goods intended for foreign consumers. In contrast, the carbon dioxide emissions associated with China's imports constituted only 4.40% in (1997) and 9.05% (in 2007) of the total emissions.

In summary, the literature review underscores that climate change presents both challenges and opportunities. It has resulted in climate disasters with adverse effects on international trade and economic growth. Simultaneously, it has created trade prospects, notably in disaster response, renewable energy, and sustainable infrastructure. Therefore, it is crucial to focus on country-specific studies about the impact of climate change on trade openness, and Lesotho stands an interesting country given its geographical unique context. Regarding agricultural competitiveness, the literature highlights that developing countries tend to experience increased competitiveness at higher temperatures, while developed nations face declining competitiveness.

3. Data and Methodology

This section presents the data and the methods that are employed in this study. It starts by highlighting the variables used and the sources of the data. It further outlines the model specification and the description of the variables. The succeeding sub-sections present the estimation techniques and the diagnostic tests.

3.1 Sources of Data

The study utilises annual time series data spanning from 1991 to 2021. The data for trade openness, total greenhouse emissions, annual population growth and industry (including construction), value added (annual % growth) has been gathered from the World Development Indicators. Additionally, the data for globalisation index has been sourced from the Konjunkturforschungsstelle (KOF) Swiss Economic Institute. Lastly, the data on the institutional variables (political stability, rule of law, corruption control, government effectiveness, voice and accountability and regulatory quality) have been obtained from the world governance indicators.

3.2 Model Specification

To examine the effect of climate change on international trade in Lesotho, the present study adapts and modifies the basic model specification that was suggested by (Abbas, 2022). The model is modified primarily to enable this study to account for the problem of omitted variable bias by including the relevant variables in each model. Lastly, the control variables used in this study have been chosen based on the reviewed literature.

$$TO_t = \beta_0 + \beta_1 TGE_t + \beta_2 Gl_t + \beta_3 POP_t + B_4 IND_t + B_5 \ln QGI_t + u_t \quad (1)$$

Where TO_t is trade openness, TGE_t is total greenhouse emissions, Gl_t denotes Konjunkturforschungsstelle (KOF) globalisation index, POP_t is annual population growth, IND_t indicates industry (including construction), value added (annual % growth), and QGI represent the quality of government institutions. On the other hand, β s are the long-run parameters to be estimated and t is the time period while u_t is the white noise disturbance term.

3.3 Explanation of the Variables

Dependent Variable

Trade Openness: It refers to the degree to which a county's economic policies encourage or impede the exchange of goods and services with other nations. It serves as a critical metric for assessing a country's willingness and ability to engage in international trade (Acheampong et al., 2019). This concept encompasses a range of policy measures, including the reduction of trade barriers

such as tariffs and import quotas, the facilitation of customs procedures, and the promotion of trade agreements with other countries.

Independent Variables and their Expected Signs

Variable of Interest

Total greenhouse gas emissions: The present study uses total greenhouse emissions as a proxy for climate change. This variable represents the cumulative amount of greenhouse gases, such as carbon dioxide, methane, and nitrous oxide, emitted into the atmosphere within a specified region. These gases are known for their heat-trapping properties, which contribute to the greenhouse effect and, consequently, global warming and climate change. Despite that, the international scientific community widely recognizes greenhouse gas emission as a key factor in climate change (Sinha & Sen, 2016). Based on the reviewed literature, this variable can either affect trade openness positively or negatively.

Control Variables

To mitigate the problem of omitted variable bias, this study controls for a number of variables, the first one being globalization. It is referred to as multifaceted and complex process that involves the increasing interconnectedness and interdependence of countries and people around the world. Various indicators, such as the Global Connectedness Index (GCI), the World Bank's Globalisation Index (WBGI), and the Global Innovation Index (GII), are used to gauge globalisation. However, this study utilises the KOF Index of Globalisation developed by (Dreher, 2006) and later upgraded by (Gygli et al., 2019). According to (Quinn et al., 2011), the KOF globalisation index (the weighted measure of economic, social, and political globalisation) is preferred over the above-mentioned indices because of its ability to distinguish between de facto and de jure globalisation for the overall globalisation index, its dimensions, as well as their sub-dimensions. Additionally, (Babones & Farabee-Siers, 2008; Gygli et al., 2019; Numba et al., 2022) asserted that the KOF Globalisation Index is also preferred because it captures quite a lot of variables relative to other globalisation indices, which makes it suitable for the present study as it enables it to account for the multidimensional nature of globalisation. This variable can have a positive or negative effect on the dependent variable.

