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The role of institutional quality on external debt and sectoral growth nexus: Evidence from emerging economies

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Abstract
Economic growth and external debt stock have been on a steady increase. But in some countries, output growth does not reflect similar growth patterns with external debt stock, which contradicts theoretical literature. Hence, this research investigates the role of institutional quality on external debt and sectoral growth relationship across 17 countries between 2005 and 2018. The Fully Modified Ordinary Least Squares (FMOLS) technique was used to estimate the longrun relationship after ascertaining the stationarity and cointegration condition of the data series. The findings reported that external debt on average exerts a significant positive effect on the agricultural and industrial sectors, while exerting a negative impact on the service sector. The findings further revealed that institutional quality (government effectiveness, voice of accountability, control of corruption, regulatory quality, rule of law and political stability) has detrimental effects on the agricultural sector. In the service sector, some of the institutional quality variables show positive impacts on the sectoral growth, however, most of them (government effectiveness, voice of accountability, control of corruption and political stability) had detrimental impact on the growth of the sector. In the industrial sector, institutional quality have a more detrimental effect on sectoral output, suggesting that poor institutional quality, as measured by these variables, constrains economic activities and hampers the growth of these sectors. The study recommended institutional reforms that will ensure both effective and transparent use of resources and improved accountability in these sectors.

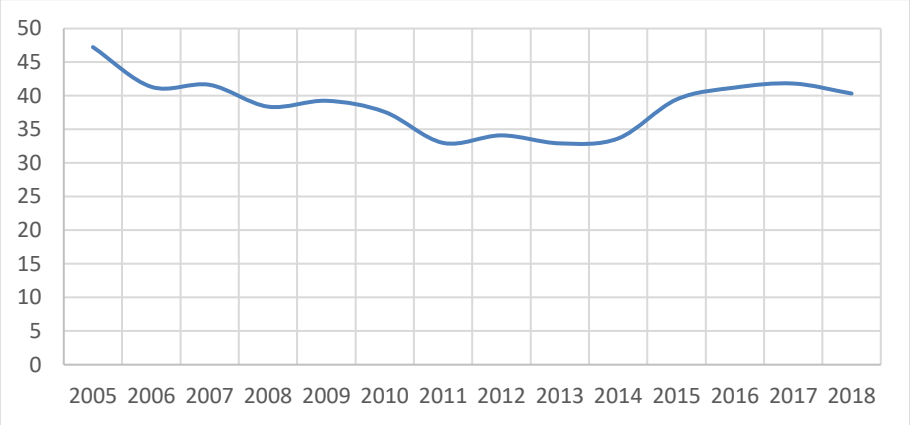
Keywords: Agricultural sector, External debt, FMOLS, Industrial sector, Institutional quality, Sectoral growth, Service sector

1. Introduction
The increasing level of external debt among emerging countries in recent times has shown signs of future debt unsustainability and raised concerns among development economic researchers (Sandow, Oteng-Abagie, & Duodu, 2022). Extant literatures in recent years have widely researched on the role of external debt in influencing economic fortunes of host nations. The reason is that, rather than stimulating the receiving economy, external debt sometimes abates economic growth. This shortfall is often as a result of weak institutions (Ogbonna, Ogbuabor, Eze & Ugwuoke, 2021). According to Richards, Pellegrina, VanWey and Spera (2015); Enu, Addey and Okonkwo (2015) and Gue, Promentilla, Tan, and Ubando (2020) respectively, agriculture, service and industrial sectors have recently become key drivers of economic growth of several economies. For this reason, the sectors must be financed, so as to maximize their output and positively influence economic growth.

Often times, these economies look inwards to fund these sectors. However, more often than not, their savings (revenue) are inadequate to make any significant impact on sectoral output. Hence, they resort to external debt as a way of supplementing local revenue (Manasseh et al., 2022). The dual gap theory explains this shortfall. The theory acknowledges how savings improves the economy in the long run when the right investments are made. However, a country's savings may not be sufficient enough to finance all investments. For this reason, countries get to incur debts to

close the savings-investment gap. The debt could be secured internally through the central bank or from an external source, say other countries or international body like the World Bank. Either way, these debts do not come for free, there is often a cost to be paid after paying the principal. This extra payment is known as interest rate (Rudiger & Stanley, 1994). In a bid to drive economic growth, most emerging countries have incurred trillions of dollars in debt from external sources. As a result, they have plunged into a revolving debt cycle. It is more worrisome when these debts become a common practice but not invested in the appropriate sectors (Kur, Abugwu, Abbah & Anyanwu, 2021). This is often the case of countries with mostly weak institutions (as defined by high level of corruption, bureaucratic bottlenecks, poor accountability, and others).

Figure 1: Trend of Average external debt % GNI from 2005 to 2018



Source: World Bank International Debt Statistics data stream (2021).

As seen in Figure 1 above, external debt (percentage of gross national income – GNI) has averaged 38.71 per cent among the 17 nations between 2005 and 2018. Although external debt declined, the average rate is still high at 38.71 per cent. Inasmuch as external debt has been high, its impact on these key sectors have been questionable given that it has not yielded an all-round positive impact (Mensah, Bokpin & Boachie-Yiadom, 2018). The diversity in the institutional setting is known to be very much connected to the variations in the performance of the economy across nations; this is to say that economies with weak institutions perform pitiably while the countries that perform better tend to have better and reputable institutions (Iqbal & Daly, 2014), of which weak institutions is the major characteristics of emerging market economies. Critically, an emerging market economy is transitioning from a low income, less developed, often pre-industrial economy towards a modern, industrial economy with higher standard of living. The IMF World Economic Outlook (2021) classifies these economies based on growing per capita income, increasing debt and equity markets liquidity, and an established financial system infrastructure.

The success story of many nations has been attributed to strong institutional quality. For instance, Asian countries behave a significant improvement in their economies due to their strong institutional quality (Abubakar, 2020). This is because institutions play a pivotal role by providing an enabling environment for increased investment and output. Therefore, external debt could have an impact on sectoral performance through institutional quality. But there are only limited literature on this subject (that is, external debt, institutional quality and sectoral performance linkage), especially in recent years, to capture the role of institutional quality. This study seeks to fill that gap as it investigates the role of institutional quality in predicting the effects of external debt on the performance of key sectors in 17 emerging economies between 2005 and 2018, by employing the Fully Modified Ordinary Least Squares (FMOLS) technique across the panels.

