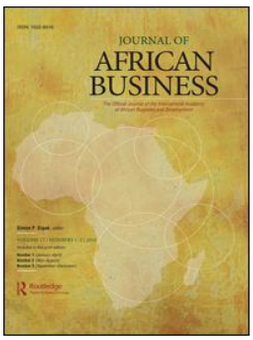

Journal of African Business

ISSN: 1522-8916 (Print) 1522-9076 (Online) Journal homepage: https://www.tandfonline.com/loi/wjab20

External Debts, Institutions and Growth in SSA

Lord Mensah, Godfred Bokpin & Eric Boachie-Yiadom

To cite this article: Lord Mensah, Godfred Bokpin & Eric Boachie-Yiadom (2018) External Debts, Institutions and Growth in SSA, Journal of African Business, 19:4, 475-490, DOI: 10.1080/15228916.2018.1452466

To link to this article: https://doi.org/10.1080/15228916.2018.1452466

Published online: 22 Mar 2018.

Submit your article to this journal

Article views: 156

View Crossmark data

Full Terms & Conditions of access and use can be found at
https://www.tandfonline.com/action/journalInformation?journalCode=wjab20

JOURNAL OF AFRICAN BUSINESS
2018, VOL. 19, NO. 4, 475–490
https://doi.org/10.1080/15228916.2018.1452466

Routledge
Taylor & Francis Group

Check for updates

External Debts, Institutions and Growth in SSA

Lord Mensah[a], Godfred Bokpin[a] and Eric Boachie-Yiadom[b]

[a]Department of Finance, University of Ghana, Legon, Ghana; [b]Department of Banking and Finance, University of Professional Studies, Accra, Ghana

ABSTRACT
The study investigates the impact of institutional quality on the external debt–growth nexus in SSA. Data from 36 SSA economies over the 1996–2013 periods were used. The results from the IV-System GMM imply that institutional quality has robust effects on the external debt–growth nexus. Thus, the impact of external debt on growth is through host nation's institutional quality. However, the mediating effect of institutional quality on this nexus is up to a point. When a country is on the wrong side of the debt-laffer curve, external debt becomes irrelevant; and institutional quality can no longer help.

KEYWORDS
Institutions; Institutional quality; external debts; economic growth; laffer curve; Sub-Saharan Africa

1. Introduction

In recent years, the impact of external debt on the economic fortunes of host nations has been widely researched. This is because external debt sometimes weakens the receiving economy rather than stimulating growth. Sub Saharan African (SSA) countries are targets for most of these debts. Among other challenges, the region is heavily constrained in accessing capital to finance its growth agenda. For instance, the World Bank (2010) indicates that the region needs at least US$ 93 billion every year to address its infrastructural gap, and such funds can scarcely be obtained in the domestic economy. Attempts to solicit external funds to boost investment and consequently promote growth have plunged the region into a revolving debt cycle. Apart from external debt, SSA countries have received other external capital flows in the form of foreign direct investment (FDI) and foreign equity portfolio investment (FEPI). But these are very low compared to the value of the external debt the region receives annually. For example, external debt (% of GDP) for SSA in 1994, 1995, 1996 were 80%, 73%, 69% and 65%, respectively (World Development Indicators, 2016). Meanwhile, within the same period the combined effect of FDI and FEPI as a percentage of SSA's GDP was only 1%, 2%, 2% and 4% respectively. In addition, current assessment between 1996–2013 shows that external debt to GDP ratio is 45.86% per annum, and the other components of external capital flows (FDI and FEPI) to SSA account for 3.5% per annum (World Development Indicators, 2016). These statistics provide convincing reasons why researchers have focused on assessing the external debt and economic growth relationship in SSA. Again, external debt, unlike other forms of external

CONTACT Eric Boachie-Yiadom boachie.eric@upsamail.edu.gh Department of Banking and Finance, University of Professional Studies, Accra, Ghana

© 2018 Informa UK Limited, trading as Taylor & Francis

capital flows, has a repayment responsibility and therefore, if funds are not invested in profitable projects, domestic taxes may be used to offset the debt in the future. Unfortunately, many empirical studies have documented that external debts retard growth (Agbloyor, Abor, Adjasi, & Yawson, 2014; DiPeitro & Anoruo, 2012; Doğan & Bilgili, 2014; Eberhardt & Presbitero, 2015; Panizza & Presbitero, 2014; Presbitero, 2008).

External debts may harm economic growth, as suggested in the literature, but the quality of governance or institutions may also be able to moderate this negative effect. For instance, in a country where rule of law is weak and public officials are also corrupt, state resources, including borrowed funds, may be diverted into wrong pockets and inefficient investments. Therefore, good governance and well-functioning institutions can help safeguard the acquisition and usage of external debts. Acemoglu, Johnson, Robinson and Thaicharoen (2003) argue that institutions have more casual effects on economic outcomes, and therefore, countries with good governance tend to grow faster. The relevance of institutions on long-run development cannot be underrated even at the micro level. Cherchye and Verriest (2016), on the other hand, note that firms' profitability strongly depends on a firm's characteristics and on country-specific institutions, and therefore, institutions have an unmitigated negative influence on profit, because they promote competition among firms.

In addition, McKinsey (2013) estimates an average amount of US$ 1 trillion invested by the public sector globally are wasted annually, and specifically in Africa around 30% of the potential gains from public investment are lost due to inefficiencies in public investment processes (IMF, 2015). Ordinarily external debts are contracted to promote investment; therefore, the quality of institutions could ensure that the debts are used for their intended purposes. In this regard, institutional quality could mediate the effects of external debt on growth and may account for cross-country growth differences. This study has become necessary because earlier studies largely ignore the role of the host nation's institutional quality in the external debt–growth nexus. We strongly argue that given the right institutions, SSA countries can benefit from external debts.