Moreover, annual population growth is also controlled for which is expected to have a positive effect on international trade given that is more likely to increase labour force participation rate and productivity in the country, driving exports (Acheampong et al., 2019). Additionally, the study controls for industry (including construction), value added (annual % growth), which is an economic indicator that measures the annual percentage in the value added by the industrial and construction sectors within a country's economy (Nugroho et al., 2023). This variable provides insights into the rate of growth or contraction in these sectors over a specific period, typically on annual basis. It is expected to have a positive effect on the dependent variable. Lastly, Principal Component Analysis is used to incorporate six world governance indicators variables solely to generate the variable called the quality of government institutions as an index. It is expected to have a positive effect on international trade.

3.4 Estimation Strategy

Unit Root

To assess the stationarity of each series in the study, the paper employs the Augmented Dickey Fuller (ADF) unit root test, both with and without trend. The ADF test is usually formulated by Equation 2 as suggest by (Biswas et al., 2022)

$$\Delta X_t = \alpha_0 + \alpha_1 X_{t-1} + \sum_{i=1}^N \alpha_{2i} X_{t-i} + u_t \quad (2)$$

Where Δ denotes lag operator while u_t denotes an error term. These tests are used to determine whether the estimated α_1 coefficient equals zero. It is worth noting that while these statistics are calculated as t-ratios, they do not follow the standard t-distribution because, under the null hypothesis of non-stationarity, the variance is not limited. However, (Dickey et al., 1979) provides the cumulative distribution of the ADF test statistics. If the calculated t-ratio for the α_1 coefficient, which has a negative sign, is less than its critical value from Fuller's table, then the series X_t is considered to be stationary or integrated of order one, that is I (1).

Additionally, this paper utilizes Phillips-Perron (PP) test for stationarity in order to cater for the problem of structural break as suggested by (Zivot & Andrews, 1992). According to (Malik, Latif, & Khan, 2020), it is very important to cater for structural breaks in time series data analysis because they are likely to significantly affect the properties of the data, such as the constant mean and variance over time. A structural break refers to a fundamental change in the underlying process that generates the time series (Lee & Strazicich, 2003).

3.5 Autoregressive Distributed Lag Model (ARDL) Estimation Technique

To investigate the relationship between the variables of interest, the study utilises an Autoregressive Distributed Lag Model (ARDL) which was developed by (Pesaran & Shin, 1999) and then updated by (Pesaran et al., 2001). The ARDL procedure is preferred to other techniques (Vector Autoregressive Model and Traditional Ordinary Least Squares) because of the following reasons: The ARDL model proves adequate because of its robust results despite the small samples (Narayan & Narayan, 2005), and this enhances both the internal and external validity of the study (Jalil, 2012). Besides that, it is applicable regardless of the mixed order of integrations of the variables in the study (Tang, 2003). Moreover, it has finite-sample critical values as opposed to other cointegration approaches (Sekantsi & Timuno, 2017). Finally, it helps in determining both the long-run and short-run relationships between the variables.

The augmented form of Equation 1 is as follows:

$$\Delta TO_t = \alpha_0 + \beta_{1i} TO_{t-i} + \beta_{2i} Gl_{t-i} + \beta_{3i} POP_{t-i} + \beta_{4i} IND_{t-i} + \beta_{5i} QGI_{t-i} + \sum_{i=1}^p \alpha_{1i} \Delta TO_{t-i} + \sum_{i=1}^q \alpha_{2i} \Delta Gl_{t-i} + \sum_{i=1}^q \alpha_{3i} \Delta POP_{t-i} + \sum_{i=1}^q \alpha_{4i} \Delta IND_{t-i} + \sum_{i=1}^q \alpha_{5i} \Delta QGI_{t-i} + e_t \quad (3)$$

Where Δ is the first difference operator, p and q denote the optimal lag lengths of the dependent and independent variables respectively chosen based on the Akaike Information Criterion, while α 's and β 's are the short-run and long-run parameters to be estimated from the sample data, and the last term e_t is a stationary (white noise) disturbance term.

After running the underlying ARDL (p, q) models as framed above, the next step is to test for cointegration.

3.6 Bounds Test for Cointegration

The joint F-statistic, often known as the Wald statistic, is the foundation for the bounds test process used in cointegration analysis. Under the null hypothesis, the F-statistics' asymptotic distribution is non-standard. The null hypothesis of no cointegration among the variables in Equation 1 is as follows: $H_0: \beta_{1i} = \beta_{2i} = \beta_{3i} = \beta_{4i} = \beta_{5i} = 0$ against the alternative hypothesis that $H_1: \beta_{1i} \neq \beta_{2i} \neq \beta_{3i} \neq \beta_{4i} \neq \beta_{5i} \neq 0$. The decision criterion is to reject the null hypothesis of no cointegration if the F-statistic is greater than the upper critical bounds. The null hypothesis fails

to be rejected if the calculated F-statistic is less than the lower bounds of the critical values. If the F-statistic falls within the bounds, then the cointegration test becomes inconclusive.