2. Concept of the sectors

The service sector is a key sector in the developmental process of every economy. Before an economy is referred to be service-based, it must have a considerably large services share to the overall performance of the economy (Iqbal, Salam & Nosheen, 2018). The service sector can directly influence an economy through contribution to trade and output; and also indirectly via productivity growth and by linking the other parts of the economy (Baumol, 2001; Diao, McMillan, & Rodrik, 2017). Nwosa and Tijani, (2020) describes the service sector as a driving factor for the socio-economic growth of any economy. The sector is regarded as having one of the highest rates of labour employment. The telecommunication, education, financial and transportation subsectors of the service sector have played significant roles in enhancing the sector's contribution to the growth of the entire economy. In addition, social and health services, hospitality, accommodation, public administration and food service are all under the service sector, and they tremendously contribute towards improving the over-all well-being of a country's labour force (Nwosa & Tijani, 2020). Cali et al. (2008) opined that the presence of an effective service sector drives investment growth, which was corroborated by Nwosa and Tijani (2020), asserting that the sector has become the fastest growing in many countries as it has also become the leading contributor to real GDP.

The industrial sector, on the other hand, is also a key sector (alongside agricultural and service sector) of a country's economy. In every economy, the industrial sector mostly transforms raw materials into finished or semi-finished products through the construction and manufacturing industries, and sell to end user or distribute for further processing. Economists

are of the opinion that the manufacturing industry contributes more to an economy as compared to the service sector (EconomyWatch, 2021). Furthermore, countries that export manufactured products usually record a massive marginal GDP growth that leads to economic development translating to a better quality of life for its citizens. This facilitates inclusive growth by reducing unemployment and enhancing agricultural productivity (Ologbenla, 2020). If agricultural outputs must be utilized to sustain growth in the region, the industrial sector must be robust to engage the outputs. According to Ranis (1973), the success of this depends on how business climate is improved, as well as enhanced technical know-how and exploitation of recent technologies.

Yerima and Tahir (2020) posits that agriculture comprises of all facets of production including crop production, livestock rearing, horticulture, fisheries; forestry, among others (Yerima & Tahir, 2020). According to Anríquez and Stamoulis (2007), sustainable unemployment reduction, reduction in income disparities, curtailing rural-urban drift and poverty reduction would be feasible in rural economies where agricultural growth is promoted. International Development Association (2009) reported that in order to reduce global poverty, agriculture must be harnessed. The reason is not farfetched, as the sector is the most productive and important sector in economies with low income. In such countries, the share of agriculture in employment is usually large. The reason is that, since the vast majority of the population are farmers, they generate most of their revenue in the cultivation of crops and rearing of animals. Thus, broad-based growth in agricultural incomes is critical in stimulating the growth of such an economy.

3. Literature review

There are numerous literatures that discuss external debt, institutional quality and sectoral growth. However, not all of them are relevant and suitable to discuss in this study. For this reason, this section discusses the relevant theoretical and empirical literatures applicable in this novel research.

3.1. Theoretical literature review

To the extent that countries would normally face financing deficits in implementing their development projects, the normal expectation is that the linkage between countries' debt profile and economic performance would remain not only topical but also an imperative policy issue. Since the Keynesian framework of deficit policy helped Western European economies navigate the great depression, public debts have been recognised as a veritable instrument for raising aggregate demand, employment, and output of both developed and developing economies. As a result, Ujuju and Oboro (2017) opined that public debt has become prominent, especially among developing economies, and is seen as a workable strategy for mobilising additional resources for projects that can drive development. And the approach seems justified by the reality that available savings at any point in time do not always match the desired levels of investment (Sørensen & Whitta-Jacobsen, 2010)

However, the general position of economic theories is that public debt, whether external or domestic, must necessarily be used for income-generating projects and for as long as the incomes generated are at least enough to cover the cost of the debt. So much so, accumulation of (external) debt will add to economic output only to some limit beyond which it becomes problematic for any country. For instance, Todaro and Smith (2009) comprehensively stated that in less developed economies where external debts are poorly utilized, the debt burden becomes catastrophic and distractive with several substantial destructive socio-economic implications. There are existing theories that attempt to rationalise the idea of (external) debt and explain why countries usually have to borrow, as well as its impact on the performance of their economy or the constituting sectors. In this section, these theories are duly consulted to satisfy the objective of this study. As discussed in Monogbe (2016), these theories include the Lerner's View, Dual Gap Analysis, Debt Overhang theory, and Liquidity Constraint Hypothesis.

Lerner's view

Lerner's view derives from the Functional Finance hypothesis by Abba Lerner, who was recorded to have had intellectual/scholarly confrontations with Keynes between the late 1930s and the early 1940s (Aspromourgos, 2014). According to him, the reason for incurring debts despite an interest rate is to make desirable investments with the predisposition to balance a budget deficit in the long run (Syll, 2017). As part of his views on how national or foreign public debts may impact future generations, Lerner argued that if borrowed funds from abroad are effectively channelled to finance current consumption, intergenerational effects may likely occur. In other words, if government debt is used to pay salaries, for instance, or for other activities that do not yield profitable returns, then future generations would bear the burden. But if the debt is used to finance capital investments such that it would generate returns greater than the debt itself, then no debt burden would be shifted to the future generation. For national debts, however, Lerner was of the opinion that the occurrence of intergenerational effects should not be a concern, since the country owes these debts to its own citizens. Thus, when the debt is to be paid in the future, it would still be paid to the country's own children, and not to any external creditor (Lerner, 1948).

The dual gap analysis

The proposition of this theory, as advanced by Chenery and Strout (1966), is that investment is an essential factor in achieving economic development. Such investments are not achievable without abundant domestic savings. But these domestic savings are not usually sufficient, thus creating a domestic savings – investment gap. These economists argue that in such situation, there is the need (and reasonably so) for a developing country to seek funds from external sources in order to lead growth-inducing investments. Thus, economic development becomes a function of domestic savings,

investments, and external debts, according to this theory. And the prescribed level of economic growth is achievable for developing countries only if they can successfully close the domestic savings – investment gap with foreign resources.