Moreover, Megersa (2015) and Doğan and Bilgili (2014) argue that the debt-growth relationship can best be captured by a non-linear model rather than a linear model, because "there is a strong tendency for modern governments to exceed both the optimal government size limit and the optimal government debt limit" (DiPeitro & Anoruo, 2012, p. 413). Despite this, large segments of the literature have linearized the debt–growth relation, grossly ignoring threshold effects. A few constituents of the literature inconclusively consider the likelihood of a non-linear relationship but have failed to proxy or control for the impact of institutional quality on the debt-–growth nexus (DiPeitro & Anoruo, 2012; Doğan & Bilgili, 2014; Eberhardt & Presbitero, 2015; Megersa, 2015). In consonance with the forgoing assertions, this study seeks to investigate the relevance of institutions in the external debt–growth nexus and tests whether this relevance may be weakened when external debt exceeds a certain threshold.

2. Literature review

North (1986) defines institutions as regularities in repetitive interactions among individuals which provide a framework within which people have some confidence as to how outcomes will be determined. Institutions according to Hodgson (2000, p. 35) are

the "rules of the game," consisting of both the formal legal rules and the informal social norms that govern individual behavior and structure social interactions. The primitive logic of "institutional economics" imply that choices of rent seeking economic agents are heavily affected by their institutional and cultural environments and therefore the "notion of individual agents as utility maximizing" should not be debated in isolation (Hodgson, 2000, p. 35).

Empirical evidence has shown that the quantum of external resources an economy receives can be explained by the level of its institutional quality (Agbloyor, Gyeke-Dako, Kuipo, & Abor, 2016; Asiedu & Lien, 2011; Busse & Hefeker, 2007; Papaioannou, 2009). Intuitively, an investor will commit more resources in an economy that promises safety for investment. Such economies should not only be devoid of conflict volatility but also the extent to which international investors are protected from property sequestration by either government or other indigenes. Busse and Hefeker (2007) particularly examine the linkage among political risk, institutions and international capital flows. Their country fixed-effects model and the Arellano–Bond GMM results show "that government stability, internal and external conflict, corruption and ethnic tensions, law and order, democratic accountability of government, and quality of bureaucracy" (Busse & Hefeker, 2007, p. 398) are positive and highly significant in the determination of the size of international capital flows a country receives.

However, a few articles have researched on the role of institutions on external debts' impact on economic growth. Acemoglu, Gallego, and Robinson (2014) focus on the direct effects of institutional quality on long-run development. Other studies such as Agbloyor et al. (2016) and Okada (2013) explore the robustness of institutions in explaining foreign capital flows. Dollar and Kraay (2003), on the other hand, research on the connection among institutions, trade and economic growth. The discussions on institutional quality's impact on the external debt–growth nexus have suffered exclusivity from the empirical literature. Our curious search came close to few of the available studies.

Another important discussion on external debt, institutions and growth is the study of Cordella, Ricci, and Ruiz-Arranz (2010). They explored how the debt–growth relation varies across indebtedness levels in a sample of 79 developing countries spanning 1970–2002. Their non-linear model specifications enabled them to study the effect of institutions on debt overhang and reported that countries with bad policies and institutions have lower debt-to-GDP ratio for debt overhang to manifest in the economy, as compared with those with strong institutions. Thus, institutions moderate external debts' impact on macroeconomic indicators.

Emerging argument in the literature is the estimation of a debt-to-GDP threshold at which the impact of external debt becomes either positive or negative. Many papers have evidence contending results. Caner, Grennes, and Koehler-Geib (2010) use a data set of 99 developing countries during the 1980–2008 period and estimate a debt-to-GDP threshold of 77%. They explain that if debt is above this threshold, each additional percentage point of debt reduces economic growth by 0.017%. Pattillo, Poirson, and Ricci (2011) conducted a similar study among 93 emerging economies and found a lower threshold of 35–40% of GDP. They concluded that a country with such a threshold will reduce it growth by at least 1% if it continues to borrow. Cordella et al. (2010), however, use the net present value (NPV) approach to calculate a debt-to-GDP ratio of 20–25% threshold beyond which evidence of debt overhang becomes robust.

2.1 *How institutions enter empirical growth models*

According to Solow's neoclassical growth model, output is produced by combining physical capital and labor with a certain level of knowledge or technology. Output is produced under the '*homogeneity of degree one*' condition, meaning, an increase or growth in any of the rival inputs will be replicated in the same quantity in the output. Per the *Inada* condition, the marginal product of capital (or labor) approaches infinity as capital (or labor) goes to zero and approaches zero as capital (or labor) goes to infinity (Barro & Sala-i-Martin, 2004). Therefore long-run growth in output is to a large extent explained by technological progress or technical change.

Tang, Groenewold and Leung (2008, p.1521) established a link between institutions and technical change and showed that technical change is an important stabilizing force of growth volatility and that at least part of the stabilizing force of technical change originates from strong institutions; therefore, "weak institutions is thus a reduction in a society's investment and its capacity for innovative activities and technical change." In addition, one of the five "*stylized facts*" of Easterly and Levine (2001) is that factor accumulation does not account for the bulk of cross-country differences in the level or growth rate of GDP per capital, but rather that TFP accounts for a substantial amount of the differences. They use TFP to proxy technical change and advice that in searching for the secrets of long-run economic growth, a high priority should be placed on rigorously defining what account for TFP. Chanda and Dalgaard (2008) and Hall and Jones (1999) associate TFP with the quality of country-specific institutions. In fact, the latter authors document that the differences in capital accumulation, productivity, and output per worker are driven by differences in cross country institutional quality. This study takes advantage of the vast literature and introduces institutional quality in the external debt and economic growth relationship. This is to enable us to explore the mediating ability of institutional quality on this important relationship.

3. Empirical method and strategy

The research data cover 36 Sub-Saharan African countries (refer to Appendix B). The empirical investigation is carried out with annual data over the period 1996–2013. To iron out business cycle fluctuations, we take averages of the data over non-overlapping three-year averages as this approach presents higher data points and as such increases the degree of freedom. We obtained six-time-periods from our study period 1996–2013 (thus; 1996–1998, 1999–2001, 2002–2004, 2005–2007, 2008–2010, and 2011–2013).