Error Correction Model (ECM)

The ECM is utilized to extract both a long and short-run relationship between the dependent variables and the covariates is as follows:

$$\Delta TO_{t-1} = \alpha_0 + \sum_{i=1}^p \alpha_{1i} TO_{t-i} + \sum_{i=1}^p \alpha_{2i} \Delta GL_{t-i} + \sum_{i=1}^q \alpha_{3i} \Delta POP_{t-i} + \sum_{i=1}^q \alpha_{4i} \Delta IND_{t-i} + \sum_{i=1}^q \alpha_{5i} \Delta QGI_{t-i} + \lambda ECT_{t-1} + e_t \quad (4)$$

Where λ denotes the coefficient of the adjustment term (ECT) which is included to capture the short-run dynamics and the speed of adjustment towards the long-run equilibrium. The adjustment term represents the difference between the actual value of the dependent variable and its long-run equilibrium value. According to (Pesaran et al., 2001) the adjustment term should be negative to reflect the concept of error correction. The negative sign implies that any deviation from the long-run equilibrium will be corrected over time. If the adjustment term were positive, it would suggest that deviations from equilibrium would persist indefinitely, which contradicts the idea of equilibrium restoration. Again, the adjustment term should also be statistically significant to indicate that it has a meaningful impact on the adjustment process (Pesaran & Shin, 1999). A statistically significant adjustment term suggests that the speed of adjustment is not due to chance but rather represents a systematic and significant response to deviations from long-run equilibrium. It should be noted again that $\alpha_{1i}, \alpha_{2i}, \alpha_{3i}, \alpha_{4i}, \alpha_{5i}$, are the short-run coefficients. Lastly, the following diagnostic tests (serial correlation, heteroskedasticity, normality and model stability) are performed in this paper for the robustness of the results.

4. Results and Discussion

This section provides the results along with their discussion. It comprises the descriptive statistics, multicollinearity test results, unit root results, cointegration analysis, Error Correction Model results, and diagnostic test results.

4.1 Summary Statistics

Table 0.1 shows a general overview of the data used for this study. It displays the sample size (time periods), and measures of dispersion (means and standard deviations). It further depicts the minimum and maximum values recorded for each variable during the period of study.

Table 0.1: Descriptive Statistics

Variable	N	Mean	Std. Dev.	Min	Max
Trade Openness	31	156.965	21.019	125.878	209.891
Total greenhouse gas emissions	31	2214.311	194.889	1830	2530
Globalization Index	31	44.511	4.521	37.691	51.19
Population Growth	31	0.81	0.909	-0.616	2.256
Industry Value-added	31	4.928	10.528	-12.242	48.174
Institutional Quality (Index)	31	-0.7	1	-1.605	1.702

Source: Author's calculations

The data consists of 31 time periods from the year 1991 to 2021. Table 1 depicts that trade openness is on average 156.956%, with a minimum value of 125.878% and a maximum value of 209.891%. The relatively small standard deviation of 21.02% indicates that trade openness values

are relatively clustered around the mean, suggesting that there is not a wide variation in trade openness among the observations in Lesotho. Table 0.1 also reveals that on average, Lesotho emits 2214.31kt units of total greenhouse gas emissions annually. The standard deviation of 194.89kt implies some variability in emissions across the observations, but the range is relatively narrow compared to the mean. Moreover, the range between the minimum 1830kt and maximum 2530kt values indicates that emissions vary within this range among the observations. Interestingly, there are no extreme outliers.

Globalisation Index has been on average 44.511% while it has been ranging from 37.691% to 51.19. This implies that the country has not performed well in terms of connectedness and interdependence as its performance has been below 50% on average. Annual population growth has been 0.81% on average while the industry value-added to growth has been only 4.928 on average. This indicates that there is still a very huge room for improvement. Likewise, the quality of government institutions still needs to be improved as depicted in Table 0.1.

4.2 Multicollinearity Test Results

Multicollinearity, as defined by (Greene, 2003), arises when there is a strong or near-perfect linear relationship between two or more independent variables in a statistical model. When multicollinearity is present, it can result in inflated standard errors, often leading to the occurrence of type II error, which means failing to detect a significant effect when there is actually one. These increased standard errors can render coefficients statistically insignificant, even if the overall model has a high R-squared value. Therefore, it is essential to assess whether multicollinearity is a problem and take appropriate measures to address it if it detected. According to (Noumba et al., 2022; Shrestha, 2020) an absolute correlation coefficient of $0 > 0.8$ among two or more predictors indicates the presence of multicollinearity. Upon examining the results in Table 0.2, it is evident that the correlation coefficients between the explanatory variables used in this study are all below the 0.8 threshold. Consequently, it can be concluded that multicollinearity is not present, and the model's goodness of fit is met.