Debt overhang theory

The overhang debt theory posits that the failure of a state to duly service its external debts has a ripple effect on the current generation and next generation. Literature about this theory was prepared by Krugman (1988) and Sachs (1989), where they analysed the consequences of a country's failure to fully service external debts without new debts. Krugman (1988) believes that a nation's debt overhang problem arises when the expected present value of potential future resource transfer is less than its debts. Accumulation of debts means that the country may experience a low level of financial inflow, which will lead to low investment, high level of unemployment, low output level, and downward economic growth. All of these, in fact, would debar the country's opportunity to further access external debt. What is more disturbing is that the inability of the current generation to service/repay these debts would be transferred to the next generations as a debt burden.

Liquidity constraint hypothesis

The position that external debt service payments potentially affects economic growth and development by creating a liquidity constraint is known as crowding out effect. As articulated by Clements et al. (2003), Cohen (1993), Pattillo et al. (2002), Claessens et al. (1996), Arnone et al. (2005) and Soydan and Bedir (2015), crowding out effect brings about reduced private spendings as a result of increased government borrowings. Soydan and Bedir (2015) reported with the ceteris paribus assumption that, high public debt service can increase deficit budget, thereby reducing savings. The implication is that private investors would be crowded out when their taxes increase and/or when lending interest rates grows, hence decreasing the accessibility of financial resources for private investors.

The other dimension of this theory is that high pressure placed by the foreign (lender) country on the developing (debtor) countries makes it difficult for the less developed countries to borrow externally, especially given that they may find it difficult to service or repay such debts. So, they fall back within to borrow domestically. But this has the risk of crowding out private investments. As pointed out by Muhammad, Nor, and Sallahuddin (2016), the crowding-out effect is brought about by high government demand for loanable funds from domestic lenders, which not only breeds a high level of competition between the government and the private economy but also leads to high interest rate charges. Thus, only the government and its agencies are able to secure such loanable funds, as private investors and entrepreneurs are scared away by excessive interest rates. This is where the "crowding out effect" comes to play – a condition in which private investments in the country dwindle drastically, due to insufficient/limited access to capital. Essentially, these theories are crucial for this study as they provide a base for understanding the question of why debt matters and how debt works in an economy, especially with respect to the performance of the constituent economic sectors of countries, and in this case, of selected emerging economies.

3.2. Empirical literature review

Following these theoretical positions and the instances of debt problems facing different countries (both developed and developing), researchers have carried out a myriad of studies spanning over different scopes to appreciate the impact of debt in determining economic growth and development. Yet, scholars do not seem to have reached a general consensus on the nexus between external debt profile and economic performance. Some studies found external debt and economic growth to be negatively related. That is, as external debt increases, economic growth falls. Other studies found varying relationships among the variables. These variations are determined by the perculiarities in the different economies studied, such as the nature of their sectors and time horizon (that is, the long and short-run scenarios). However, only a few studies have seen and examined the gap in literature between external debt and the performance of the economy's key sectors (service, industrial and agricultural sectors). As a matter of fact, most of the studies put forward have been restricted to only the debt and sectoral growth nexus without considering the role of institutions. For example, a study by Kur, Chukwu and Ogbonna (2021) compared the effects of external debt on sectoral performance between Botswana and Nigeria by utilising the ARDL model. The findings reported external debt to be of negative influence in the agricultural and industrial sectors of both economies. However, it had no impact on the service sector of Botswana, but it is highly detrimental to the growth of the Nigerian service sector.

Similarly, Ebhotemhen and Umoru (2019) explored external debt and agricultural production in Nigeria. The paper employed co-integration and ECM to explore the association between external debt and agricultural production. The findings disclosed that external debt had detrimental effect on the growth of agricultural output. The implication is that external debt incurred for agriculture was not optimally utilized for the same resolve. Warner (2012) examined the impact of debt crisis on agricultural output. The study used the traditional OLS method to estimate the longrun relation in 13 less developed countries between 1982 and 2010. The findings also reported an inverse relationship between debt and agricultural output. Brown et al. (2014) and Yerima and Tahir (2020) investigated Nigeria's external debt in relation with of external debt by employing the ARDL model. Their findings further confirms a negative link among the variables. Furthermore, Ukpe et al. (2017) deployed the FMOLS to investigate the impact of public external debt and private investment on Nigeria's agricultural output growth between 1980 and 2016. The results showed, inter alia, that both domestic private investment and public external debt substantially affect agricultural output negatively. Olu-Coris (2008) reported an inverse relationship between debt and service sector performance in Botswana. Suggesting that the sector have suffered more with an increased level of external debt.

Due to the vast gap in the extant literature linking external debt and sectoral performance, the study digressed a bit to review the debt-growth relationship. Studies on external debt and economic performance have shown varying results, as stated earlier. In one instance, Edo (2002) compared Nigeria and Morocco to explore the impact of external debt on their economies. The main conclusions, among other things, are that external debt negatively impacts the economies of the two nations. Mumba and Li (2020) employed the panel ARDL model to explore the debt-growth nexus in southern Africa. Their long and short-run findings reported a negative relationship among the core variables. The research suggested that the external debts incurred were not utilised for economic-growth-enhancing ventures like, building capital formation, and revamping technology. Reinhart and Rogoff (2010), Audu (2004), Shabbir (2012), Pattillo, Poirson, and Ricci (2011), Seyram, Matuka and Dominic (2019), Sen, Kasibhatla, and Stewart (2007), Getinet and Ersumo (2020), Oyinlola, Adedeji, and Oladipupo (2020), Ujuju and Oboro (2017), Adepoju, Salau, and Obayelu (2007), Irfan et al. (2020), Sothan (2018), Ayadi and Ayadi (2008), Fagbemi and Adeosun (2021), Kharus and Ada (2018).

Conversely, other studies have reported a positive relationship between external debt and economic growth, suggesting that as external debt increases, economic activities increase, thus, boosting economic growth. Korkmaz (2015), Sulaiman and Azeez (2012), Ezema, Nwekwo and Agbaji (2018), Safdari and Mehrizi (2011), Zaman and Arslan (2014) and Pharm (2018) employed different econometric techniques at different time periods and found external debt to be growth-enhancing. From these diverse findings, we see that, as stated above, there are unresolved conclusions about external debt and economic performance, more especially the performance of key economic sectors. This study is, therefore, poised to fill up this gap by carrying out a cross-country investigation of the impact of external debts on the service, industrial and agricuktural sectors of emerging economies, unravelling the role of interaction with institutional quality. Most previous studies only emphasised debt – economic growth nexus, while only few examined the effects of external debt on sector-specific performance, and a gap in literature that this study seeks to cover.