We used data from World Development Indicators (WDI) and World Governance Indicators (WGI), both provided by the World Bank. Specifically, our main variable of interest – Institutional quality is a composite of six distinct variables extracted from the WGI. The six variables are Voice and Accountability; Political Stability and Absence of Violence/Terrorism; Government Effectiveness; Regulatory Quality; Rule of Law; and Control of Corruption. The six variables are consolidated from 31 underlying governance data houses and we carefully ironed out possible correlations among them.

The empirical model is specified below:

$$logGDPPC_{it} = \beta_1 logGDPPC_{it-1} + \beta_2 EXTD\_GDP_{it} + \beta_3 INST\_QLIT_{it} + \beta_4 EXTD\_GDP_{it}^2 + \beta_5 INTERRACTION + \beta_6 (INTERACTION)^2 + \sum_{j=5}^{N} \beta_j X_{it} + \varepsilon_{it}$$

Where *it* is country *i* in time *t*. $logGDPPC_{it}$ represents the logarithm of per capita Gross Domestic Product for country "i," at time "t." The $logGDPPC_{it}$ is a three-year average of the series and shows the annual GDP per capita based on constant of 2005 U.S. dollars. $logGDPPC_{it-1}$ represents the initial per capita GDP or the first lag of the dependent variable. $EXTD\_GDP_{it}$ represents the share of External Debt to GDP. $INST\_QLITY_{it}$ represents the institutional quality. It is a composite measure of six variables proposed by Kaufmann, Kraay, and Mastruzzi (2010), to measure the quality of institutions. We include the squared term of $EXTD\_GDP_{it}$ in the model to test for possible non-linear relationships that might exist between external debt and economic growth. *INTERACTION* represents the interaction term between External debt and Institutional quality $(EXTD\_GDP_{it} * INST_{it})$. This is to test whether institutional quality has any influence on the relationship between external debt and economic growth. If institutional quality is still statically significant and positive at the introduction of this term in the model, then it denotes that the effect of external debt on economic growth is through institutional quality.

$\sum_{j=4}^{N} \beta_j X_{it}$ represents additional exogenous variables. These variables are widely in the literature and they include: LSAV represents logarithm of gross savings use as a proxy for physical investment or domestic investment. TRADE represents the logarithm of the three-year-average of net export. Where net export is the difference between total export and total import of goods and services. SCHOOL ENROLMENT represents logarithm of tertiary school enrolment and is used as a proxy for human capital. DEBT_EXPORT represents the share of total external debt to export. External debt is subject to volatility in foreign currencies, as a result, if a country export more, it lessens its obligations to foreign lenders. Alternatively, if a country is a net importer, it becomes greatly exposed to volatilities in foreign currencies. This variable is also another way to proxy for external debt (Presbitero, 2008).

POPULATION represents population growth rate. INFLATION represents the inflation in the study sample. It is a proxy for macroeconomic stability and measured by consumer price index.

ε_{it} is mean zero scalars and decomposes into $\varepsilon_{it} = \mu_i + \nu_{it}$. μ_i that is the time invariant country-specific effect, and ν_{it} captures the all other white noise in the specified model.

3.1 *Estimation technique*

This paper follows the advice of Agbloyor et al. (2014) and Wooldridge (2001) and adopts GMM as the estimation method. The GMM presents us with the luxury to include the first lag of the dependent variable. The inclusion of a lag dependent variable

is consistent with existing theoretical frameworks that economic growth is a continuous process, and therefore, previous growth may influence future growth (Panizza & Presbitero, 2014; Presbitero, 2008). To test for the robustness of our System GMM, we employ the Random Effect – Generalized Least Squares (GLS) method (suggested by the Hausman Specification Test in Table 3) as a different estimation technique.

4. Empirical results and discussion

4.1 *Descriptive statistics*

Table 1 shows the results of the descriptive statistics. It reports average GDP per capita of US$ 1,142. The results, however, indicate that most countries within the study sample are within lower middle-income classification by the World Bank standard, because the average GDP per capita falls within threshold of US$ 1,036 – US$ 4,085. The region's average external debt as a percentage of GDP is 58% and some countries within the study sample have as high as 166% external debt to GDP. Considering the responsibilities that come with external debts, some of these countries may end up using tax rents to service external debt. This may lead to continuous evolving of debt cycle in the region. Moreover, the summary statistics of institutional quality is not very different from that of Agbloyor et al. (2016). On a scale of 0 (lowest) to 100 (highest), they report weak institutional quality of an average score of 31. Our study sample recorded a mean of 26 which still suggests weak institutional quality across the region.

4.2 *Correlation matrix*

There are three major lessons from the pairwise correlation matrix presented in Appendix A. First, it signifies the direction of the relationship between two variables (either positive or negative). Secondly, it measures the strength of the relationship (either strong or weak) and last, it can be used to identify whether two variables suffer from multicollinearity. The pairwise correlation matrix showed in Appendix A evidenced that multicollinearity is improbable in the dataset. The six components of institutional quality exhibit high correlation among each other and some of the

Table 1. Descriptive Statistics.

Variable	Observation	Mean	Std. Dev.	Min	Max
PCGDP	216	1142.08	1723.31	79.92	8150.03
EXTD_GDP	192	58.07	36.33	4.39	166.83
INST_QLITY	216	26.48	17.86	0.43	75.47
SAVINGS	216	11.55	9.80	−19.12	44.94
TRADE	216	2.24	3.44	0	26.02
SCHOOL ENROLMENT	216	3.36	5.16	0	39.04
DEBT_EXPORT	167	183.11	128.21	7.00	496.81
POPULATION	216	2.60	0.84	0.22	6.90
INFLATION	214	36.39	11.50	7.27	75.77
VACCT	216	27.07	18.79	0.64	75.42
POLSTAB	216	28.60	21.30	0	85.81
GOVEFF	215	23.80	18.86	0.33	76.47
REGLQLITY	216	26.19	17.84	0.65	78.38
RULE	216	25.58	19.31	0.16	82.62
CTRLCORRP	215	27.45	20.00	0	80.20

controlled variables; this, however, is not inconsistent with other empirical works like Agbloyor et al. (2014, 2016) and Pattillo et al. (2011).