Table 0.2: Pairwise Correlations

Variables	TO	TGE	GL	POP	IND	QGI
TO	1.000					
TGE	-0.356	1.000				
GL	-0.433	0.794	1.000			
POP	-0.408	-0.484	-0.551	1.000		
IND	0.277	-0.460	-0.521	0.368	1.000	
QGI	-0.008	-0.479	-0.627	0.746	0.387	1.000

Source: Author's calculations

4.3 Unit Root Results

Table 0.3 and Table 0.4 presents the Augmented Dickey-Fuller (ADF) and Philip Perron results for the stationarity test for all the variables used in this study respectively.

Table 0.3: ADF Results

Variable	H_0 : Non-Stationary in levels		H_0 : Non-Stationary in first differences		Conclusion
	Test statistic	P-value	Test statistic	P-value	

TO	-0.970	0.7641	-5.794	0.000	I (1)
TGE	-1.749	0.4060	-4.168	0.007	I (1)
GL	-0.970	0.7641	-1.753	0.048	I (1)
PO	-1.649	0.0552			I (0)
IND	-5.313	0.000			I (0)
QGI	-1.476	0.5453	-4.076	0.001	I (1)

Source: Author's calculations

Table 0.4: Phillips Perron Unit Root Test Results

Variable	Level	P-value	First Difference		Conclusion
	Test Statistic		Test Statistic	P-value	
TO	-1.341	0.6100	-5.789	0.000	I (1)
TGE	-1.950	0.3087	-7.232	0.000	I (1)
GL	-1.076	0.7245	-8.154	0.000	I (1)
POP	-3.523	0.019			I (0)
IND	-3.069	0.0289			I (0)
QGI	-1.336	0.6126	-4.029	0.0013	I (1)

Source: Author's calculations

Table 3 reveals that quality of government institutions and industry value-added are stationary at level, at 5% significance level while trade openness, total greenhouse gas emissions, annual population growth as well as globalisation index are stationary after the first difference at all significance levels. The unit root results have been found to be robust even when using Phillips Perron test for stationarity which is used to cater for structural break. This implies that there might be a long-run relationship among the series. Therefore, the study proceeds by applying the ARDL bounds test for cointegration in all three models.

4.4 Cointegration Results

Since the unit root results suggest the presence of a long-run association among the series, the study empirically tests for cointegration using the ARDL Bounds test for cointegration, and the results are presented in Table 0.5

Table 0.5: Cointegration Results

	At 10% critical value		At 5% critical value		At 1% critical value	
	I (0)	I (1)	I (0)	I (1)	I (0)	I (1)
F-statistic = 7.834, k=5	2.26	3.35	2.62	3.79	3.41	4.68

Source: Author's calculations

The F-static is greater than the upper bound critical values of the F-table. This suggests the existence of a long-run relationship among the variables used in this study. Therefore, the study continues by estimating the Error Correction Model (ECM).

The Error Correction Model Results

This section presents the Error Correction Model results specified in equations 4. Panel A presents the long-run results, while panel B presents the short-run results.

Table 0.6: Long Run and Short Run Results (Dependent Variable – Trade Openness)

Panel A: Long-run Results

Variable	Coefficient	Standard errors
<i>Adjustment Term</i>	-0.6248888 ***	0.17783
Total Greenhouse Gas Emissions	-0.70060*	0.37585
Globalisation Index	-0.00046	0.01004
Population Growth	-0.09532**	0.03522
Industry Value Added	0.00619**	0.00287
Institutional Quality	0.03423	0.03772
Panel B: Short-run Results		
Total Greenhouse Gas Emissions	-0.43780**	0.16921
Globalisation Index	-0.01835**	0.00744
Population Growth	-0.31144***	0.07152
Industry Value Added	0.00387***	0.00113
Institutional Quality	0.02139	0.02186
Constant	6.67975***	1.40959
R²	0.7274	
Adjusted- R²	0.6236	

Notes: *Indicates significance at 10%** Indicates significance level at 5%, ***indicates significance level at 1%.

Source: Author's computations

Table 0.6 reveals that climate change indicated by greenhouse gas emissions have a negative and significant relationship with trade openness in Lesotho, both in the short run and long run. This could be attributed to the fact that Lesotho is focusing on addressing climate change (Hoogendoorn et al., 2021), and it is allocating resources, both financial and human, to initiatives like renewable energy projects. These resources might otherwise be allocated to activities that promote trade. The diversion of resources towards climate-related activities is therefore possibly affecting trade openness negatively. Additionally, changes in rainfall patterns, increased temperatures, and the frequency of extreme weather events are more likely to harm crop yields and food production. Reduced agricultural productivity can lead to decreased exports, negatively impacting trade openness. This results are coherent with the findings by (Gassebner et al., 2010; Oh & Reuveny, 2010).

