Regional Trade and Economic Development in Sub-Sahara African Countries

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Abstract	Case Studies

This paper analyse the impact of regional trade on economic growth in Sub-Sahara African (SSA) Countries using the dynamic panel system generalized methods of moments (System GMM). The study utilized annual panel data comprising 48 SSA Countries spanning from 2003 to 2024. The system GMM model has the GDPR proxied by GDP growth rate (GDPR) as the regressand variable while trade openness (TOP) and Africa trade share (ATS) as the independent variables. Other controlled variables introduced in the model are institutional quality (INSQ), population growth rate (PGR) Logistic performance (LOGIS) Labour (LAB) and Capital. The results revealed that TOP, INSQ, PGR, African trade share, Logistic performance, and LAB were found to positively impact on GDPR rate of SSA Countries within the period of 2003-2024. But the co-efficient of capital was found to be negatively impacting on GDPR of SSA countries. Despite trade openness, INSQ, PGR, ATS, logistic performance, and LAB having positive effect on GDPR rate, only TOP and LAB showed a substantial influence on GDPR, ATS, and LOGIS were insignificant. The empirical implication is that SSA countries still have weak institutions rapid growing population with little contribution to GDPR average trade share with the other nations contributing insignificantly to economic growth, and weak logistic performance. However, over the years, the TOP and productive LAB force have substantial impact on the GDPR of SSA countries owing to the increase of trade liberalization and educational revolution in SSA countries. Finally the negative effect of capital signifies the cost of borrowing money for business and investment in SSA Countries are too high and bring about significant contribution to GDPR.

Keywords: Regional trade, Economic Growth, Sub-Sahara African Countries, Dynamic Panel System GMM.

1.0   Introduction

Regional trade has long been acknowledged as a fundamental pillar of GDPR in Sub-Saharan Africa (SSA). By fostering economic integration, regional trade enhances market access, promotes industrialization, and creates business opportunities to scale across borders. However, trade within the SSA region persistently lagged behind. According to the African Trade Report (2023), intra-African trade accounted for only 16.6% of total African exports, compared to over 60% in Europe and

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47

40% in Asia. This limited trade connectivity has been attributed to factors such as infrastructural deficiencies, regulatory fragmentation, and the dependency on the exportations of unprocessed industrial materials (Afreximbank, 2023).

The existence of the African Continental Free Trade Area (AfCFTA, 2021) represented a key advancement in tackling these challenges and realising Sub-Saharan Africa's economic potential. AfCFTA seeks to establish the largest free trade area globally, encompassing 54 African nations and over 1.3 billion individuals, with the objectives of augmenting intra-African commerce, promoting industrialisation, and attracting Foreign Direct Investment (FDI) (World Bank, 2020). The accord aims to abolish tariffs on 97% of exchanged commodities, diminish non-tariff obstacles, and standardise trade laws. The World Bank forecasts that, if fully executed, AfCFTA could augment Africa's earnings by $450 billion by 2035 and elevate 30 million individuals out of intense hardship (World Economic Forum, 2022). Notwithstanding these estimates, actualising these benefits is dependent on overcoming numerous structural and policy-related impediments.

One of the most significant barriers to regional trade in SSA is inadequate infrastructure. High transportation costs, inefficient port facilities, and poor road and rail connectivity make cross-border trade expensive and time-consuming. The African Development Bank (AfDB, 2024) predicts that SSA necessitates an annual expenditure of $130 billion to $170 billion in infrastructure to address its existing deficiencies. The lack of efficient trade corridors has particularly hindered the movement of goods within the continent, making it cheaper for some African countries to trade with external partners than with neighboring states. For example, it costs more to ship a container from Lagos to Accra than from China to Lagos, highlighting inefficiencies in regional logistics (Brookings Institution, 2024).

Regulatory inconsistencies and non-tariff impediments present significant obstacles to regional trade integration. Notwithstanding the presence of multiple Regional Economic Communities (RECs), like ECOWAS and the East African Community (EAC), overlapping laws and inconsistent policy execution persistently hinder trade facilitation. UNCTAD (2020) research reveals that non-tariff barriers, including intricate customs procedures, licensing mandates, and bureaucratic inefficiencies, elevate transaction costs and hinder trade between African nations. The AfCFTA provides a framework to streamline these regulations, but solid political obligation and institutional competence is necessary both at the national and regional level.