4.3 *Regression results*

4.3.1 *System GMM estimation results*

We estimate four different regressions using the System GMM, and these are reported in the four columns of Table 2. In Column (1) we test for the significance of institutional quality. The results suggest that Institutional quality maintained the expected sign of positive and entered the model at a significant level of 5%. It recorded a 0.00418 coefficient denoting that on the average a proportionate increase in institutional quality will cause GDP per capita to increase by 0.418%. Our findings, that institutional quality enhances host nations' economic growth, confirm earlier studies by Acemoglu et al. (2014) and Presbitero (2008). In column (1) of Table 2, external debt is significant at conventional levels, but maintains a positive sign. This means that external debt

Table 2. System GMM Estimation Results.

VARIABLES	(1) LGDPPC	(2) LGDPPC	(3) LGDPPC	(4) LGDPPC
L.LGDPPC	0.123***	0.107***	0.110***	0.110***
	(0.0290)	(0.0211)	(0.0212)	(0.0227)
EXTD_GDP	0.00376***	0.00586***	0.00613***	0.00545***
	(0.00120)	(0.00140)	(0.00162)	(0.00173)
INST_QLITY	0.00418**	0.0166***	0.00787***	0.00758***
	(0.00190)	(0.00359)	(0.00218)	(0.00218)
INTERACTION		−0.00821***		
		(0.00241)		
EXTD_GDP2			−0.00093***	−0.000007
			(0.000298	(0.000105)
INTERACTION2				−0.000014
				(0.000014)
SAVINGS	0.443***	0.385***	0.415***	0.420***
	(0.108)	(0.0871)	(0.0932)	(0.0909)
TRADE	0.108***	0.0893***	0.0853***	0.0831***
	(0.0218)	(0.0242)	(0.0214)	(0.0213)
SCHOOL ENROLMENT	0.00429	0.00654	0.00884**	0.0128**
	(0.00597)	(0.00416)	(0.00406)	(0.00588)
DEBT_EXPORT	−0.00101***	−0.00100***	−0.00102***	−0.00107***
	(0.000210)	(0.000191)	(0.000196)	(0.000227)
POPULATION	−0.136***	−0.134***	−0.130***	−0.129**
	(0.0465)	(0.0464)	(0.0499)	(0.0503)
INFLATION	−0.00646***	−0.00536***	−0.00593***	−0.00596***
	(0.00173)	(0.00144)	(0.00157)	(0.00161)
Constant	2.318***	2.284***	2.236***	2.213***
	(0.289)	(0.264)	(0.282)	(0.293)
Observations	103	103	103	103
Number of countries	36	36	36	36
Number of Instruments	17	17	17	17
Wald chi2	1043.71	460.73	370.11	1766.89
Prob>chi2	0.000	0.000	0.000	0.000
AR(1) p-value:	0.101	0.146	0.122	0.146
AR(2) p-value:	0.203	0.494	0.619	0.269
Sargan/Hansen test p-value	1.000	1.000	1.000	1.000

Robust standard errors in parentheses.
*** p < 0.01, ** p < 0.05, * p < 0.1.

Table 3. Hausman Specification Test Results.

	Coefficients: (b) fe	(B) re	(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
EXT DEBT_GDP	0.001226	0.0025663	−0.0013404	0.0001883
INST_QLITY	0.0041234	0.002757	0.0013664	0.0007284
SAVINGS	0.2687484	0.406174	−0.1374256	0.029582
TRADE	0.2589223	0.2312508	0.0276715	–
SCHOOL ENROLMENT	0.0103957	0.0061674	0.0042283	0.0011452
EXT DEBT_EXPORT	−0.0009363	−0.0008074	−0.0001289	0.000051
POPULATION	−0.1145979	−0.1583685	0.0437707	0.012678
INFLATION	−0.0035608	−0.0054816	0.0019207	0.0002178

b = consistent under Ho and Ha; obtained from xtreg.
B = inconsistent under Ha, efficient under Ho; obtained from xtreg.
Test: Ho: difference in coefficients not systematic.
chi2(8) = (b-B)'[(V_b-V_B)^(−1)](b-B).
= 14.07.
Prob>chi2 = 0.0800.
(V_b-V_B is not positive definite).

enhances economic growth in the presence of good governance or institutions. This evidence is contrary to studies which do not control for the effect of institutional quality (refer to Table 1 column 2 of Doğan & Bilgili, 2014, p. 216); DiPeitro and Anoruo (2012). In such studies, external debt harms economic growth.

Our objective in column (2) was to find out whether the impact of external debt on economic growth is through institutional quality. To achieve this, we interacted external debt and institutional quality. The interaction term between institutional quality and external debt to GDP produced negative and had a significant coefficient of 0.00821. Institutional quality enters into the column at a 1% significant level and still recorded the *a priori* positive sign. In addition, External debt to GDP does not only have a significant positive coefficient, but also the introduction of the interaction term enhances the external debt's impact on economic growth. Comparatively, the inclusion of the interaction term increases external debt's impact on economic growth by 0.21 percentage points. This finding supports Presbitero (2008) that countries with some level of institutional quality benefit more from external debt.

We find extensive studies that support the existence of a "bell shape" or an inverted "U" shape between external debt and economic growth (Cordella et al., 2010; DiPeitro & Anoruo, 2012; Doğan & Bilgili, 2014; Eberhardt & Presbitero, 2015; Ouyang & Rajan, 2014; Panizza & Presbitero, 2014; Pattillo et al., 2011; Megersa, 2015). These studies consolidate their findings on the concept of the debt laffer curve and submit that the impact of external debt on growth tends to be negative and significant at a higher external debt threshold. Unlike the studies of Pattillo et al. (2011)and Caner et al. (2010) we failed to estimate the exact turning point at which the impact of external debt on economic outcomes becomes negative; however, we tested the validity of this claim and found support for the presence of a "bell shape" in the external debt and economic growth relationship. In order to test for the presence of an inverted "U" shape in the given sample, we included a squared term of the external debt. Our results in column (3) of Table 2 echo the fact that external debt to GDP squared (EXTD_GDP2) is statistically significant and negative. Thus, a proportionate increase in EXTD_GDP2 will cause GDP per capita to decrease by about 0.093%. This finding indicates that if a

country accumulates external debt beyond a certain percentage of its GDP, each additional external debt contracted will have negative impact of economic growth.

