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DOMESTIC DEBT AND ECONOMIC GROWTH IN NIGERIA: AN ARDL BOUNDS TEST APPROACH

Ibrahim AYUBA K.[1], Shazida MOHD KHAN[2]

[1,2] *University Utara Malaysia, Sintok, Malaysia*
Corresponding author's e-mail: ibrahimayubak@gmail.com

Abstract. The study examines the long-run relationship between domestic debt and the fiscal policy of economic growth in Nigeria in the period from 1981 to 2013 owing to government reforms in the financial system, particularly due to the establishment of the Debt Management Office (DMO) in 2000 and a new fully funded pension fund scheme, both of which resulted in a resurgence of the debt market. The issue that is often raised is the doubt regarding the stability of the debt and its likely implications for the economy, as well as the unpleasant consequences for the government embarking on consolidation. The study employs the autoregressive distributed lag (ARDL) approach and the bounds test as proposed by Narayan (2005), anchored on the perspective of the endogenous growth theory. The results reveal that although overall the adverse negative domestic debt hurts the economy, it has a positive effect on the total aggregate government revenue and economic growth in Nigeria in the research period. Furthermore, the paper develops a system to assess the speed of the adjustment mechanism coefficient in an error correction model (ECM).

Keywords: *Autoregressive Distributive Lag, Domestic Debt, Economic Growth, Fiscal Policy, Government Revenue.*

JEL Classification: F23, F36, F43, Q56, O16

INTRODUCTION

The current build-up of domestic debt has become a central policy issue, particularly for Nigeria and most Sub-Saharan African (SSA) countries (Hanson, 2007; African Development Bank, (AfDB) (2013). This topical issue concerns not only the biggest economy in Africa with the largest population but also the oil sector, which is a major source of revenue (Gulde, Pattillo, & Christensen, 2006; Okonjo-Iweala & Osafo-Kwaako, 2007). The previous and current massive fluctuations in revenue are predominantly related to the financial and global economic turmoil attributed to the impact of economic and political events occurring in western countries (AfDB, 2013). However, heavy cuts in the revenue generate tension amongst policy makers, especially when financing governmental fiscal budgets across the federal entities – the federal, state, and local governments. This has resulted in revenue levelling through engagement of more domestic debt/borrowing rather than external debt/borrowing, partly due to its implications for the economy in the past (Okonjo-Iweala, Soludo, & Muhtar, 2002; Poirson, Pattilo, & Ricci, 2004).

Domestic borrowing has become more appealing to governments in recent years (Beaugrand, Loko, & Mlachila, 2002; Eichengreen, Hausmann, & Panizza, 2008; Hanson, 2007; Kahn, 2005). Furthermore, due to the reforms in the financial system, particularly, the establishment of the Debt Management Office (DMO) in 2000 and launch of a new fully funded pension fund scheme in Nigeria in 2004, a number of non-bank players entered the system (Beaugrand, Loko, & Mlachila, 2002; DMO, 2014; Fox & Palmer, 2001). This may also have resulted in a resurgence of domestic debt market activity in the country. The issues that are often raised concern the doubts regarding the stability and sustainability of the debt (Velinov, 2014) as well as its likely implications for the economy (Cochrane, 2010). However, another emerging area of concern is the probable unpleasant consequences for the government embarking on consolidation (Chalk & Hemming, 200; Chowdhury, 2001; Mink & Hann, 2013).

In this regard, it is evident that external funds, despite their appeal, in the form of foreign aid (FA), foreign direct investment (FDI), official development assistance (ODA), and foreign remittances (FR), can be very unpredictable and lead to an upsurge in domestic debt (Reinhart & Rogoff, 2011a; Kumar & Woo, 2010). This fluctuation can be attributed to the impact of the recent and previous global financial crises that began in the USA during the period of 2007–2008, leading to a financial meltdown, credit crunch, and debt crisis, which affected most of the developed western countries. Additionally, scholars and policy makers argue that the crisis affected the flow of funds, especially to the developing countries (Fan & Lv, 2012). Therefore, the drastic cuts in revenue in Nigeria and other developing countries may be attributed to this crisis, where poor citizens were affected the most by the stalling of developmental projects, programs, and initiatives. Policies, funds, measures, and programs are required to cushion the effects on vulnerable people (Afonso, 2005; Koo, 2008; Wachtel, 2001).