4. Methodology

Model specifications

So far, no theoretical framework has accurately linked external debt with sectoral performance. However, empirical literature (such as Ring et al., 2021) on external debt have employed the debt overhang theory put forward by Krugman (1988) and Sachs (1989). The theory postulates that a debtor country's ability to service its stock of debts increases with a rise in the size of its debts, and the repayment ability reaches its maximum and will fall after an optimal debt size is reached. This relationship can be modelled as in equation (1).

$Y = f(EXD)$ - - - - - - - - - - - - - - - - -1

where *Y* is real gross domestic product, and *EXD* is the ratio of external debt

Given that the objective of this study is to explore the link between external debt and sectoral output, we derive equation (2) from (1) to become;

$Y_t = f(EXD_t)$ - - - - - - - - - - - - - - - - 2

where, *Y* is the vector of dependent variables (that represent agricultural, service and industrial sectors), and *EXD* is external debt ratio.

Bearing in mind that several factors would impact the sectoral growth aside the core variable (external debt), the paper further tests the moderating role of institutional quality that affects the association between external debt and sectoral growth. Equation (2) is then expanded to equation (3) to capture the different institutional quality indicators as a set of moderators including other control variables.

$Y_t = f(EXD_t, GDPPC_t, IM_t, GI_t, EXD_t \times GI_t)$ - - - - - - - - - - - - 3

In the model above, GI represents the governance indicators mentioned above. The moderating effect of institutional quality is measured by the interaction between each of the six components of governance indicators and external debt, GI×EXD.

The functional form of equation (3) is transformed below into a panel econometric equation represented in equation (4) below. The variable IM_t is expressed in its natural logarithmic form to reduce noise, outlier and bias.

$$Y_{it} = \beta_0 + \beta_1 EXD_{it} + \beta_2 GDPPC_{it} + \beta_3 IM_{it} + \beta_4 GI_{it} + \beta_5 GI \times EXD_{it} + \lambda_i + \Psi_t + \mu_{it} \text{ - - - - - - - - } 4$$

where i = 1, 2,3, …, 17 and t = 1, 2, 3, …, 14; *Yit* is the vector of dependent variables for the three sectors (agriculture, service and industrial sector) for country *i* at period *t;* EXD_{it} is external debt stock for country *i* at period *t;* IM_{it} *i*s import for country *i* at period *t;* GI_{it} is a set of governance indicators that includes control of corruption, government effectiveness, political stability, rule of law, regulatory quality and voice of accountability for country *i* at period *t;* $GI \times EXD_{it}$ is the interaction of governance indicator and external debt stock for country *i* at period *t*; β_1, β_2, β_3, β_4 and β_5 are the parameters; λ_i is a country-specific effect; Ψ_t is a time-specific effect, and μ_{it} is the white noise/error term.

Estimation technique

The dynamic panel data analysis grounded on the Fully Modified Ordinary Least Squares (FMOLS) estimation technique is employed to determine the impact of external debt stock on sectoral output in these emerging economies (that have

with weak governance). The FMOLS estimator was first put forward by Phillips and Hansen (1990) and further developed and expanded on by Phillips and Moon (1999), Pedroni (2000), and Kao and Chiang (2000). A semi-parametric estimator was put forward by Phillips and Hansen (1990) to address the threats that were often triggered by the long-run correlation between the cointegrating equation and stochastic regressors innovations. According to Phillips and Hansen (1990), there is a resulting asymptotically unbiased FMOLS estimator with a fully efficient combination of normal asymptotics. This gives room for a standard Wald by employing an asymptotic Chi-square statistical inference.

The FMOLS take care endogeneity by adding the leads & lags. These methods are tailored to handle cointegrated time series. They involve additional transformations to ensure that the estimated coefficients are unbiased and consistent when cointegration is present. The method addresses endogeneity and autocorrelation issues in time-series data, providing more robust estimates, thus, ensuring that the results are valid and statistically efficient.

5. Data and variables

The study explored the impact of external debt on sectoral output across 17 emerging economies between 2005 and 2018. The sampled countries include; Algeria, Bangladesh, Burkina Faso, Cambodia, Cameroon, Comoros, Ecuador, Egypt, Mauritania, Nigeria, Pakistan, Paraguay, Russia, Togo, Ukraine, Uzbekistan and Zimbabwe. These countries were selected based on the common characteristic of "weak institutions" (as their capacity to govern is ranked low by the World Bank) and also to reflect regional differences by capturing countries from Asia, Europe, Latin America, North and Sub-Saharan Africa. The study utilised the following variables: annual growth of the agricultural sector (AGR), annual growth of the industrial sector (IND), annual growth of the service sector (SER), external debt stocks (EXD), imports of goods and services (LNIM), GDP per capita growth (GDPPC) and governance indicators – GI. The level of governance was determined using the World Governance Indicators (WGI). WGI measures governance on six (6) dimensions – government effectiveness (GEFF), voice of accountability (VA), control of corruption (COC), regulatory quality (RQ), rule of law (RL) and political stability (PS).

Political Stability and Absence of Violence/Terrorism measures perceptions of the likelihood of political instability and/or politically-motivated violence, including terrorism. Government effectiveness reflects perceptions of the quality of public services, the quality of the civil service and the degree of its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies. The rule of law reflects perceptions of the extent to which agents have confidence in and abide by the rules of society, and in particular, the quality of contract enforcement, property rights, the police, and the courts, as well as the likelihood of crime and violence. Control of corruption reflects perceptions of the extent to which bureaucratic regulation or public power is exercised for private gain, including petty and grand forms of corruption, as well as "capture" of the state by elites and private interests. Voice of accountability reflects perceptions of the extent to which a country's citizens are able to participate in selecting their government, as well as freedom of expression, freedom of association, and free media. Regulatory quality reflects perceptions of the ability of the government to formulate and implement sound policies and regulations that permit and promote private sector development.

According to the WGI, the estimate of governance ranges from approximately -2.5 (weak) to 2.5 (strong) governance performance. Thus, the justification for selecting these countries (as stated above) is that their average estimates across the period is less than zero (in other words, negative). This is an indication that the countries have weak governance, as suggested by the WGI estimate.