The findings also indicate that globalisation has a negative short run relationship with trade openness in Lesotho. This is potentially due to the issue that increased globalisation might lead to aa surge in foreign competition as international companies enter the Lesotho market. Local industries may initially struggle to compete with more established foreign firms, which can result in reduced trade openness as domestic companies face difficulties exporting their goods and services. Additionally, globalisation accelerates, there could be a period of economic adjustment required for local industries to adapt to international competition and meet global standards. During this adjustment phase, trade openness may decrease temporarily as businesses work to align themselves with global market demands. This findings are inconsistent with the findings by (Arif et al., 2022) while they are in line with the findings by (Clougherty, 2001; Kotz, 2002).

Regarding the relationship between annual population growth and trade openness, the study found it to be negative in Lesotho. This is possibly due to the fact that population growth, which is more likely not to be matched with economic development potentially strain resources, leading to a lack

of infrastructure and investment in industries necessary for trade (Rahman et al., 2017). In line with (Nugroho et al., 2023), industry (including construction), value added (annual % growth) is found to have a positive relationship with trade openness. This is because a growing industrial and construction sectors potentially diversify the economy beyond traditional sectors like agriculture. These diversifications lead to the development of new export-oriented industries, expanding Lesotho's base and increasing trade opportunities. Furthermore, a thriving industrial sector can attract foreign investors looking to establish manufacturing or production facilities in Lesotho. This can lead to an inflow of foreign direct investment, which often comes with technology transfer and access to global markets, thereby enhancing trade openness.

Lastly, the adjustment term of approximately -0.6248 which is statistically significant at all levels indicates that there is an error correction mechanism in the model. This implies that when trade openness deviates from its long-term equilibrium, it quickly adjusts back towards that equilibrium at a rate of 0.6248 units per time period.

Table 0.7: Diagnostic Results

Diagnostic Test Results for Model 1				
	Test	Null hypothesis	P-value	Conclusion
Serial Correlation	Breusch-Godfrey LM test	No Serial Correlation	0.2521	No Serial Correlation
Heteroskedasticity	White's test	Homoskedasticity	0.4140	No heteroscedasticity
Normality	Jarque-Bera test	Residuals are normal	0.9255	Residuals are normal

Source: Author's Computations

The results provided in Table 0.7 show that the variance is constant across all the explanatory variables used in this study. Again, the study found no serial correlation among the variables, and the errors have been found to be normally distributed. The model has also found to be stable, as the cumulative sum of residuals (CUSUM) and cumulative sum of squared residuals (CUSUMSQ) are within a 5% significance level as shown in Figure 1 and 2 respectively.