The export composition in SSA further limits regional commerce and economic development. The majority of African economies depend on the exportation of raw commodities, including oil, minerals, and agricultural items, while importing manufactured goods. This framework subjects the region to variations in global commodity prices and constrains value enhancement within local markets. According to the African Trade Report (2023), Africa's total merchandise exports stood at $450 billion in 2022, while imports reached $600 billion, resulting in a trade deficit of $150 billion. Countries that have successfully diversified their economies, such as South Africa and Kenya, have shown more resilience to external shocks, underscoring the importance of industrial policy in driving sustainable growth (Afreximbank, 2023).

FDI is central in promoting economic development and trade growth in SSA. In 2023, FDI inflows to Africa remained steady at $48 billion, accounting for 3.5% of global FDI (Trends Research, 2023). Notably, the energy sector has attracted significant investments, with countries like South Africa, Ghana, and Kenya emerging as key destinations for renewable energy projects (Reuters, 2025). The AfCFTA is expected to enhance FDI flows by creating a more predictable and unified market for investors. However, concerns regarding policy consistency, weak governance, and political instability continue to pose risks for investors looking to enter the African market. Mitigating these issues through enhanced governance frameworks and investor-centric policies is essential for optimising the advantages of trade and investment inflows.

Despite the challenges, there are ongoing initiatives aimed at promoting regional trade and economic growth. Countries like Benin are investing in domestic processing industries to reduce their dependence on raw commodity exports. For instance, Benin's textile industry is being developed to process cotton locally, rather than exporting raw materials, thereby creating employment opportunities and increasing value addition (Financial Times, 2023). Similarly, Kenya's Tatu City, a privately developed urban hub, is being positioned as a model for business-friendly environments that can attract trade and investment (Associated Press, 2023). These examples highlight the importance of industrialization and infrastructure development in enhancing SSA's trade competitiveness.

The economic outlook for SSA remains cautiously optimistic, with growth projections indicating a moderate recovery. According to the African Economic Outlook (2024), SSA's RGDPR slowed from 4.1% in 2022 to 3.1% in 2023 due to external economic pressures and domestic challenges (African Development Bank, 2024). However, a rebound to 4.1% is expected in 2024, driven by increased infrastructure investments, policy reforms, and improved trade conditions. Inflation, which has been a concern in recent years, is also showing signs of moderation, contributing to the stabilization of public finances and creating a more favorable environment for business and trade.

The AfCFTA presents a unique opportunity for SSA to enhance regional trade and drive long-term economic transformation. By addressing trade barriers, investing in critical infrastructure, and promoting industrialization, SSA can unlock new growth opportunities and achieve sustainable development. While challenges remain, the commitment of African governments to the full implementation of the AfCFTA will be instrumental in shaping the future of trade and GDPR in the zone.

This research aims to enhance and expand the discourse on the influence of regional commerce on GDPR, employing data from SSA countries. The rationale for studying these countries stems from the scarcity of empirical research in this region and its distinctive characteristics. These countries comprise a collection of nations reliant on the export of raw materials. Their manufacturing industries remain in an embryonic phase, characterised by a substantial informal sector. The examination of the benefits of regional trade on economies afflicted by structural rigidities in LAB markets, infrastructural deficiencies, misaligned trade policies, persistent non-tariff barriers, demographic factors that impede production, limited access to credit, and economic frameworks and motivation that favour exports generated the impetus for the study. In addition to TOP, the incorporation of African Trade Share (ATS), INSQ, LOGIS, PGR, LAB, and capital (CAP) as controlled variables distinguishes the study. This research aims to examine the influence of regional trade on GDPR in SSA countries utilising the dynamic panel system generalised methods of moments (system GMM). To accomplish this purpose, the remainder of the paper is organised as follows: Section two comprises the literature review, whilst section three addresses the methodology of data analysis. Section four addresses the estimation and analysis of outcomes, while section five presents the conclusion and recommendations.