Table 1: Sources of data

Data	Data Sources
Agriculture, forestry, and fishing, value added (annual % growth)	World Development Indicators, World Bank (WDI)
Industry (including construction), value added (annual % growth)	WDI
Services, value added (annual % growth)	WDI
External debt stocks % GNI	WDI
Imports of goods and services (constant 2010 US$)	WDI
GDP per capita growth (annual %)	WDI
Governance indicators – GI	WGI, 2021

6. Findings and discussion

Unit root test

As the first preliminary test, the study conducts the stationarity test by employing Levin, Lin and Chu (2002) panel unit root tests, which also state the order of integration. The FMOLS requires integration of variables at order one I(1). Erdal and Erdal (2020) stated that the test has some plusses, namely, the provision of a large number of point data that increases the value of the degree of freedom as well as reducing multicollinearity between the regressors. In addition, the test gives a more dominant test statistics that asymptotically follow a normal distribution. The results are presented in Table 2 below.

Table 2: Panel Levin, Lin, Chu unit root

	Variables	Statistics	Probability
First differenced at intercept and trend (I&T)	AGR	-12.4175	0.0000***
	COC	-9.97715	0.0000***
	EXD	-16.3245	0.0000***
	EXD×COC	-12.0925	0.0000***
	EXD×GEFF	-10.4950	0.0000***
	EXD×PS	-11.1724	0.0000***
	EXD×RL	-13.8510	0.0000***
	EXD×RQ	-11.7099	0.0000***
	EXD×VA	-13.4640	0.0000***
	GDPPC	-20.9529	0.0000***
	GEFF	-11.8787	0.0000***
	IND	-15.5088	0.0000***
	IM	-10.2604	0.0000***
	PS	-11.8345	0.0000***
	RL	-10.0619	0.0000***
	RQ	-12.4591	0.0000***
	SER	-12.4798	0.0000***
	VA	-8.62289	0.0000***

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

Source: Authors' computations

Panel unit root test

With the variables meeting the stationarity requirements, a panel co-integration test was conducted to ascertain whether the variables have a long-run relationship that will ensure unbiased FMOLS results. The results were split into three panels in the table below, capturing the sectors. Panel A captures the six (6) cointegrating equations for the agricultural sector, while panel B reports that of the service sector, and panel C reports for the industrial sector. We determine a cointegrating relationship if we find the probability value to be less than our significance levels of 1%, 5% or 10%. The study utilised the default Newey-West automatic bandwidth selection for Panels A and B. Newey-West fixed bandwidth was employed in panel C to solve the problem of "no co-integration." However, the three panels used the Bartlett kernel spectral estimation method. The results of the panel co-integration tests proposed by Kao (1999) are presented below. It tests for the null hypothesis of no co-integration in homogenous and heterogeneous panels. The results in Panel A below, posit that in the agricultural sector, models 1 and 5 report a long-run relationship at 5 per cent level of significance, while the rest of the models indicate significance at 1 per cent level.As shown in panel B, the cointegrating results of the service sector indicate a long-run relationship at 10 per cent significance level for model 8. Meanwhile, the rest of the models confirm a cointegrating nexus at 5% significance level. Panel C contains the cointegrating results of the industrial sector. The findings confirm that the six (6) models are cointegrated at 1 per cent significance level.Decision rule: We reject the null hypothesis of no co-integration, and accept the alternative hypothesis of a long-run relationship, then conclude that in both sectors, the variables are cointegrated, meaning that they all have a long-run relationship.

Table 3: Kao Residual Cointegration Test

Models		Test statistic	Probability	Included observations
Panel A				
1	F(AGR, EXD, GDPPC, IM, COC, EXD×COC)	-2.123639	0.0169**	238
2	F(AGR, EXD, GDPPC, IM, GEFF, EXD×GEFF)	-2.019472	0.0217***	238
3	F(AGR, EXD, GDPPC, IM, PS, EXD×PS)	-2.124458	0.0168***	238
4	F(AGR, EXD, GDPPC, IM, RL, EXD×RL)	-2.444169	0.0073***	238
5	F(AGR, EXD, GDPPC, IM, RQ, EXD×RQ)	-2.291651	0.0110**	238
6	F(AGR, EXD, GDPPC, IM, VA, EXD×VA)	-3.023150	0.0013***	238
Panel B				
7	F(SER, EXD, GDPPC, IM, COC EXD×COC)	-1.824507	0.0340**	238
8	F(SER, EXD, GDPPC, IM, GEFF, EXD×GEFF)	-1.603171	0.0544*	238
9	F(SER, EXD, GDPPC, IM, PS, EXD×PS)	-1.943576	0.0260**	238
10	F(SER, EXD, GDPPC, IM, RL, EXD×RL)	-2.303849	0.0106**	238
11	F(SER, EXD, GDPPC, IM, RQ, EXD×RQ)	-2.011209	0.0222**	238
12	F(SER, EXD, GDPPC, IM, VA, EXD×VA)	-2.161809	0.0153**	238
Panel C				
13	F(IND, EXD, GDPPC, IM, COC, EXD×COC)	-5.463072	0.0000***	238
14	F(IND, EXD, GDPPC, IM, GEFF, EXD×GEFF)	-5.773834	0.0000***	238
15	F(IND, EXD, GDPPC, IM, PS, EXD×PS)	-5.374793	0.0000***	238
16	F(IND, EXD, GDPPC, IM, RL, EXD×RL)	-5.414802	0.0000***	238
17	F(IND, EXD, GDPPC, IM, RQ, EXD×RQ)	-5.136932	0.0000***	238
18	F(IND, EXD, GDPPC, IM, VA, EXD×VA)	-5.720165	0.0000***	238

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

Source: Authors' computations

Panel FMOLS results

The study employed a pooled (weighted) panel method to analyse the 18 models in all three sectors under consideration. The pooled (weighted) panel estimation method accounts for heterogeneity by using cross-section-specific estimates of

the long-run covariances to reweight the data before computing pooled FMOLS (Pedroni, 2000, and Kao & Chiang, 2000). The study opted for constant (level) trend specification to handle the fixed effect.