Figure 2: CUSUMSQ

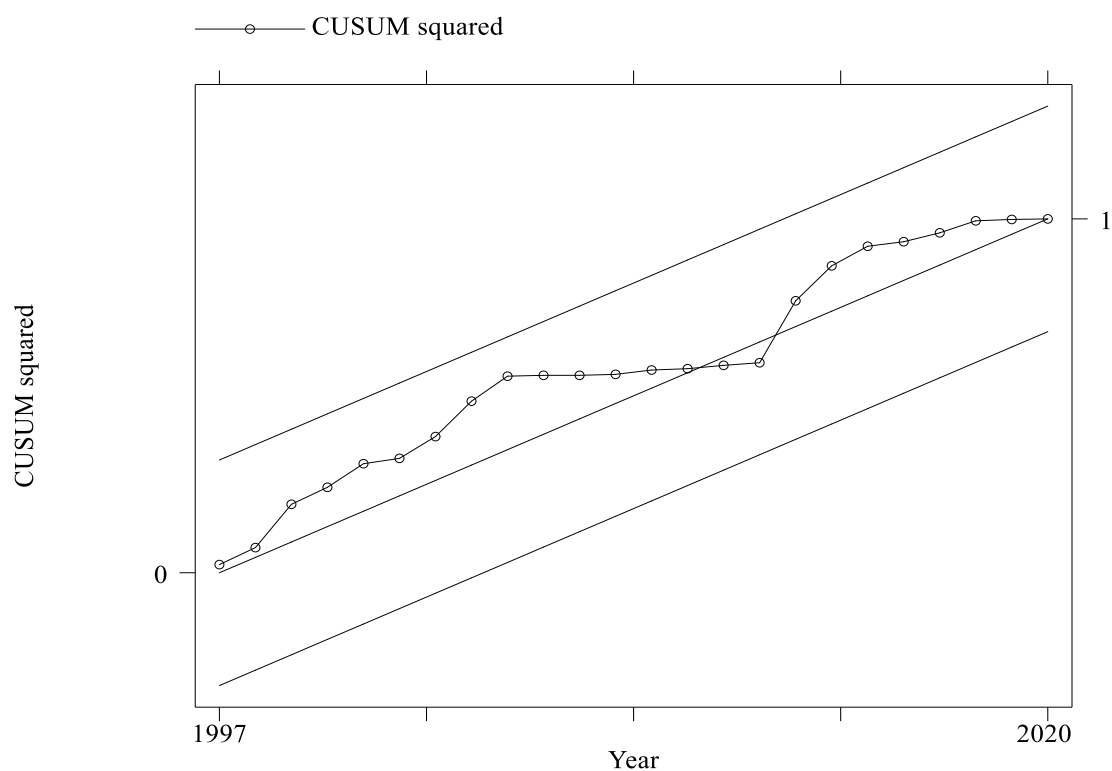
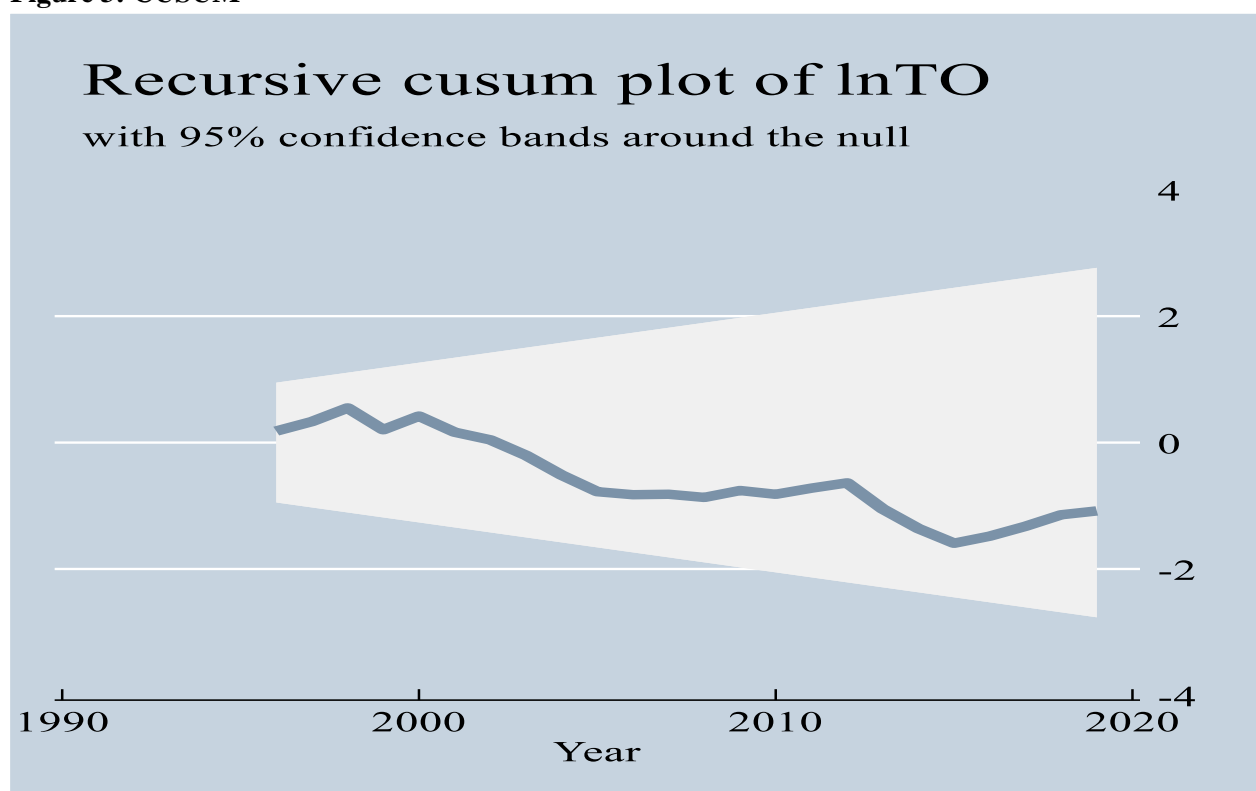


Figure 3: CUSUM



5. Conclusion and Policy Implications

The present study empirically investigated the relationship between climate change and international trade using the annual time series data of Lesotho over the 1990-2020 period. Total greenhouse gas emissions have been used as a proxy for climate change while trade openness has been utilized as a measure on international trade. The ARDL Error Correction Model has been applied to examine the short-run and long-run relationships between the climate change and international trade. The findings of this paper reveal that climate change indicated by greenhouse gas emissions has a significant and negative relationship with international trade indicated by trade openness in Lesotho.