2.0 Theoretical Framework and Literature Review

2.1 Theoretical Framework

This study examines the influence of regional trade on GDPR in SSA via the lens of two principal economic theories: Endogenous Growth Theory (EGT) and New Trade Theory. These frameworks offer complementary insights into how trade, infrastructure, INSQ, and FDI interact to influence regional economic dynamics.

EGT, articulated by Romer (1986) and Lucas (1988), asserts that GDPR is predominantly propelled by internal variables rather than external influences. This theory contrasts with classical growth theories by positing that knowledge, innovation, and human capital are essential drivers of progress, rather than treating technological advancement as an external factor. Investment in research and development (R&D), education, and infrastructure is regarded as

essential for maintaining long-term economic growth.

In the notion of SSA, EGT explains how improvements in trade infrastructure, governance, and export diversification can stimulate productivity and economic performance. Regional trade acts as a mechanism for knowledge spillovers, innovation diffusion, and the creation of dynamic economies of scale. Regional Trade Agreements (RTAs) promote the inter-border movement of commodities, services, and LAB, allowing for the reallocation of resources to more efficient applications (Barro & Sala-i-Martin, 2004).

Moreover, the theory underscores the essence of FDI as a conduit for technology transfer and capacity building. In SSA, FDI into sectors such as energy, manufacturing, and ICT has increased capital formation and stimulated employment and innovation. However, the realization of these benefits is contingent on complementary investments in INSQ and infrastructure, as emphasized in the empirical literature reviewed.

This paper posits that regional integration projects, such as the AfCFTA, serve as catalysts for endogenous growth by facilitating market expansion, fostering innovation, and permitting investment in productive areas.

New Trade Theory (NTT), initiated by Krugman (1979, 1980), contests conventional comparative advantage models by incorporating economies of scale and network effects into trade research. The idea posits that trade may emerge even across analogous countries and industries as a result of increased returns to scale and product differentiation. It offers a robust theoretical justification for regional integration and the advancement of trade within the industry.

For SSA, NTT supports the argument that RTAs such as AfCFTA can lead to efficiency gains through specialization, expanded market access, and the exploitation of scale economies. As SSA countries trade more among themselves, they can reduce production costs, enhance competitiveness, and develop regional value chains that support industrial growth and job creation.

This framework also highlights the significance of infrastructure and policy harmonization.

Without adequate transport networks, customs efficiency, and regulatory alignment, the benefits of scale economies and trade-induced growth may not materialize. The theory aligns with empirical findings that emphasize the positive role of trade infrastructure and regulatory quality in facilitating intra-African trade and investment.

Furthermore, by promoting product diversity and fostering competition, NTT suggests that regional trade can enhance consumer welfare and stimulate innovation, which are essential for sustainable development in SSA.

2.2 Empirical Literature

The correlation between regional commerce and GDPR in Sub-Saharan Africa (SSA) has been thoroughly examined, resulting in varied conclusions. Jiahao et al. (2022) investigated the direct and interaction effects of trade facilitation and INSQ on sustainable GDPR in 41 SSA nations from 2005-2019. Employing a two-step dynamic-system GMM estimator, they discovered that efficient trade practices and resilient institutions favorably affect sustainable economic growth. They recommended that policymakers streamline trade processes and strengthen institutional frameworks to harness growth potential. However, the study's reliance on data up to 2019 may not account for recent global economic changes.

Kagochi and Durmaz (2018) assessed the impact of RTAs on trade within region among 46 SSA nations between 1995 and 2011. Employing a gravity model, they discovered that three out of four RTAs significantly enhanced trade among member countries, with factors like common language and shared borders also playing a role. They advocated for continued support of RTAs to overcome size constraints and achieve economies of scale. Nonetheless, the study's timeframe may not encapsulate the effects of current RTAs or policy shifts.