FMOLS results in the agricultural sector

As noted by Yerima and Tahir (2020), agriculture encompasses all aspects of production, including horticulture, livestock rearing and fisheries. Hence, the growth of the sector would have macroeconomic implications. Thus, governments across the world are poised to finance the sector, even to the extent of incurring debts. Yerima and Tahir (2020) further argued that the impact of external debt incurred for the purpose of agriculture cannot be underrated. The impact is so severe that it reaches an outrageous point where plethoric levels of external debt servicing creeps in and adversely impacts the economy as the attention tilts away from financing private investment towards repayments of debts (Yerima & Tahir, 2020). Pattilo, Poirson and Ricci (2002) assert that, at low levels, debt is of positive impact to agricultural growth. However, above certain thresholds, the amassed debt begins to have adverse impact on growth. The result presented in Table 4 below shows how the agricultural sector responds to changes caused by external debt, GDPPC, imports and governance indicators.

External debt is reported to affect the agricultural sector in two directions. As suggested by the results, it can be said that the institutional quality variables are responsible for these positive and negative impacts. In fact, institutional quality in these countries has significantly impeded the growth of the sector. This is evident in the negative signs of all the institutional quality indices, as seen in the table. Per capita GDP and imports significantly positively influence the sector, irrespective of the institutional quality tool used. This is not the same for external debt. With the government utilising the control of corruption mechanism, external debt enhances the sectoral growth by 5.6 per cent. In contrast, control of corruption negatively affects the sector by -31.2 per cent. In other words, the motive for external debt is accomplished since it improves the sector while the control of corruption has not been enough to positively impact the sector. Remarkably, the interaction of external debt and control of corruption confirms an 8.96 per cent increase in sectoral output. This means that, an increase in external debt with a corresponding increase in the level of corruption control would enhance the sectoral performance. This could be achieved through routine audits in the sector.

Table 4: FMOLS results in the agricultural sector

Variables	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Dependent Variable: AGR						
EXD	5.693416*** (0.049419)	-0.143646*** (0.049370)	-2.256606*** (0.050541)	5.853524*** (0.049996)	2.645474*** (0.052217)	2.971577*** (0.051035)
GDPPC	0.528615*** (0.072297)	0.529742*** (0.071323)	0.561673*** (0.071222)	0.502272*** (0.073067)	0.460351*** (0.071498)	0.527807*** (0.071652)
IM	1.499558*** (0.025044)	1.299092*** (0.024072)	1.705466*** (0.024105)	0.597324*** (0.023253)	0.342632*** (0.024381)	1.224156*** (0.024792)
COC	-31.24383*** (0.049464)					
EXD×COC	8.961811*** **(**0.035503)					
GEFF		-8.749366*** (0.038705)				
EXD×GEFF		2.574039*** (0.038440)				
PS			-4.283279*** (0.036057)			
EXD×PS			0.760335*** (0.025370)			
RL				-29.84233*** (0.042557)		
EXD×RL				8.841306*** (0.036540)		
RQ					-17.42337*** (0.031974)	
EXD×RQ					5.398936*** (0.033936)	
VA						-20.22399*** (0.048903)
EXD×VA						6.336621*** (0.029772)
Periods included: 13						
Total panel (balanced) observations: 221						

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

Source: Authors' computations

With the substitution of corruption control for government effectiveness as a governance indicator, external debt and government effectiveness have a negative effect (of -0.14 per cent and -8.75 per cent, respectively) on the sector. The implication is that the government's ineffectiveness has robbed the sector of growth. As a result, external debt meant to finance the sector are rather used inappropriately: thus, accounting for the negative impacts on the sector. Fascinatingly, as external debt and government effectiveness interact with each other, the result records a significant positive impact of

about 2.57 per cent. Implying that, if external debt stock rises and the government is equally more effective, the sector will record significant expansion.

Similarly, political stability and external debt affect the sector by -4.28 per cent and -2.25 per cent, respectively. This is not surprising as most of the countries sampled in this study have been through endless terrorism over the period. With some of the prominent cases to include, Nigeria, southern Cameroon and the Russia-Ukraine war that has lingered since 2014. The implication of this is that, the debt incurred will be channelled towards catering for the victims of crisis rather than investing in productive ventures (such as acquisition of machines) that would enhance the sector. The findings further report that an interaction between the two variables will boost the output of the sector at around 0.76 per cent. That is, a consistent and corresponding rise in the absence of violence with external debt will nullify the negative impacts of the variables. This will reflect in the increase in agricultural produce by about 1 per cent.

Model 4 shows that with the introduction of rule of law in the model, external debt accounts for about 5.85 per cent of the sectoral growth. As established earlier, the control variables (per capita GDP and import) strongly and positively impact the sector. Conversely, the level of rule of law in the sampled countries negates the sectoral growth at about -29.84 per cent. Thereby suggesting that there is some level of arbitrary use of power by the officials manning the sector. Furthermore, if they are not accountable and the law does not take its course on corrupt public office holders, the sectoral output will be on a desperate decline. However, the interaction between with external debt and rule of law boosts the sectoral growth quite decently at about 8.84 per cent. That is, the more accountable public officers are with respect to external debt, there'll be an increase in agricultural yields.

The introduction of regulatory quality in model 5 as the only governance indicator reports a 2.65 per cent positive nexus between debt and sectoral growth. However, regulatory quality has a detrimental impact of the sector of about 17.42 per cent. This detrimental impact only implies the government's inability to formulate and implement sound policies and regulations to promote the agricultural sector development. The variable is further interacted with external debt to ascertain their multiplicative effect on the sectoral performance. With a positive impact of about 5.4 per cent, it suggests that more robust regulatory policies with a corresponding level of external debt stock in the sector would be growth-enhancing. In like manner, model 6 also reports a positive effect of external debt on agricultural growth at about 2.97 per cent. However, voice of accountability on its own has a negative impact of 20.22 per cent on the sector. Meaning that the country's citizens are not able to participate in the actual selection of their government. In other words, the citizens are imposed public office holders against their wish. Thus, they run their offices for their selfish gains without fear because of the freedom of expression and media that has been taken away from the masses. Conversely, a positive interaction of 6.34 per cent is reported between external debt and voice of accountability. This suggests that, with the masses have more voice of accountability and are enfranchised enough to select and remove their government, they elected officers will serve with integrity. This of course will prevent mismanagement of public funds and thus, increase output.