In column (4) of Table 2, we focus on testing the relevance of institutional quality in the external debt and economic growth relationship at the turning point of the debt laffer curve. The interaction term between external debt squared and institutional quality (INTERACTION2) produces negative coefficient, albeit insignificant. Also, external debt squared (EXTD_GDP2) lost significance in the model but maintained the negative sign. These results greatly support the nonlinear assumptions in the empirical literature and indicate further that external debt becomes irrelevant at higher debt thresholds (Cordella et al., 2010). We continue to record a significant and positive impact of institutional quality on macroeconomic results, even at higher debt threshold in column (4). There is strong evidence in column (4) of Table 2 to believe that the quality of a host nation's institutions can turn the negative and significant effect of high external debt to GDP into a negative and insignificant effect. Thus, as countries take on more external debt up to a point, any additional external debt acquired will have no influence on economic growth.

4.3.2 *Control variables*

Initial GDP per capital (L.LGDPPC) is significant at 1% throughout the four models. This supports our earlier assertions that economic growth is continuous, and therefore current performance cannot be isolated from previous gains.

As expected, Savings (LSAV) as a percentage of GDP is significant and positive in all the models. This confirms other studies that the rates at which countries save and invest influence the disparities in growth rates immensely (Megersa, 2015). A parallel analysis of the coefficients of savings and external debt reveals that, although all two variables produce positive and significant coefficients, the values of LSAV exceed that of EXTD_GDP in all the models. This is expected, because external debt comes with the responsibility of repayment, whereas savings do not. Hence, the positive impact of external debt on economic growth is minimal compared to savings. We acknowledge that this finding is not puzzling but merely unifies theoretical expectations. Trade enters all four models significantly at conventional levels and maintains the expected positive sign throughout. This result does not disagree with Dollar and Kraay (2003, p. 133) that "countries with better institutions and countries that trade more grow faster." Our measure of human capital is school enrolment. This, although it records the expected positive sign, it, however, does not enter the model in column (1) and (2) (Cordella et al., 2010). Eventually, we find reasons to support related empirical works in column (3) and (4) that human capital is statistically significant in growth regressions (Acemoglu et al., 2014).

Considering the staggering upshot of external debt to the rate of export in SSA, it is not surprising that external debt as a ratio of export (DEBT_EXP) is significantly negative in all four models (Pattillo et al., 2011). There are also divided results on the effect of Population growth rate on macroeconomic outcomes. Whereas some studies argue that a large population promotes growth because it creates large markets (Agbloyor et al., 2014, 2016; Doğan & Bilgili, 2014) other studies suggest that a large population overweighs the economy, especially if the population is not trained to contribute meaningfully to human capital (Cordella et al., 2010). Our results are biased toward the latter preposition. Population growth rate (POP_GRATE) is negative and significant at 1% in column (1), (2), (3) and (4). Inflation is used to proxy for macroeconomic stability. It epitomizes poor performance when compared

to world's regions; it is therefore not surprising it enters all four models significantly at conventional levels with negative coefficients. This, however, is not contrary to theoretical expectations. It merely affirms that the study sample jointly has poor macroeconomic policies.

4.3.3 *Unbundling institutional quality*

Following the study of Agbloyor et al. (2016), we unbundle the institutional quality index into its six sub-components to explore which sub-component influences institutional quality the most in SSA. The results presented in Appendix C show that all the six sub-components of institutional quality are statistically significant at conventional levels. This means that for an economy to reap the full dividends of institutional quality, all six components should be working effectively. Intuitively, businesses will not flourish in a politically unstable economy, no matter the effectiveness of the government or the quality of rule of law. Also, if an economy is stable and the public officials are corrupt, external debt will be siphoned into unprofitable investments. Gyemah-Brempong (2001) estimates that a one-point increase in corruption will decrease GDP by between 0.75 and 0.9 percentage points. Moreover, if the citizenry does not freely participate in the election of governments, ineffective governments tend to stay in power longer by continuously weakening the various institutional components to support their agenda. The six institutional indicators are somewhat interconnected and succeeding in each component is key to benefiting from external debt. These findings, in summary, presuppose that SSA can benefit immensely from external debt only if there are proper institutional quality in all six dimensions that can moderate the acquisition, disbursement and servicing of external debt.

4.3.4 *Robustness check of the results*

To check the robustness of our results we use the Random Effect-GLS model. However, before concluding on the use of this model, we performed the Hausman test to choose between the Random Effect-GLS and the Fixed Effect (within) regression. The results of the Hausman specification test which favors the Random Effect-GLS is shown in Table 3. The results of the Random Effect-GLS are presented in Table 4 below. To check the validity of the system's GMM results, we estimate four different models under the Random Effect-GLS estimator. From Table 4, external debt is persistently significant and positive at conventional levels and is consistent with the system GMM estimator output. Contrary to the system GMM results, our variable of interest – institutional quality, failed to enter the model [column (1)] although it retained the expected positive sign. However, in column (2) of Table 4, when we interacted institutional quality with external debt, it recorded a positive coefficient of 0.0127 at a 1% significant level. This is an indication that external debt gels well with institutional quality at a lower external debt to GDP threshold. Column (4) suggests that at higher external debt thresholds, the quality of institutions is significant in determining whether an economy benefits from external debt.

To confirm the non-linearity produced by the system GMM estimator, we used the Random Effect-GLS estimator to run similar regression. We found sufficient reasons to uphold the existence of the debt laffer curve in examining the relationship among external debt, institutions and economic growth. Specifically, we show in column (3) that external debt to GDP has a positive and significant coefficient of 0.00468; whereas external debt to GDP squared recorded a negative and statistical significant value of −0.00081. This gives an indication that beyond a certain point, an additional unit of

Table 4. Random Effect-GLS Results.