Akpan and Atan (2016) investigated the interplay among TOP, INSQ, and GDPR in 23 SSA nations from 1996 to 2011. Utilizing Pooled OLS and dynamic GMM system estimation techniques, found that TOP alone negatively impacted growth. However, when coupled with strong institutions, the effect turned positive,

suggesting that INSQ conditions the benefits of trade liberalization. They recommended that SSA governments prioritize institutional strengthening before pursuing aggressive trade liberalization. The study's data limitations may affect the applicability of its conclusions to the current economic context.

Okoro et al. (2020) explored the impact of regional and non-regional trade on GDPR within the ECOWAS from 2007 to 2017. Applying dynamic system GMM estimation reveals that regional trade positively influenced GDP, while non-regional trade had a negative, non-significant effect. They suggested that emphasizing RTAs could be more beneficial for growth than global trade engagements. However, focusing solely on ECOWAS limits the generalizability of their findings to other SSA regions.

Ikpesu et al. (2019) examined the growth effects of trade and venture in 35 SSA countries using the Panel Corrected Standard Error (PCSE) technique. They found that TOP, local investment, and imports positively affected growth, whereas exports had a negative impact. They recommended policies aimed at enhancing the quality and value of exports to ensure positive growth contributions. The negative impact of exports suggests underlying issues like commodity dependence, warranting deeper exploration.

Ngouhouo et al. (2021) analysed the dynamics influencing TOP in 36 SSA nations from 1996 to 2017 via the GMM. Robust domestic institutions were found to positively affect trade openness, with government performance and the rule of law identified as major contributors. They advised enhancing INSQ to promote TOP in SSA. The research could further investigate the direct effects of particular institutional improvements on trade policies.

Yeboah et al. (2012) explored the influence of TOP on GDPR in 38 African nations by panel data analysis. Research indicated that TOP positively affects economic growth, especially when supported by robust macroeconomic policies and institutional structures. They recommended that African countries pursue trade liberalization policies while strengthening institutional capacities to maximize growth benefits. However, the study's findings may be influenced by the heterogeneity of the countries analyzed.

Zahonogo (2017) scrutinized the influence of TOP on GDPR in emerging nations, with an emphasis on Sub-Saharan Africa. The study employed a dynamic growth model utilising data from 42 Sub-Saharan African nations spanning 1980 to 2012, revealing a trade threshold beneath which increased TOP positively influences economic growth, while over this threshold results in a diminishing trade effect on growth. This suggests a non-linear link between TOP and GDPR in SSA countries. The findings recommends that SSA nations implement more effective trade policies and control import levels to boost GDPR through international trade. However, the study may not account for recent global trade dynamics post-2012.

Matthew and Adegboye (2014) examined the influence of TOP and institutional frameworks on GDPR in SSA. Utilising econometric analyses, including Panel Unit Root, LSDV, and GMM techniques for the period 1985-2012 across thirty selected SSA nations, they discovered that establishments exerted a significant positive influence on GDP, whereas TOP demonstrated limited significance. They advised that SSA nations allocate resources effectively to economically significant initiatives in order to enhance their institutions and establish favorable economic and political conditions to promote international trade. The study's data constraints may influence the relevance of its conclusions to the present economic landscape.

Babu et al. (2022) analysed the influence of transportation infrastructure and INSQ on trade between the EAC and three more regional syndicates in SSA, utilising panel data from 2000 to 2018. Utilising a gravity model for trade and the Poisson-Pseudo Maximum Likelihood estimator, they discovered that transit road and rail network enhances inter-regional commerce, while advancements in regulatory quality and corruption control favorably influence exports. They proposed further investment in transport infrastructure and enhancement of INSQ to facilitate trade. The study concentrates on

particular regional blocs, perhaps restricting the generalisability of the results.

The influence of RTAs on GDPR in SSA has been thoroughly explored through numerous empirical investigations. Kagochi and Durmaz (2018) employed a gravity model to examine the impact of RTAs on trade within region among 46 SSA nations from 1995 to 2011.Their findings indicated that three out of four selected RTAs significantly enhanced trade among member countries. They recommended supporting RTAs to overcome size constraints and achieve economies of scale. However, the study's timeframe may not reflect recent developments in trade agreements.