FMOLS results in the service sector

The service sector result is presented in Table 5 below. The FMOLS results in Table 5 show that external debt has a negative impact on the service sector across all the institutional quality variables in the models. At a 5 per cent level, external debt has a significant negative impact of 1.897 per cent on the service sector's output. Specifically, increasing the external debt has an inelastic negative effect on the value added to the service sector. This finding is consistent with Ejumegu (2019), who found external debt asymmetric effect on service sector output. Thus, an increase in external debt has downward pressure on the service sector output. Conversely, control variables in the model, like per capita GDP and imports, exert significant positive effects on the service sector output.

Table 5: FMOLS results in the service sector

Variables	Model 7	Model 8	Model 9	Model 10	Model 11	Model 12
Dependent Variable: SER						
EXD	-1.897049*** (0.049419)	-3.609954*** (0.049370)	-3.391375*** (0.050541)	-5.190033*** (0.049996)	-7.240838*** (0.052217)	-2.330894*** (0.051035)
GDPPC	0.407860*** (0.072297)	0.435324*** (0.071323)	0.432555*** (0.071222)	0.516521*** (0.073067)	0.482554*** (0.071498)	0.403509*** (0.071652)
IM	1.212266** (0.025044)	2.142166** (0.024072)	1.243671** (0.024105)	2.094960** (0.023253)	2.080580** (0.024381)	1.486093** (0.024792)
COC	-5.417239*** (0.049464)					
EXD×COC	1.571791*** (0.035503)					
GEFF		-3.759535*** (0.038705)				
EXD×GEFF		-0.409811*** (0.038440)				
PS			-0.383860*** (0.036057)			
EXD×PS			0.225138*** (0.025370)			
RL				0.090344*** (0.042557)		
EXD×RL				-1.978838*** (0.036540)		

RQ					11.59207*** (0.031974)	
EXD×RQ					-3.686896*** (0.033936)	
VA						-11.95927*** (0.048903)
EXD×VA						1.588260*** (0.029772)
Periods included: 13						
Total panel (balanced) observations: 221						

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

Source: Authors' computations

The study further examined at the role of institutional quality on service sector performance and discovered that institutional quality variables exert an overwhelmingly significant negative impact on service sector output, except rule of law and regulatory quality. Rule of law and regulatory quality exerts a positive and significant influence on service sector performance with a magnitude of about 0.09 per cent and 11.59 per cent at a 5 per cent significance level, respectively. Conversely, control of corruption, government effectiveness, political stability, and voice and accountability exert a significant adverse effect on the service sector with a magnitude impact of 5.42 per cent, 3.75 per cent, 0.38 per cent and 11.96 per cent, respectively.

Further findings reveal negative relationship of the interactive effects between external debt and government effectiveness, rule of law as well as regulatory quality on the service sector output. However, the interaction between external debt and control of corruption, political stability, voice of accountability on service sector output is positive. The results show that all the institutional quality variables are statistically significant at the conventional level, irrespective of the signs and magnitude. This result indicates that for the service sector to contribute meaningfully, all these institutional quality components should work effectively. Intuitively, large or small enterprises in the service sector cannot flourish in a politically unstable environment, despite a high regulatory quality or quality of the rule of law. More so, if the political climate is stable and public servants are corrupt, it affects the entire business environment of the sector.

FMOLS results in the industrial sector

Table 6: FMOLS results in the industrial sector

Variables	**Model 13**	**Model 14**	**Model 15**	**Model 16**	**Model 17**	**Model 18**
Dependent Variable: IND						
EXD	6.495245*** (0.049419)	-1.987775*** (0.049370)	3.399138*** (0.050541)	5.425514*** (0.049996)	4.567623*** (0.052217)	0.171919*** (0.051035)
GDPPC	0.226708*** (0.072297)	0.166625*** (0.071323)	0.159256*** (0.071222)	0.147537*** (0.073067)	0.179188*** (0.071498)	0.217354*** (0.071652)
IM	0.758272*** (0.025044)	0.861751*** (0.024072)	-0.363134*** (0.024105)	0.450077*** (0.023253)	-0.290705*** (0.024381)	0.817519*** (0.024792)
COC	-24.63884*** (0.049464)					
EXD×COC	6.628097*** (0.035503)					
GEFF		8.468300*** (0.038705)				
EXD×GEFF		-2.422139*** (0.038440)				
PS			-5.119696*** (0.036057)			
EXD×PS			2.450927*** (0.025370)			
RL				-20.86772*** (0.042557)		
EXD				5.220390*** (0.036540)		
RQ					-9.337209*** (0.031974)	
EXD×RQ					4.164039*** (0.033936)	
VA						-2.092669*** (0.048903)
EXD×VA						-0.247796*** (0.029772)
Periods included: 13						
Total panel (balanced) observations: 221						

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

Source: Authors' computations

The extension of this analyses to the industrial sector, as shown in Panel C above, reveals that the sector maintains significant growth rates in all the models, as long as per capita GDP is concerned. The level of imports mostly affects the sector positively. This is given that these low-governance countries are mostly import-dependent, and imports, especially of raw materials, will support industrial sector production, assuming high political stability and regulatory quality. However, the introduction of political stability and regulatory quality, as in models 15 and 17, respectively, saw the results

indicating a negative impact of -0.36 per cent and -0.29 per cent, respectively. This is evidently against a priori expectation, and maybe attributed to the fact that these countries have low scores in political stability and regulatory quality. Economies with relatively unstable political environment and poor regulatory quality would have expected impact of imports on the industrial sector change from positive to negative.

In model 13, external debt enhances growth of the industrial sector by about 6.495 per cent, while control of corruption is -24.64 per cent growth-impeding, holding other variables constant. The negative impact of the corruption control variable suggests that the industrial sector of the countries under study largely thrives under corruption, as may be exemplified by tax avoidance, and non-compliance with regulatory requirements. With improved control of corruption, therefore, the growth of the sector is adversely affected. Meanwhile, a positive impact of 6.63 per cent is recorded after external debt and control of corruption are interacted. This indicates that external debt has a higher chance of improving performance of the industrial sector if corruption control is put in place, which reduces the mismanagement or syphoning of borrowed funds.