The role of domestic debt/borrowing as a measure to level off the revenue in order to influence the direction of economic activities continues to be the focus for an ongoing debate in the literature. Therefore, the fiscal policy implemented by policy makers, economists, and scholars to maintain macroeconomic stability continues to be a dominant policy instrument that plays a crucial role in a number of developing economies (Şen & Kaya, 2013). Policy makers wish to mitigate the financial gap through domestic borrowing in order to achieve macroeconomic stability and promote growth. As Keynesian economists simply put it, "state's borrowing doesn't cause harm provided it is properly spent". This study aims to examine the long-term effects of the interaction of fiscal policy variables of domestic debt/borrowing on economic growth in Nigeria.

The present study differs from other empirical work in many respects, such as the method employed. Moreover, only a few studies have been conducted in Nigeria with obvious weaknesses such as the data span of the study and non-inclusion of important fiscal policy aggregate variables that may suggest a bias or limit insight into vital underlying information. Therefore, this paper implementing the autoregressive distributed lag (ARDL) bounds test methodology developed by Pesaran, Shin and Smith (2001) is a modest contribution to the body of literature on domestic debt and economic growth. Not much has been reported in the body of

existing empirical research with respect to debates in Nigeria during the period under discussion.

Nigeria is the most populated and largest economy in Africa, yet it has the largest proportion of poor and vulnerable people in the world. This is despite vast human and material resources that are untapped in comparison with other countries. Even so, various governments have envisioned that the country will find its place among the top 20 economies in the world by the year 2020, with improved standard of living for its people.

1. LITERATURE REVIEW

The issue of scarcity of funds to finance economic growth and development relates to promoting considerable revenue levelling off. The volume of debt can become problematic for policy makers, investors, and by extension, economic growth, particularly when it is anchored on a major source of revenue (Trehan & Walsh, 1988), as it may undermine savings and subsequently truncate growth. Woo (2003) considers various reasons for debt accumulation, such as increase of long-term interest rates, which invariably impacts savings. It may also increase distortionary taxation, suggesting a decrease in revenue, increase in inflation, and a greater uncertainty and vulnerability to crises. Meanwhile, Takashima, Kato, and Ogibayashi (2014) suggest that domestic debt is a strategy for firm financing, although more viable through the stock market than bank financing, which had an overall impact on the economy of South Korea.

However, to support this view, scholars have shown how high volumes of debt could lead to severe implications for long-term growth (Gale & Orszag, 2003). For instance, in addition to distortionary taxation (revenue) (Gale, et al., 2004; Baldacci & Kumar, 2010; Barro, 1979; Dotsey, 1994), inflation (Sargent & Wallace, 1981; Barro, 1995; Cochrane, 2010; Filardo, Mohanty & Moreno, 2012) and a blink prospect in policies, debt crises are also associated with the ability to trigger bank crises, exchange rates, and/or currency crises (Furman & Stiglitz, 1998). These implications can damage the health of the economy (Burnside, Eichenbaum & Rebelo, 2001). In similar vein, Aghion and Kharroubi (2008) and Woo (2009) argue that an increasing and voluminous debt can complicate and constrain pro-cyclicality and counter-cyclical policy, resulting in the volatility of fiscal policy consequently impeding economic growth. This is evident considering the policies which policy makers use responding to a reduction in deficit or attempting to steady the fluctuations in the economy, especially in developing and, to a large extent, emerging economies (Pattilo *et al.*, 2006).