Okoro et al. (2020) examined the influence of zonal and non-zonal trade on GDPR in the ECOWAS from 2007 to 2017. Through dynamic system GMM estimate, they determined that regional trade favorably impacted GDP, whereas non-regional trade exerted a negative, non-significant influence. They suggested that emphasizing RTAs could be more beneficial for growth than global trade engagements. However, focusing solely on ECOWAS limits the generalizability of their findings to other SSA regions.

Turkson et al. (2023) evaluated the ex-post trade impact of STAs, financial incorporation, and non-tariff obstacles on trade within zones among 43 SSA nations. Utilising a gravity model enhanced by indicators of trade agreements and financial incorporation from 1960 to 2015, the study revealed that RTAs within SSA, particularly among ECOWAS and Southern African Development Community organs, exerted a positive and considerable influence on bilateral commerce. They advised concentrating on policies that enhance and unify regional markets by eliminating trade barriers and augmenting trade facilitation measures. The study's data timeframe may not encompass the impacts of more recent RTAs.

Ejonesa et al. (2021) explored the influence of RTAs on trade within the EAC with an augmented gravity model that addresses naught trade, endogeneity, and heterogeneity. Analysis of data from 1990 to 2017 revealed that RTAs augmented trade inside the EAC bloc, with diverse effects across nations and industries. They proposed that the promotion of RTAs may enhance trade inside the EAC. Nonetheless, the study's emphasis on the EAC may restrict the generalisability of its findings to other regions of SSA.

Yang and Gupta (2005) assessed the efficacy of Regional commerce Agreements in Africa regarding their ability to enhance commerce and foreign direct investment. Research indicated that RTAs were predominantly inefficient owing to substantial external trade barriers and minimal resource complementarily among member nations. They advocated for extensive liberalisation and enhancements in infrastructure and trade facilitation to augment regional trade and investment. The study's conclusions may be obsolete, given the dynamic nature of RTAs in Africa.

3.0 Methodology

3.1 Method of Data Analysis

In analysing the impact of regional commerce on the GDPR of SSA nations, the research will employ annual panel data encompassing 48 SSA nations from 2003 to 2024. The variables of interest include economic growth, represented by the GDP growth rate (GDPR), TOP, INSQ, PGR, African trade share (ATS), LOGIS, LAB, and capital (K) of SSA nations, obtained from the World Bank (WB, 2024).

This study embraced the dynamic panel system GMM estimation method in achieving the specific objective of the study. The system GMM estimator is deemed appropriate for this study as it addresses the issues of endogeneity associated with the lagged regressand variable in the dynamic panel data model, along with omitted variable bias, unnoticed panel heterogeneity, particularly when the sample cross-section exceeds the time series (Arellano and Bond, 1991; Arellano and Bover, 1995; Blundell and Bond, 1998). These issues are typically linked to pooled ordinary least squares and causal estimation methodologies. Furthermore, the studies by Blundell and Bond (2000) and Windmeijer (2005) demonstrate that the system GMM estimator improves accuracy and mitigates fixed model bias in the first-difference

GMM estimator. To confirm the appropriateness of the system GMM estimator for this investigation, the Bond (2002) test will be administered for all equations.

3.2   Model Specification

To estimate the influence of zonal trade on GDPR in SSA countries, the study employed Arellano and Bond (1991) system GMM, a linearly abridged form of dynamic panel data model specified thus:

$$Y_{it} = \alpha_0 + \varphi Y_{it-1} + \lambda X_{it} + \beta V_{it} + \alpha_i + \varepsilon_{it} \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots.(1)$$

Where Y_it represents the regressand variable for cross-sectional unit i in period t (economic growth), X_it denotes a vector of proxies for regressor variables (regional trade) noticed for country i in period t, V_it signifies intervening variables, α_i indicates the i-th unobservable time-invariant country-specific effects that are independent and equally dispersed in country i, ε_it is the idiosyncratic disturbance term particular to nation i, implicit to be autonomous and equally spread across all time periods in nation i, and $Y\_(it-1)$ refers to the natural logarithm of the lagged regressand variable (GDPR).