These findings underscore the need for a nuanced approach to policy formulation and decision-making in Lesotho. While addressing climate change is essential for the country's long-term sustainability and resilience, policymakers should carefully consider the trade-offs between climate action and trade promotion. Balancing these priorities will be crucial for Lesotho to harness the economic opportunities emerging from the global response to climate change while safeguarding interests. Moreover, this research highlights the importance of adaptive strategies to mitigate the adverse effects of climate change on agriculture, such as implementing climate-resilient agricultural practices and diversifying the export base beyond agriculture.

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APPENDIX 1: Conference Programme



NATIONAL UNIVERSITY
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WORLD TRADE
ORGANIZATION



WTO
CHAIRS
PROGRAMME

National University of Lesotho World Trade Organization (NUL-WTO) Chair 2nd Annual Conference

*The Political Economy of Regional Integration and
International Trade in Africa*
5 - 6 October, 2023

ISAS Auditorium, Roma or Virtual (Zoom):
<https://us06web.zoom.us/j/89844916513?pwd=cmcvVpkaHpUVi8xMmVpdFFsWlFPQT09>
(Meeting ID: 898 4491 6513; Passcode: 842514)

PROGRAMME

Programme Director: **Dr Tsotang Tsietisi**; Co-Chair NUL-WTO Chair

Time is based on the Southern African Time Zone (Lesotho local time)

DAY 1: THURSDAY, 5th OCTOBER 2023

08:30 – 09:00	Registration (ISAS Auditorium) / Signing into the Zoom platform
09:00 – 09:10	Opening Remarks - Dr 'Matsepo Kulehile ; Ag. Dean, Faculty of Law, NUL
09:10 – 09:50	Keynote Address – Mr Tsotetsi Makong ; Eastern and Southern African Management Institute (ESAMI) – Trade Policy Training Centre in Africa (TRAPCA) WTO Co-chair
SESSION I: GENDER AND TRADE PANEL	
Chair Prof Peter Khaola, Dean, Faculty of Social Sciences, NUL	
09:50 – 10:05	Gender-Trade Issues: The Effect of AGOA on Female Participation in African Labour Markets Presenter: Rorisang Lesaoana – National University of Lesotho
10:05 – 10:10	Discussant: Chengetai Euphemia Hamadziripi
10:10 – 10:25	Trade and Gender Gap in Africa's Labour Market: Are Institutions a Friend or Foe? Presenter: Martins Iyoboyi - Federal University Dutsin-Ma, Katsina State, Nigeria
10:25 – 10:30	Discussant: Mamotebang Tsoeunyane
10:30 – 11:00	Q & A / General Discussions
11:00-11:10	Group Photo
11:10-11:40	Tea & Coffee Break



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SESSION II:
Chair

ECONOMIC PANEL

Dr Leseko Makhetha - National University of Lesotho

11:40 – 11:55

Tax and International Trade In the SADC Region: A Panel Gravity Model Approach

Presenter: Joalane Rosina Tota – National University of Lesotho

11:55 – 12:00

Discussant: Makeletso Khoeli

12:00 – 12:15

Econometric Analysis of the Drivers of Interest Rate Spread in the Financial System in Sub-Saharan Africa: Period from 2000 to 2019

Presenter: Joseph Ndagijimana - University of Rwanda

12:15 – 12:20

Discussant: Denis Nfor Yuni

12:20 – 12:35

Tax Revenue Stability and Economic Growth in the SADC Region

Presenter: Maliketla Lenyatsa - National University of Lesotho

12:35 – 12:40

Discussant: Tsietsi Khopholi

12:40 – 12:55

The Political Economy of International Trade, Colonial Heritage and Economic Development in Africa

Presenter: Denis Nfor Yuni – National University of Lesotho

12:55 – 13:00

Discussant: Joseph Ndagijimana

13:00 – 13:30

Q & A / General Discussions

13:30 – 14:30

Lunch Break

SESSION III:
Chair

REGIONAL INTEGRATION PANEL

Dr Denis Nfor Yuni - National University of Lesotho

14:30 – 14:45

Contextualising 4IR in Intra-African Trade – Critical Reflections.

Presenter: Tanatsiwa Dambuzi - Zimbabwe Institute of African Integration

14:45 – 14:50

Discussant: Dr Emeka C. Iloh

14:50 – 15:05

The Extension of 'Safeguard Measures' in South Africa within and outside the Framework of the AfCFTA Protocol on Trade in Goods

Presenter: Clive Vinti – University of the Free State

15:05 – 15:10

Discussant: Dr Ukwueze, Ezebuilo R.