Furthermore, evidence from a plethora of studies confirms that public debt has a considerable impact on economic growth in developing economies (Mohd Daud, Ahmad, & Azman-Saini, 2013; Fischer, 1993; Reinhart & Rogoff, 2011a,b; Romer, 1994), particularly in relation to the "debt overhang theory", as it rather relates to external debt. SSA countries encounter a precarious situation wherein a country's debt service becomes so burdensome that a large proportion of the budget is paid out to external creditors. In most cases, this situation is aggravated by resultant capital flight and coupled with extreme poverty, deplorable standards of living, and

diminishing growth (Kumar & Woo 2010; Okonjo-Iweala, Soludo, & Muhtar, 2002). Most scholarly studies place the issue into a proper perspective, utilising conceptual and empirical reasoning to describe the scenario. Economists and scholars have propounded several ideas pertaining to the indulgence and support of public (external) debt in the past backed by the "financing gap theory".

The resource gap, in terms of capital or inadequate savings, is recognised as very crucial and lacking in most SSA countries. Therefore, external debt is suggested as a suitable means to finance critical sectoral needs, which would facilitate, speed up investment, and develop the economy. However, recent studies have suggested the positive role of domestic debt/borrowing in mobilizing savings, which has been hitherto lacking or inadequate due to the active attraction of the debt/bond market (Foncerrada, 2005; Thumrongvit, Kim & Pyum, 2013).

Abbas and Christensen (2010) supported crowding in investment and strengthened this position owing to sustained growth through counter-cyclical policy, especially for the BRICS during the global crisis (Jawadi, Mallick, & Sousa, 2011). Another view pertains to the repercussion on fiscal and debt sustainability due to external versus domestic debt in view of concessional foreign financing. Beaugrand, Loko, and Mlachila (2002) and Abbas and Christensen (2010) expressed their views on the implication of interest burden for domestic debt and the possibility of restricting a large amount of the revenue and crowding out, which would benefit vulnerable groups. This may retard spending that may subsequently stimulate growth. Furthermore, reliance on domestic borrowing may lead to a constant rollover, considering the nature and structure of the debt instruments, predominantly short-term, in some low-income countries, with the cost of domestic debt when confronted by a weak tax system or inadequate revenue. Besides, it may make printing of currency inevitable thereby affecting the citizens through inflation (Mohammed, 2009). In addition to this is the implication of the monopoly of domestic debt held by banks, which may not bode well for the economy (Hauner, 2006). The dilemma may worsen, as banks may not be able to finance any form of new private investment or even sustain the previous ones due to over-reliance on easy cash flow from government bonds.

Nowadays, studies are beginning to stress the benefit of debt impact on growth and other macro-economic variables (Detragiache, Gupta & Tressel, 2005; Fabella & Madhur, 2003). Domestic debt may serve as an alternative route for savings incentives, generating stimuli and thus motivating households and investors to save (Mohd Daud, Ahmad, & Azman-Saini, 2013). It may also be instrumental in establishing a yield curve in government debt, which can serve as a benchmark for long-term private debt thereby enhancing development in the corporate bond market (Fabella & Madhur, 2003). Furthermore, increasing domestic debt can crowd in investment, reduce reliance on external debt, and address the challenges related to it by strengthening domestic institution capacity to implement reforms (Moss, Petterson, & Van de Walle, 2006).

Consequently, Kahn (2005) suggested that in most cases, countries that have successfully launched sovereign bonds in the international market have garnered experience and a track record in launching domestic debts. This would bolster the government image and consequently pave the way for the private sector to tap into

the international finance market. It would also play a crucial role in improving the formation of private capital (Hussein & Thirlwall, 1999; Chowdhury, 2001). Domestic debt is also argued to have a positive spill-over effect on the development of private capital. Nevertheless, this can provide benefits as well as pose risks (King & Levine, 1993).