Given the implicit function, the GMM can be specified thus:

$$GDPR_{it} = \alpha_0 + \alpha_1 GDPR_{it-1} + \alpha_2 TOP_{it} + \alpha_3 INSQ_{it} + \alpha_4 PGR_{it} + \alpha_5 ATS_{it} + \alpha_6 LOGIS_{it} + \alpha_7 LAB_{it} + \alpha_8 K_{it} + \varepsilon_{it} \quad \ldots (2)$$

Where $GDPR$ = Gross domestic growth rate, $GDPR_{it-1}$ = Lagged value of GDPR that captures the effect of persistence of growth, TOP, INSQ, PGR African trade share (ATS), LOGIS, LAB and capital (K) and ε= idiosyncratic disturbance term.

4. 0   Results and Findings

4.1   Presentation of Result

Table 1: Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
gdpr	1,056	3.876127	5.397507	-46.08	38
top	1,052	31.36342	22.96245	-25.76	165.66
insq	1,050	.0302857	.8540321	-2.33	4
pgr	1,055	2.547735	1.183092	-4.91	6.18
k	1,055	16.79676	14.37468	-74.51	124.05
lab	1,053	65.01088	13.39554	23.07	89.45
logis	1,056	3.731581	.7366301	1.43	4.93
ats	1,056	52.90086	27.05492	12.3	175.38

Source: Author's computation

Table 1 displays the descriptive statistics for the variables $GDPR$, TOP, INSQ, PGR African trade share (ATS), LOGIS, LAB and capital (K) with mean values of 3.88, 31.36, 0.030, 2.555, 16.79, 65.01, 3.73, and 52.9. The result shows that average GDPR in SSA countries over the period of 2003 and 2024 have 3.87%, the rate of TOP is 31.36%. This means that the growth in SSA has been very slow and low at the same time and the TOP of 31.36% of GDP is moderate. This is due to poor economic structure and trade policies. The mean of institution quality of 0.030 showed that the SSA countries have weak institutions resulting to high corruption, weak rule of law, lack of transparency and accountability. The average mean of capital cost was put at 16.79%, indication the cost of capital is moderate in SSA countries. Also, with the average PGR of 2.55%, it has not resulted to productive high LAB force, given that the average LAB between 15-64 years is 65% are not very active. Furthermore, the LOGIS of SSA countries is slight above average, implying that SSA countries have improved efficiency in custom clearance, moderate quality infrastructure, fair capacity to follow and trace delivery s and average timeliness of batches. Finally, the average value of ATS was found to be 52.9, this means that the trade of SSA nations with the other nations is above average indicating that potential of the opportunity for GDPR and development.