VARIABLES	(1) LPCGDP	(2) LPCGDP	(3) LPCGDP	(4) LPCGDP
EXT DEBT_GDP	0.00257***	0.00428***	0.00468***	0.00413***
	(0.000881)	(0.000911)	(0.000970)	(0.00129)
INST_QLITY	0.00276	0.0127***	0.00607**	0.00588**
	(0.00221)	(0.00274)	(0.00251)	(0.00252)
INTERACTION		−0.00660***		
		(0.000937)		
EXT DEBT_GDP2			−0.00081***	−0.000048
			(0.00011)	(0.000098)
INTERACTION2				−0.000012
			0.00011	(0.000014)
SAVINGS	0.406***	0.367***	0.387***	0.391***
	(0.102)	(0.0926)	(0.0951)	(0.0925)
TRADE	0.100***	0.0852***	0.0813***	0.0796***
	(0.0252)	(0.0274)	(0.0244)	(0.0245)
SCHOOL ENROLMENT	0.00617	0.00782	0.00949*	0.0127*
	(0.00756)	(0.00570)	(0.00531)	(0.00694)
EXT DEBT_EXPORT	−0.000807***	−0.000821***	−0.000830***	−0.00087***
	(0.000196)	(0.000187)	(0.000186)	(0.000195)
POPULATION	−0.158***	−0.155***	−0.154***	−0.154***
	(0.0335)	(0.0411)	(0.0406)	(0.0401)
INFLATION	−0.00548***	−0.00485***	−0.00513***	−0.00514***
	(0.00164)	(0.00164)	(0.00164)	(0.00168)
Constant	2.787***	2.728***	2.684***	2.665***
	(0.151)	(0.165)	(0.175)	(0.173)
Observations	109	109	109	109
Number of countries	36	36	36	36
Observations	109	109	109	109
R-squared	0.7153	0.7334	0.7347	0.7254

Robust standard errors in parentheses.
*** p < 0.01, ** p < 0.05, * p < 0.1.

external debt acquired will reduce GDP by 0.081%. Meanwhile, the results in column (4) suggest that if an economy puts in place the right institutional mechanisms, it can transform the negative significance of high external debt to GDP ratio into negative insignificant, as reported by the system GMM estimator. Turning to the control variables, they altogether recorded their expected signs in line with the system GMM technique at 1% level of significance.

5. Conclusion and recommendations

The introduction of aid or debt into the growth debate brought to light mixed and disjointed evidence. Lately, a growing population of studies is investigating institutional quality as sources of long-run growth. Our study attempts an explanation on the joint impact of external debt and institutional quality on economic growth fortunes among 36 countries in SSA between 1996 and 2013. Whereas external debt has varied effects on economic outcomes, institutional quality is expected to have positive effect in the literature. The results from the study throw more lights on these theoretical expectations. In the context of the study, we find that external debt, institutional quality, savings, trade, school enrolment, population, external debt to export ratio, and inflation play vital roles in explaining economic growth patterns in SSA.

The study advances that the level of external debt highly correlates with the level of growth in SSA. If a country can channel external debt into viable investment, the debt is able to pay for itself and positively influences growth. On the other hand, where a country relies extensively on external debt beyond reasonable levels, external debt becomes irrelevant and in some cases its impact on economic outcomes tends to be negative and significant. The study posits that external debt is not entirely bad, as some parts of the literature have indicated. We add that the extent to which an economy prospers from external debt, depends on the available institutional mechanisms that acquire, disburse and repay the debt.

Moreover, the nonlinearity between external debt and growth places a cap on the degree to which institutional quality can moderate external debt's impact on growth. Beyond a certain level of debt, institutional quality cannot restrain the negative effect of external debt on growth.

Another important revelation from our study is that SSA over the years records worsening external debt to export ratio. As a result, the region does not earn enough foreign exchange to service the already foreign denominated external debt. This phenomenon coupled with deteriorating local currencies open the region to exchange rate volatilities, and external debt may swing upwards with these fluctuations. The study uses six different dimensions of governance indicators from Kaufmann et al. (2010) to measure institutional quality. These include Voice and Accountability; Political Stability and Absence of Violence/Terrorism; Government Effectiveness; Regulatory Quality; Rule of Law; and Control of Corruption. Our results show that all six indicators are important, and therefore SSA countries should strive to excel in all.

Based on the study's findings, we provide relevant policy ramifications for investors, development partners and borrowing economies. In developing policies toward efficient allocation of loans, commercial creditors and development partners should ensure that the borrowing economy has in place at least some level of institutional quality. The level of institutional quality will not only prevent fungibility of debt but will also ensure that debt is maintained at sustainable levels. In effect, institutional quality minimizes the risk of debt overhang. Host nations should also focus on developing economy-wide institutions, especially in the six governance indicators outlined by Kaufmann et al. (2010). Most often countries perform better in some of the institutional quality indicators and neglect others to allow them to deteriorate. Our study confirms that all six indicators are relevant, and therefore SSA economies need to formulate policies that will ensure strengthening of these indicators. Development assistance in the form of debts should also target countries with good institutional reforms so as to encourage others to emulate them. But this should not override the need to ensure that countries do not take on more debt than necessary.

Disclosure statement

No potential conflict of interest was reported by the author.