In another line of study, Barro and Sala-i-Martin (1992), Cornford (2009), and AfDB (2013) called for empirical country-specific studies, which may result from unique histories and nature of economic fiscal policy, structure, reforms and development, which vary across nations and regions of the world. Friedman (1978; 1985) stressed the implications pertaining to the argument on whether debt crowds out or crowds in investment, especially in the case of developing economies, which is the issue yet to be fully explored. Therefore, this study will attempt to review some related empirical works in relation to debt and economic growth. For instance, the study conducted by Kemal (2001) and Uzochukwu (2003) presented almost the same findings on the effect of a build-up of public debt, both domestic and external, as negatively influencing the welfare of the people. It also has implications regarding the level of poverty in Pakistan and Nigeria. However, Kemal argued that despite having the highest debt burden percentage in the southern Asia, Pakistan continues to have the capacity to service the debt. Uzochukwu (2003) suggested that the growth and debt (domestic and external) variables, using the per capita income procedure with annualized data set for 1970–2002, largely contributed to the level of poverty in Nigeria based on the fact that a large chunk of revenue is expended on servicing the debt.

Similarly, Sheikh, Faridi, and Tariq (2010) asserted that public debt has been a crucial economic issue in the governance of Southern countries. Despite the intense debate on external debt, there is little evidence with regard to domestic debt. The study adopted the OLS technique to investigate the period between 1972 and 2009. The findings indicate that the volume of domestic debt positively affects economic growth in Pakistan. This suggests that the proper and effective use of such resources for the funding of some government expenditures promotes economic growth. However, it also indicates an inverse relationship between domestic debt services and economic growth. In Nigeria, Adofu and Abula (2009) applied the OLS approach to an annual data set in the period between 1986 and 2005 and concluded that the rising domestic debt was a result of several factors, such as high budget deficit, low output, increased government expenditure, high inflation rate, and narrow revenue base. Hence, their results demonstrated that domestic growth impacts economic growth negatively. However, the range of data for the analysis remains questionable, coupled with limited variables in the estimation.

Similarly, Muhdi and Sasaki (2009) used the OLS estimation for a short-term series study on Indonesia for the period between 1991 and 2006, which indicated that the build-up in external debt is paramount in overcoming high deficit. This could also translate into a positive impact on investment and economic growth. However, the policy resulted in the depreciation of domestic currency, an upsurge of domestic debt, and the displacement of private investment due to the crowding out effect, consequently leading to a reduction in capital stock and output.

Abbas and Christensen (2010) examined the role of the domestic debt market in economic growth in low-income countries and emerging markets during the period between 1975 and 2004. They used panel data, employing dynamic single panel data regression equation and the Granger causality test. The proxy for some variables, due to data paucity, confirmed that moderate levels of mild inflationary domestic debt, in proportion to GDP and bank deposits, have a positive impact on economic growth. The Granger causality supported various routes, such as enhanced monetary policy, deepening of financial market development, institutional accountability, improved private savings, and financial intermediation. It also suggested that beyond a ratio of 35% of bank deposits, the effect will be counterproductive to growth, thereby supporting the issues related to crowding out effect and bank efficiency. In conclusion, they stressed that growth influence of domestic debt increases if it is marketable, promotes positive real interest rates, and is outside the purview of the banking system.

Amassoma (2011) conducted a study on the period between 1970 and 2009, with the variables being stationary at first difference. The author applied the co-integration test, which indicated the absence of co-integration between domestic debt and economic growth. With regard to external debt, it indicated the presence of co-integration with economic growth. The findings of the VAR model suggested a bi-directional causality between domestic debt and economic growth, and the VECM indicated uni-directional causality for external debt and economic growth. Egbetunde (2012) examined the direction of the causality of public debt in Nigeria between 1970 and 2010 using the Granger causality in a VAR model and domestic and external debt variables. He observed the presence of a long-run co-integrating relationship with economic growth. The model may be inadequate, as it fails in relaying the interplay and role of several key economic fiscal variables in the system, such as financial deepening and the capital market that may affect the economic policy recommendations.