Table 2: Correlation Matrix

```
-------------+-------------------------------------------------------------------
             |    gdpr      top     insqpgr       k       lab     logisats
-------------+-------------------------------------------------------------------
gdpr |    1.0000
top  |    0.0217    1.0000
insq |    0.1203    0.0327    1.0000
pgr  |    0.1753   -0.2123   -0.1594    1.0000
k    |    0.0658    0.0638    0.1328    0.1408    1.0000
lab  |    0.0320   -0.1593    0.0274    0.2994   -0.0104    1.0000
logis|   -0.0712    0.0142    0.0589   -0.0235   -0.2009   -0.1806    1.0000
ats  |    0.0044    0.4346    0.0316   -0.3079   -0.0047   -0.1809   -0.0587      1.0000
-------------+-------------------------------------------------------------------
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Source: Author's computation

Table 2 reveals result of the matrix correlation for Gross domestic growth rate ($GDPR$), TOP, INSQ, PGR African trade share (ATS), LOGIS, LAB and capital (K). The result revealed that the independent variables positively correlate with GDPR except for LOGIS, which has a negative correlation to GDPR. TOP, INSQ, PGR, ATS, LAB and K correlate to GDPR by 2.17%, 12.0%, 17.5%, 6.6%, 3.2% and 0.44% respectively. However, LOGIS correlated GDPR by -7.12%. The correlation result for the dependent and independent variables signifies weak relationship, despite having most of the relationship exhibiting positive relationship.

Table 3: Choice of System-GMM and Difference-GMM

Variable	Pooled	Fixed Effect	Diff-GMM
$gdpr_{i,t-1}$	.3133156**	.176334	.1019309
$top_{i,t}$	.0040978	.0309084	.1208174
$insq_{i,t}$	.674665**	.1282864	.1595762
$pgr_{i,t}$	.5000772**	.4704923	.2412794
$k_{i,t}$	-.0002804	.0134506	.0110837
$Lab_{i,t}$	-.0024781	.1362297	.6374802
$logis_{i,t}$	-.3824529	-1.674381	-1.25817
$ats_{i,t}$	-.0011856	.026777	-.002214
Constant	2.928962**	-3.176371	-37.68102
N	994	994	945
R^2	0.1575	0.0435	-
F-stat	23.01**	9.96**	105.17**

Source: Author's computation; Dependent Variable: $gdpr_i$,

Note: * ** *** show significance at 1%, 5% and 10% respectively

Table 3 displays a summary of results for the pooled regression, fixed effects, and Difference-GMM methodologies. Bond (2001) asserts that selecting between System-GMM and Difference-GMM necessitates estimating the models with the lagged dependent variable to derive coefficients through Pooled regression, Fixed effects, and Diff-GMM methodologies. If the estimated coefficient of the dependent variable from Diff-GMM approximates that of the Pooled regression method, then Diff-GMM is a superior estimator compared to sys-GMM. If the coefficient of fixed estimate for the lagged dependent variable approximates that of the pooled approach, then SYS-GMM is the superior estimator. The coefficient of Fixed effects, 0.176334, is more similar to the coefficient of Pooled regression, 0.3133156, than to the coefficient of Diff-GMM, 0.1019309, as indicated in Table 3. Consequently, the Sys-GMM was determined to be a superior estimator compared to the difference-GMM.

Table 4: Result of System-GMM and Diff-GMM

Variable	Sys-GMM	P-value	Diff-GMM	P-value
$gdpr_{i,t-1}$	.1175401	0.000**	.1019309	0.003**
$top_{i,t}$	.0906595	0.000**	.1208174	0.000**
$insq_{i,t}$	.1255008	0.632	.1595762	0.560
$pgr_{i,t}$	.2821503	0.284	.2412794	0.440
$k_{i,t}$	-.0015831	0.959	.0110837	0.736
$Lab_{i,t}$	.3153744	0.000**	.6374802	0.000**
$logis_{i,t}$	.2923442	0.671	-1.25817	0.171
$ats_{i,t}$	.0188356	0.269	-.002214	0.906
Constant	-22.64565	0.000**	-37.68102	0.000**
N	994		945	
F-stat	91.18	0.0000**	91.18	0.0000**

AR-1	-3.0491	0.0023**	-3.178	0.0015**
AR-2	-1.8519	0.0640	-1.9937	0.0462**
Sargan Test	42.90357	1.0000	45.7591	1.0000

Source: Author's computation; Dependent Variable: *gdpr*ᵢ,

Note: * ** *** show significance at 1%, 5% and 10% respectively

Table 4, shows the estimated coefficients for Arellano and Bond (diff-GMM) and Arellano and Bover/ Blundell and Bond (Sys-GMM). The value of the AR (1) for both DIFF-GMM and SYS-GMM indicated that there is presence of serial correlation between the lagged dependent variable. However, the AR(2) diff-GMM and Sys-GMM was found exist for Diff-GMM but absent for Sys-GMM. Thus, signifying the validity of Sys-GMM over Diff-GMM. The Sargan Test confirmed the adequacy of the sys-GMM. It showed that the null hypothesis which is over-identifying constraints justifiable is upheld. Based on the prob-value of the F-statistics which revealed values below the significance level is an indication that the model is a good fit with variables showing a linear dependency?

The lagged effect of GDPR$_{it-1}$ on the current GDPR is positive and significant at 5% level, for both DIFF-GMM and SYS-GMM. This means that the present value of GDPR dependent on the effect of the past value, indicating that what happens in the current year was predicted by what happened the previous years.