References

Acemoglu, D., Gallego, F. A., & Robinson, J. A. (2014). Institutions, human capital, and development. *The Annual Review of Economics*, *6*, 875–912. doi:10.1146/annurev-economics-080213-041119

Acemoglu, D., Johnson, S., Robinson, J. A., & Thaicharoen, Y. (2003). Institutional causes, macroeconomic symptoms: Volatility, crises and growth. *Journal of Monetary Economics*, *50*, 49–123. doi:10.1016/S0304-3932(02)00208-8

Agbloyor, E. K., Abor, J. Y., Adjasi, C. K. D., & Yawson, A. (2014). Private capital flows and economic growth in Africa: The role of domestic financial markets. *Journal of International Financial Markets, Institutions and Money*, *30*, 137–152. doi:10.1016/j.intfin.2014.02.003

Agbloyor, E. K., Gyeke-Dako, A., Kuipo, R., & Abor, J. Y. (2016). Foreign direct investment and economic growth in SSA: The role of institutions. *Thunderbird International Business Review*, *7*, 479–497. doi:10.1002/tie.21791

Asiedu, E., & Lien, D. (2011). Democracy, foreign direct investment and natural resources. *Journal of International Economics*, *84*, 99–111. doi:10.1016/j.jinteco.2010.12.001

Bank, W. (2010). *Africa's Infrastructure: A time for transformation*. Washington, DC: World Bank.

Bank, W. (2016). *Indicators of governance and institutional quality*. Washington, DC: World Bank.

Barro, R. J., & Sala-i-Martin, X. (2004). *Economic Growth* (2nd ed.). Cambridge, Massachusetts: The MIT Press.

Busse, M., & Hefeker, C. (2007). Political risk, institutions and foreign direct investment. *European Journal of Political Economy*, *23*, 397–415. doi:10.1016/j.ejpoleco.2006.02.003

Caner, M., Grennes, T., & Koehler-Geib, F. (2010). *Finding the tipping point: When sovereign debt turns bad* (pp. 63–75). Washington, DC: World Bank.

Chanda, A., & Dalgaard, C. (2008). Dual economies and international total factor productivity differences: Channelling the impact from institutions, trade, and geography. *Economica*, *75* (300), 629–661. doi:10.1111/ecca.2008.75.issue-300

Cherchye, L., & Verriest, A. (2016). The impact of home-country institutions and competition on firm profitability. *International Business Review*, *25*(4), 831–846. doi:10.1016/j.ibusrev.2015.10.005

Cordella, T., Ricci, L. A., & Ruiz-Arranz, M. (2010). Debt overhang or debt irrelevance?*IMF Staff Papers*, *57*(1), 1–24. doi:10.1057/imfsp.2009.20

DiPeitro, W. R., & Anoruo, E. (2012). Government size, public debt and real economic growth: A panel analysis. *Journal of Economic Studies*, *39*(4), 410–419. doi:10.1108/01443581211255620

Doğan, İ., & Bilgili, F. (2014). The non-linear impact of high and growing government external debt on economic growth: A Markov Regime-switching approach. *Economic Modelling*, *39*, 213–220. doi:10.1016/j.econmod.2014.02.032

Dollar, D., & Kraay, A. (2003). Institutions, trade, and growth. *Journal of Monetary Economics*, *50*, 133–162. doi:10.1016/S0304-3932(02)00206-4

Easterly, W., & Levine, R. (2001). It's not factor accumulation: Stylized facts and growth models. *World Bank Economic Review*, *15*(2), 177–219. doi:10.1093/wber/15.2.177

Eberhardt, M., & Presbitero, A. F. (2015). Public debt and growth: Heterogeneity and non-linearity. *Journal of International Economics*, *97*, 45–58. doi:10.1016/j.jinteco.2015.04.005

Gyemah-Brempong, K. (2001). Corruption, economic growth, and income inequality in Africa. *Economics of Governance*, *3*, 183–209.

Hall, R., & Jones, C. I. (1999). Why do some countries produce so much more output per worker than others?*The Quarterly Journal of Economics*, *114*, 83–116. doi:10.1162/003355399555954

Hodgson, G. M. (2000). What is the essence of institutional economics?*Journal of Economic Issues*, *34*(2), 317–329. doi:10.1080/00213624.2000.11506269

IMF. (2015). *Making public investment more efficient*. Washington, DC: Author.

Kaufmann, D., Kraay, A., & Mastruzzi, M. (2010). *The Worldwide Governance Indicators: A summary of methodology, data and analytical Issues* (World Bank Policy Research Working Paper no. 5431). Retrieved from http://ssrn.com/abstract=1682130

McKinsey Global Institute. (2013). *Infrastructure productivity: How to save $1 trillion a year*. San Francisco, CA: McKinsey and Company.

Megersa, K. A. (2015). The laffer curve and the debt-growth link in low-income Sub Saharan African economies. *Journal of Economic Studies*, *42*(5), 878–892. doi:10.1108/JES-06-2014-0095

North, D. C. (1986). The new institutional economics: 3rd Symposium on The New Institutional Economics. *Journal of Institutional and Theoretical Economics*, *142*(1), 230–237.
Okada, K. (2013). The interaction effects of financial openness and institutions on international capital flows. *Journal of Macroeconomics*, *35*, 131–143. doi:10.1016/j.jmacro.2012.11.003
Ouyang, A. Y., & Rajan, R. S. (2014). What determines external debt tipping points? *Journal of Macroeconomics*, *39*, 215–225.
Panizza, U., & Presbitero, A. F. (2014). Public debt and economic growth: Is there a causal effect? *Journal of Macroeconomics*, *41*, 21–41. doi:10.1016/j.jmacro.2014.03.009
Papaioannou, E. (2009). What drives international financial flows? Politics, institutions and other determinants. *Journal of Development Economics*, *88*, 269–281. doi:10.1016/j.jdeveco.2008.04.001
Pattillo, C., Poirson, H., & Ricci, L. (2011). External debt and growth. *Review of Economics and Institutions*, *2*(3), 1–30. doi:10.5202/rei.v2i3.45
Presbitero, A. F. (2008). The debt-rowth nexus in poor countries: A reassessment. *The Open-Access, Open-Assessment E-Journal*, *2*, 1–30.
Tang, S. H. K., Groenewold, N., & Leung, C. K. Y. (2008). The link between institutions, technical change and macroeconomic volatility. *Journal of Macroeconomics*, *30*, 1520–1549. doi:10.1016/j.jmacro.2008.02.002
Wooldridge, J. M. (2001). Applications of generalized method of moments estimation. *Journal of Economic Perspectives*, *15*(4), 87–100. doi:10.1257/jep.15.4.87