Likewise, Umaru, Hamidu, and Musa (2013) focused their study on investigating the relationship between external debt, domestic debt, and economic growth. They further investigated the impact of these variables on economic growth. The study utilized a data set between 1970 and 2010 using the OLS estimation and the Granger causality test after logging variables such as GDP and external and domestic debt. The data was equally subjected to the unit root, integration test, and error correction test mechanism, and the long-run relationship between the variables was determined. The results showed bi-directional causation between external debt and GDP, although there is no causation between domestic debt and GDP. The results did not suggest causation between external and domestic debt. The OLS approach suggested a negative impact of external debt on GDP and positive impact of domestic debt on economic growth. So far, the results of all studies in Nigeria have suggested conflicting findings, in contrast with the studies conducted by Baier and Glomm (2001). Abdullah and Habibullah (2009) conducted their study on Malaysia in the period between 1970 and 2003, which showed that a 1% increase in education increased GDP per capita by 9.42%.

Domestic debt/borrowing and growth studies have been largely dismal in developing countries, as opposed to external debt/borrowing, which has received

adequate attention in the literature. Not much is known empirically about domestic debt and fiscal policy variables in the developing economies. There are few specific country-wise studies on developing nations, particularly SSAs (Abbas & Christensen, 2010), the quest reflecting the policy makers' desire for the country to become one of the 20 biggest economies by 2020, or Nigeria's global commitment to the United Nations 2016–2030 Agenda on Sustainable Development Goals (SDGs). However, the threat of a drop in oil revenues, which constitutes a bulk of finance, is topical. Fiscal policy makers are constrained in their desire to achieve financing for development goals, given the apparent deficit in most development indicators. More importantly, there is a need to assess the role of domestic debt in relation to fiscal behavior and the structure of the budget in financing for development due to its likely backlash. Accordingly, the flagship document of the International Monetary Report (IMR) (2014) claimed that developing countries such as Nigeria have been severely attacked by the global economic and financial crises in several forms and sizes. Therefore, emphatic efforts towards countercyclical fiscal policy must be initiated as well as strengthened.

The objective of this paper is to evaluate the long-run relationship of domestic debt, taking into consideration the interaction of fiscal policy variables with domestic debt, total revenue, total expenditure, financial deepening, and economic growth. We aim to shed light on the co-integration properties of domestic debt, revenue, expenditure, and financial deepening in Nigeria. Policy makers in Nigeria have vigorously pursued reforms supported by the World Bank (WB) and International Monetary Fund (IMF) through structural adjustment programs (SAPs) in the 1980s, which led to liberalization of the banking and financial sector. Several reforms trailed afterwards, which translated into a dominance of fiscal policy operation to complement the monetary policy in the country.

2. EMPIRICAL AND MODEL SPECIFICATION

This study considered the reviewed works of such authors as Arrow *et al.* (2011) and Hunt (2012). It adapted the model suitable for analysis of country-specific effects in relation to domestic debt/borrowing. Meanwhile, the theoretical basis of this study is rooted in the Neoclassical growth presumption that offers an explanation for the determinants of long-run growth. However, the endogenous growth model suggested by Romer (1994) provides a more viable explanation by improving the model formulated by Solow in 1956, which viewed technological change as endogenous instead of exogenous, as it was previously believed. He supported his argument with a call for the growth process at an aggregate level, which had been previously ignored and may perhaps have made it difficult to comprehend some of the issues proffering an explanation for growth.