The coefficients of TOP, INSQ, PGR African trade share (ATS), LOGIS, and LAB were found to positively impact on GDPR of SSA countries within the period of 2003 and 2024. But the coefficient of capital (K) was found to be negatively impacting on GDPR of SSA countries. Despite TOP, INSQ, PGR African trade share (ATS), LOGIS, and LAB having positive effect on GDPR, only TOP and LAB showed a significant effect on GDPR while INSQ, PGR African trade share (ATS), and LOGIS were insignificant. The result indicated that SSA countries still have weak institutions, rapid growing population with little contribution to economic growth, average trade shares with the other nations contributing insignificantly to

GDPR and weak logistic performance. However, over the years, the TOP and productive LAB force have contributed significant to the GDPR of SSA countries owing to the increased trade liberalization and educational revolution in SSA countries. Finally, the negative effect of capital signifies the cost of borrowing money for business and investment in SSA countries are too high to bring about significant contribution to economic growth.

4.2   Discussion of Findings

From the result, TOP was found to be positive and significant. This was found to be not in conformity with results of Akpan and Atan (2016), disclosed that TOP alone negatively impacted growth. This can be attributed to the gap of the study between 2016 and 2024. Thus, indicating change in trade policy of SSA countries. Again, the INSQ revealed an insignificant positive effect. This finding supported the submission of Jiahao et al. (2022) discovered that institutions positively influence sustainable economic growth. The PGR indicated a positive but insignificant effect. The result revealed that SSA countries have not been able to harness and make use of its growth population i.e. making as an opportunity for domestic market to thrive, thus bringing about economic growth.

The result of ATS was found to be positive but insignificant. The outcome of the result corroborated with the results of Okoro et al. (2020) which showed that regional trade positively influenced economic growth. For LOGIS the outcome revealed a positive impact on GDPR in SSA countries which is in conformity with the outcomes of Babu et al. (2022) which revealed that transport road and rail network aids inter-regional trade, and enhancements in dogmatic value and control of

corruption positively affect exports. In the case of LAB, there was a significant effect of LAB on GDPR in SSA countries. This is an indication that the LAB force in SSA countries despite being significant and contributing positively to economic growth, only 31.5% are active but a chunk of LAB force in SSA countries are unproductive due to unemployment. The effect of capital was found to be negative and insignificant. This result is not consistent with the study of Ikpesu et al. (2019) who found that domestic investment positively affected growth. This is attributed to high cost of capital affect investment and thus GDPR.

5.0 Conclusion and Recommendations

This study centered majorly on examining the influence of regional trade on GDPR in SSA countries. The debate that regional trade has long been acknowledged as a fundamental pillar of GDPR in SSA, this study has been laid to rest considering the results and findings. The result showed that TOP, INSQ, PGR, ATS, LOGIS, and LAB were positively impacted the GDPR of SSA nations within the period of 2003 and 2024. But the coefficient of K was found to be negatively impacting on GDPR of SSA countries.

The result indicated that SSA nations still have weak institutions, rapid growing population with little contribution to economic growth, average trade shares of the other nations were insignificantly influencing the GDPR and weak logistic performance. However, over the years, the TOP and productive LAB force have contributed significant to the GDPR of SSA countries owing to the increased trade liberalization and educational revolution in SSA countries. Finally, the negative effect of capital signifies the cost of borrowing money for business and investment in SSA countries is excessively high to yield a substantial influence on GDPR.

The theory of endogenous growth was proven to be relevant and must adopt as it supports GDPR through internal factors rather than external influences, which SSA countries need. The Endogenous Growth Theory explained that improvements in trade infrastructure, governance, and export diversification can stimulate productivity and economic performance. Regional trade acts as an instrument for knowledge spillovers, innovation diffusion, and the formation of dynamic economies of scale. Also, the NTT theory is relevant in this study as it encourages trade among similar countries and sectors due to its beneficial outcomes.

By this assertion, the result supported the report that SSA has consistently lagged behind compare with the rest of the regions in terms of trading within region. This limited trade connectivity has been attributed to factors such as infrastructural deficiencies, regulatory fragmentation, and a reliance on primary commodity exports. It is therefore, recommended that every policy implementation to achieving stable and thriving region like African AfCFTA was be encouraged.

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