APPENDIX

APPENDIX A: Correlation Matrix

Variable	GDPPC	EXT DEBT_GDP	INST_QLITY	SAVINGS	TRADE	SCHOOL ENROLMENT	EXT DEBT_EXPORT	POPULATION	INFLATION	VACCT	POLSTAB	GOVEFF	REGLQLITY	RULE	CTRLCORRP
GDPPC	1.0000														
EXT DEBT_GDP	−0.3240*	1.0000													
INST_QLITY	0.5158*	−0.4357*	1.0000												
SAVINGS	0.4326*	−0.4797*	0.3747*	1.0000											
TRADE	0.5676*	−0.4016*	0.3216*	0.4052*	1.0000										
SCHOOL ENROLMENT	0.4231*	−0.2405*	0.4201*	0.2699*	0.8023*	1.000									
EXT DEBT_EXPORT	−0.4613*	0.7063*	−0.4403*	−0.4021*	−0.4208*	−0.2895*	1.0000								
POPULATION	−0.5395*	0.1465*	−0.3742*	−0.1357	−0.3379*	−0.3777*	0.3301*	1.0000							
INFLATION	0.1224	−0.2466*	0.0205	0.2444*	0.0973	−0.0166	−0.2036*	0.1176	1.0000						
VACCT	0.3855*	−0.4133*	0.7417*	0.2882*	0.2591*	0.3045*	−0.3585*	−0.2087*	0.0421	1.0000					
POLSTAB	0.4447*	−0.3181*	0.7697*	0.2290*	0.2788*	0.3159*	−0.3179*	−0.2392*	0.0026	0.7799*	1.0000				
GOVEFF	0.4948*	−0.4250*	0.8532*	0.4089*	0.2947*	0.3726*	−0.4281*	−0.3212*	0.0999	0.8021*	0.7388*	1.0000			
REGLQLITY	0.4849*	−0.4637*	0.8452*	0.4118*	0.3010*	0.3514*	−0.4382*	−0.2517*	0.1084	0.7951*	0.7177*	0.9188*	1.0000		
RULE	0.4266*	−0.4235*	0.8334*	0.3958*	0.2460*	0.3405*	−0.3883*	−0.2618*	0.0693	0.8315*	0.8516*	0.9113*	0.8835	1.0000	
CTRLCORRP	0.3545*	−0.4016*	0.7671*	0.2482*	0.2482*	0.3047*	−0.3941*	−0.2917*	0.0529	0.7492*	0.7655*	0.8561*	0.7774*	0.8731*	1.0000

APPENDIX B: Countries included in the study sample (in no particular order)

Benin	Cote d'Ivoire	Madagascar	Senegal
Botswana	**Gabon**	Malawi	Sierra Leone
Burkina Faso	**Ghana**	Mali	South Africa
Burundi	**The Gambia**	Mauritania	Sudan
Cabo Verde	Guinea-Bissau	Mauritius	Swaziland
Cameroon	Guinea	Mozambique	Tanzania
Comoros	Kenya	**Niger**	Togo
Congo, Dem. Rep.	Liberia	Nigeria	Uganda
Congo, Rep.	Lesotho	Rwanda	Zambia

APPENDIX C: Effects of Sub-components of Institutional Quality on Economic Growth

VARIABLES	(1) LGDPPC	(2) LGDPPC	(3) LGDPPC	(4) LGDPPC	(5) LGDPPC	(6) LGDPPC
L. LGDPPC	0.0749**	0.0479	0.0844***	0.0888***	0.0781**	0.0750**
	(0.0333)	(0.0375)	(0.0323)	(0.0253)	(0.0320)	(0.0337)
EXT DEBT_GDP	0.00538***	0.00512***	0.00589***	0.00674***	0.00532***	0.00622***
	(0.00202)	(0.00187)	(0.00171)	(0.00184)	(0.00201)	(0.00213)
SAVINGS	0.438***	0.436***	0.418***	0.401***	0.434***	0.466***
	(0.100)	(0.0932)	(0.0914)	(0.0975)	(0.0994)	(0.0858)
TRADE	0.0769***	0.0832***	0.0846***	0.0805***	0.0914***	0.0665***
	(0.0235)	(0.0201)	(0.0252)	(0.0254)	(0.0284)	(0.0249)
SCHOOL ENROLMENT	0.0110**	0.00924***	0.00961**	0.00864*	0.00881*	0.0141***
	(0.00478)	(0.00335)	(0.00484)	(0.00491)	(0.00530)	(0.00377)
EXT DEBT_EXP	−0.000858***	−0.000885***	−0.000960***	−0.000929***	−0.000939***	−0.00101***
	(0.000231)	(0.000200)	(0.000208)	(0.000213)	(0.000194)	(0.000191)
POPULATION	−0.153***	−0.140***	−0.136***	−0.164***	−0.148***	−0.132**
	(0.0521)	(0.0476)	(0.0489)	(0.0486)	(0.0521)	(0.0514)
INFLATION	−0.00593***	−0.00551***	−0.00705***	−0.00602***	−0.00655***	−0.00744***
	(0.00169)	(0.00165)	(0.00169)	(0.00177)	(0.00166)	(0.00170)
VACCT	0.00689***					
	(0.00254)					
POLSTAB		0.00628***				
		(0.00185)				
GOVEFF			0.00743***			
			(0.00239)			
REGLQTY				0.00905***		
				(0.00269)		
RULE					0.00573**	
					(0.00261)	
CTRLCORRP						0.00528***
						(0.00186)
INTERACTION	−8.22e-05*	−6.57e-05*	−9.30e-05***	−0.000112**	−7.00e-05*	−0.000102***
	(4.58e-05)	(3.62e-05)	(3.43e-05)	(4.85e-05)	(4.14e-05)	(3.63e-05)
Constant	2.385***	2.435***	2.375***	2.340***	2.426***	2.408***
	(0.297)	(0.277)	(0.259)	(0.250)	(0.286)	(0.292)
Observations	103	103	103	103	103	103
Number of countries	36	36	36	36	36	36

Robust standard errors in parentheses *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.