Government effectiveness, when substituted for corruption control in Model 14, as a measure of the quality of institutions, impacts the industrial sector output positively by 8.47 per cent, while the effect of external debt on the sector is negative (-1.99 per cent), holding other variables constant in each case. The multiplicative effect of external debt and government effectiveness tends to affect the sector adversely by -2.42 per cent. By implication, an increasing interplay of external debt with government effectiveness tends to bear a reductive impact on the performance of the industrial sector. While this contradicts expectation, it may well be indicative of the level of government effectiveness especially when it comes to the management of (external) debts. Low governance countries typically have low government credibility in terms of commitment and consistency towards quality policy formulation and implementation, which can have a negative bearing on the effective use of debts to improve sectoral performance.

The results in model 15 completely counter model 14. We introduced political stability as the governance indicator, and external debt, as the result shows, positively impacts the industrial sector (by 3.399 per cent), holding other factors constant. Although political stability itself exerts a negative effect of -5.12 per cent on the growth of the sector, the interaction of both variables boosts the sector's output at around 2.45 per cent. This indicates that external debt would most likely drive growth for the sector under conditions of political stability. The more politically stable the economy, the less likely that external debts would have to be used for rebuilding damages that would arise from an otherwise unstable and violent political atmosphere.

Similarly, external debt is positively related to the industrial sector growth in Model 16, with an impact of about 5.43 per cent. Rule of law, on the other hand, suggests a negative relationship, impacting the performance of the sector under review by around -20.87 per cent, a possible pointer that rule of law is undermined and subverted in the review countries. Just like in the previous model, the interaction of external debt with the control variable yields about 5.22 per cent impact on the sectoral output. This also gives the indication that external debts will drive sectoral growth under conditions of confidence in and abidance by the rules of the society, as well as quality contract enforcement. Model 17, external debt is shown to enhance sectoral growth by 4.57 per cent. Albeit regulatory quality impedes growth by -9.34 per cent, an indication that governments do not have the ability to promote private sector development through sound policy formulation and implementation. Its interaction with debt reveals a positive and significant effect of up to 4.16 per cent. In Model 18, voice of accountability counters the positive effect (0.17 per cent) of external debt on the industrial sector growth by -2.09 per cent. The counteraction further negates the sectoral output by -0.25 per cent when we investigated their interaction. This means that those running the institutions are not answerable to the masses. Thus, they run their offices in a manner that best suits them.

7. Contribution of the study

This study adds to the existing stock of knowledge on how institutional quality interacts with external debt and sectoral growth. The study outlines some key areas of the economy to specifically examine what has actually happened to the debts that are being incurred, whether or not they are channelled to finance the sectors. It further explains the position of the institutions of the countries, and how effective they are in stimulating economic growth through the sectoral output. The data gathered from this research is also used to make sound predictions of the sectoral output given the external debt level and quality of institutions. Thus, students, researchers and likewise policy makers would find this document useful to enhance their knowledge on the topic.

8. Implications of the study

This paper examined the role of institutional quality on external debt and sectoral growth nexus. 17 countries with weak governance indicators were selected for the study over the period between *2005 to 2018*. The FMOLS developed by Phillips and Hansen (1990) was utilized across the period. The findings of the study attributed the significant role played by quality institutions in shaping the sectoral output with external debt, hence, making suggesting key recommendations. Firstly, on the average, agricultural and industrial sector have thrived more with external debts. Therefore, government of these countries should target on investing external borrowing in these sectors. However, the two sectors are better off when agricultural products are imported, and services are hired from abroad. This suggests a comparative advantage in imports rather than local production. The GDPPC is also a blessing to the sector. Therefore, the policies that has sustained that positive influence on the sector be maintained so as to augment importation.

Secondly, more attention should be paid to the service sector. The detrimental effects of external debt in the sector are disturbing, and will potentially jeopardize economic growth since there is a confirmed direct relationship between the

sector and economic growth. Furthermore, the policies that improve GDP per capita, by increasing investment attraction for instance, should be encouraged, since GDP per capita has also been found to positively influence growth of sectoral output. This will keep these emerging markets on the right track of industrialization. The government should encourage imports, as it is seen to enhance the sectoral growth, especially the commodities in which they have comparative advantage, while also promoting local production across sectors to boost export earnings. Obviously, it means that these countries are not self-reliant, as such, they should import the technical know-how from more advanced economies.

Thirdly, some routine institutional reforms that will encourage transparency and accountability in these sectors are also imperative. Such reforms should encourage immediate follow-up of funds disbursed to the ministries so as to ensure judicious spending. This is one way to boost sectoral performance by ensuring greater transparency and accountability in the use of state resources for sectoral activities. Finally, the anti-graft agencies established to combat corruption should be independent as stipulated by law without any form of favouritism and nepotism in discharging their duties. A well-functioning anti-graft agency will enhance proper utilization of borrowings, and thus, mitigating debt burdens on the future generations.

9. Conclusion

How external debt shapes the efficacy of the agricultural sector depends on the institutional quality variable regressed in the models. All the institutional quality variables have negative impacts on the agricultural sector. With government effectiveness and political stability as the institutional quality variables in the model, external debt has shown negative impacts on the sector. On the other hand, external debt boosts the sector if we have control of corruption, rule of law, regulatory quality, and voice of accountability as governance indicators in the various models. However, if all these governance indicators interact with external debt, a positive relationship with the sector is found. Furthermore, the control variables (per capita GDP and imports) positively affect the sector across all the models in this analysis.

The models in the service sector report that external debt is a curse; that is, it inversely affects the sector irrespective of the institutional quality variable. On the contrary, per capita GDP and imports have positive impacts on the sector. Among the institutional quality variables, only rule of law and regulatory quality have positive impacts on the sector, but their interactions with external debt have negative impacts. Interestingly, control of corruption, political stability and voice of accountability have negative impacts on the sector; and their interactions with external debt have positive impacts. Fascinatingly, government effectiveness has detrimental effects on the service sector, as does its interaction with external debt.

The industrial sector is positively related to external debt in all the models except when government effectiveness is factored in. Government effectiveness here positively affects the sector, but its interaction with external debt shows a negative effect on sectoral growth. On the other hand, control of corruption, political stability, rule of law, regulatory quality and voice of accountability have n egative impacts on the sector. Barring voice of accountability, we find that all the governance indicators with negative impacts on the sectoral growth have positive impacts on the sector when interacted with external debt.

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