Romer's ideas laid foundation for several studies considering the "endogenizing technological process as a persistent issue" that can be driven by some specific fiscal policy action, capital and labor being key determinants of growth (Kurz & Salvadori, 1998; Foss, 2012). Therefore, the standard model for this study strongly adapted the works by Abdullah and Habibullah (2009) and Mohd Daud and Azman-Saini (2013). It also borrowed ideas from Otani and Villanueva

(1998), who described how capital stock can be translated into growth by increasing savings through deliberate fiscal action. Villanueva and Mariano (2007) constructed a theory on the relationship between external debt and economic growth through the tools of fiscal policy. In the same vein, this study expanded the neoclassical theory by introducing some endogenous variables in consonance with the neoclassical growth model and adapting the same to this study. The postulation suggests that an economy, which desires to grow, must increase its savings levels through deliberate policy action in conjunction with the financial system (Fry, 1978; 1997; Ogundina, 2013; Thumrongvit, Kim & Pyum, 2013). This has resulted in fiscal reforms in conformity with the WB/IMF SAP reforms in the 1980s. This also led to the emergence of the DMO and new pension schemes and the revamping of the overall financial system. This boosted activity in the bonds market (by banks as well as non-banks) and resulted in the accumulation of domestic savings, aided by the debt market (Friedman, 1978; 1985). Hence, it possibly promoted introduction of viable marketable debt instruments other than the inflationary prone recourse of printing of currency by the Central Bank of Nigeria (CBN, 2012) to level off the revenue, which may have been an alternative and safer approach to increase revenue and investment could have led to economic growth (Friedman, 1978; 1985; Mohammed, 2009).

Therefore, we proceeded with the technique to allow our series to be tested, using the unit root test to ensure that none was beyond I (1). This paper distinguishes itself as it engaged the ARDL bounds test co-integration approach, which is a relatively new method. The method permits for the data to be tested without relying on whether they are stationary at purely I (0) and I (1) and I (0) or I (1) (Pesaran, Shin & Smith, 2001). It is also anchored on the Wald test (implementation of F-statistics of the bounds testing approach) via the critical values of I (1) and I (0). This implies that the area within which the F statistics fall around the bounds inform our decision concerning the existence or absence of co-integration. The results that fall within the bounds are regarded as inconclusive. For instance, Pesaran, Shin and Smith (2001) address some weaknesses in the Engel Granger and Johanen Jesuli co-integration approach with respect to the number of variables in the model, the size of the data, and the number of lags that can be included in the model (Pahlavani, Wilson & Worthington, 2005). Therefore, the ARDL bounds test co-integration approach for the long-run relationship between domestic debt, total revenue, total savings, secondary school educational enrolment, financial deepening, and total expenditure is a relatively new method for testing for co-integration. Moreover, the study is also suitable for a short span of data based on the study observation of 1981–2013 annual time series data (Narayan, 2005).

Furthermore, the analysis focuses on the behaviour of fiscal authorities in increasing revenue through domestic debt to execute government expenditure in financing government budgets, particularly based on the fluctuating oil revenue resources and due to the dominance of the oil revenue in relation to other revenue sources. Coupled with surges in overall government finances, the warrant for the finance gaps to be filled in the form of debt, especially domestic debt from the debt market, is in part similar to Mohammed (2009) recourse to printing of money by the CBN, which is prone to inflation. The constructed model (4) is short-run, model

(3) is the long-run ARDL estimated equation, while the standard equation (2) is tested based on the time series functional form equation (1) presented in the next section.

3. DATA DESCRIPTION

This study utilizes data for the time series of Nigeria for the period between 1981 and 2013. The period was selected based on data availability and in regard of the prevailing circumstances, intensification of the debates, as well as in view of minimal empirical research conducted on domestic debt.

Table 1. Description of variables and data sources

Variable	Description	Source
RGDPW	Real gross domestic product from World Development Indicators (WDI)	WB, 2002; WDI
TSV	Total savings	CBN, 2012
ED	Number of secondary school enrolments	National Bureau of Statistics, Nigeria (NBS)
DD	Government domestic debt	CBN, 2012
TR	Total government revenue	CBN, 2012
FD	Total private credit as percentage of GDP	CBN, 2012
TX	Total government expenditure	CBN, 2012

Note: As indicated in Table 1, most of the variables were sourced from the CBN (2012) statistical bulletin, NBS. Real GDP is obtained from the WDIs.