15:10 – 15:25

ECOWAS – WAEMU Dichotomy: Challenges for Regional Integration and Intra-Regional Trade in West Africa

Presenter: Dr Emeka C. Iloh - Afe Babalola University Ado-Ekiti, Nigeria

15:25 – 15:30

Discussant: Tanatsiwa Dambuzi;

15:30 – 15:45

Assessing the Influence of International Rating Agencies on Investment and Development in Sahelian African States

Presenter: Tindo Narcisse Saturnin Kaze - Pan-African Institute for Development-West Africa and University of Yaounde I, Cameroon.



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15:45 – 15:50 **Discussant: Clive Vinti**
15:50 – 16:20 **Q & A / General Discussions**
16:20 - 16:40 **Tea & Coffee Break**

DAY 2: FRIDAY, 6th OCTOBER 2023

SESSION IV: DIGITAL TRADE AND BLOCK-CHAIN PANEL

Chair Tanatsiwa Dambuza - Zimbabwe Institute of African Integration

09:00 – 09:15 The Effect of Digital Technology on Trade Within the SADC Region

Presenter: Nkati Tsotleho – National University of Lesotho

09:15 – 09:20 **Discussant: Martins Iyoboyi**

09:20 – 09:35 Unlocking Transparency and Efficiency: Exploring the Potential of Blockchain Technology in Regional Trade.

Presenter: Chido Teclar Mitchel Muza - University of Pretoria

09:35 – 09:40 **Discussant: Bouraima Sawadogo**

09:40 – 09:55 Trade in Services and Sub-Sahara African countries participation in GVC: Do modern and traditional services matter?

Presenter: Bouraima Sawadogo – Pan-African University, Cameroon

09:55 – 10:00 **Discussant: Chido Teclar Mitchel Muza**

10:00 – 10:15 Incorporating gender dimensions of trade facilitation in E-commerce: A critical analysis of the Southern African Development Community (SADC)

Presenter: Chengetai Euphemia Hamadziripi - Midlands State University, Zimbabwe

10:15 – 10:20 **Discussant: Nkati Tsotleho**

10:20 – 10:50 **Q & A / General Discussions**

10:50 - 11:10 **Tea & Coffee Break**

SESSION V: SOCIO-POLITICAL PANEL

Chair Chido Teclar Mitchel - University of Pretoria

11:10 – 11:25 The effects of size and product quality on local and regional competitiveness: The implications for small agri-businesses and countries in Africa

Presenter: Prof Peter Khaola – National University of Lesotho

11:25 – 11:30 **Discussant: Stanislas Bigirimana**

11:30 – 11:45 The Post-Colonial African States and the Dilemma of the African Continental Free Trade Area (AfCFTA): A Prognostic Analysis



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	Presenter: Dr Udalla, Ernest Arinze - Madonna University Nigeria
11:45 – 11:50	Discussant: Tindo Narcisse Saturnin Kaze
11:50 – 12:05	Satisfying Needs, Building Capabilities: The Contribution of Trade to Sustainable and Inclusive Socio-Economic Development Presenter: Stanislas Bigirimana - College of Business, Peace, Leadership and Governance Africa University
12:05 – 12:10	Discussant: Prof Peter Khaola
12:10 – 12:25	The Dispute Settlement Mechanism under the African Continental Trade Area as a Preserve of Elites – a missed Opportunity for Regional Integration in Africa Presenter: Tomasz Milej - Kenyatta University, Nairobi, Kenya
12:25 – 12:30	Discussant: Udalla, Ernest Arinze
12:30 – 13:00	Q & A / General Discussions
13:00 – 14:00	Lunch Break
SESSION VI:	DEPENDABLE ECOSYSTEM AND ENVIRONMENT PANEL
Chair	Joalane Rosina Tota – National University of Lesotho
14:00 – 14:15	Building a Self-Sustaining and Dependable Ecosystem of the Pharmaceutical Industry in Africa: The Move by AfCFTA Presenter: Mamotebang Tsoeunyane – National University Lesotho
14:15 – 14:20	Discussant: Tomasz Milej
14:20 – 14:35	Trade and the Environment: Does climate change affect international trade in sub-Saharan African countries? Presenter: Dr Ukwueze, Ezebuilo R. - University of Nigeria, Nsukka
14:35 – 14:40	Discussant: Rorisang Lesaoana
14:40 – 14:55	Climate Change and International Trade Nexus in Lesotho Presenter: Makeletso Khoeli - National University of Lesotho
14:55 – 15:00	Discussant: Malikhethla Lenyatsa
15:00 – 15:30	Q & A / General Discussions
15:30 - 15:50	Tea & Coffee Break
15:50 – 16:00	Closing Remarks & Vote of Thanks Prof Motlamelle Kapa; WTO Chair, National University of Lesotho