The functional form model specification is displayed in equation (1) below:

$$\ln(RGDPW_t) = f\left[\ln(TSV_t), \ln(ED_t), \ln(DD_t), \ln(TR_t), FD_t, \ln(TX_t)\right] \qquad (1)$$

Where,

$RGDPW$ = Real GDP per capita (economic growth)

TSV = Total savings

ED = Secondary school enrolment

DD = Domestic debt

TR = Total revenue

FD = Financial development

TX = Total expenditure

$\ln$ = Log

Model (4) is for the short-run and model (3) for the long-run ARDL estimated equation, while the standard equation (2) is tested based on the time series. This produces an error correction representation if there is a long-run relationship. Thereafter, the error correction model is also estimated with the short-run estimates. The error correction model typically represents the speed of adjustment back to its long-run equilibrium due to innovation or shock. Hence, both the long-run and error correction estimates of the ARDL are obtained, given the equation as a representation of the error correction, which is formulated below:

$$\ln(RGDPW_t) = \pi_0 + \beta_1\ln(TSV_t) + \beta_2\ln(ED_t) + \beta_3\ln(DD_t) + \beta_4\ln(TR_t) + \beta_5 FD_t + \beta_6\ln(TX_t) + \varepsilon_t \tag{2}$$

$$\Delta\ln(RGDPW_{t-1})$$
$$= \pi_0 + \beta_1\ln(RGDPW_{t-1}) + \beta_2\ln(TSV_{t-1}) + \beta_3\ln(ED_{t-1})$$
$$+ \beta_4\ln(DD_{t-1}) + \beta_5\ln(TR_{t-1}) + \beta_6 FD_{t-1} + \beta_7\ln(TX_{t-1})$$
$$+ \sum_{i=1}^{p} \tau_1\,\Delta\ln(RGDPW_{t-1}) + \sum_{i=0}^{p} \tau_2\,\Delta\ln(TSV_{t-1})$$
$$+ \sum_{i=0}^{p} \tau_3\,\Delta\ln(ED_{t-1}) + \sum_{i=0}^{p} \tau_4\,\Delta\ln(DD_{t-1}) + \sum_{i=0}^{p} \tau_5\,\Delta\ln(TR_{t-1})$$
$$+ \sum_{i=0}^{p} \tau_6\,\Delta FD_{t-i} + \sum_{i=0}^{p} \tau_7\,\Delta\ln(TX_{t-1}) + \varepsilon_t \tag{3}$$

$$\Delta\ln(RGDPW_{t-1})$$
$$= \pi_2 + \sum_{i=1}^{p} \tau_1\,\Delta\ln(RGDPW_{t-1}) + \sum_{i=0}^{p} \tau_2\,\Delta\ln(TSV_{t-1})$$
$$+ \sum_{i=0}^{p} \tau_3\,\Delta\ln(ED_{t-1}) + \sum_{i=0}^{p} \tau_4\,\Delta\ln(DD_{t-1}) + \sum_{i=0}^{p} \tau_5\,\Delta\ln(TR_{t-1})$$
$$+ \sum_{i=0}^{p} \tau_6\,\Delta FD_{t-i} + \sum_{i=0}^{p} \tau_7\,\Delta\ln(TX_{t-1}) + \psi ecm_{t-i} \tag{4}$$

$$ECM_t = \ln(RGDPW_t) - \beta_1\ln(TSV_t) + \beta_2\ln(ED_t) + \beta_3\ln(DD_t) + \beta_4\ln(TR_t)$$
$$+ \beta_5 FD_t + \beta_6\ln(DTX_t) + \pi_0 \tag{5}$$

Therefore, the symbol ψ is a representation of the speed of adjustment parameter while the (ECM) is an error correction residual derived from the estimation of the cointegration model of ARDL equation (5). The symbol Δ is the operator sign for differencing and (ε) is the disturbance white noise or error term. The Wald test F statistics are anchored on the restriction placed on the parameters on the long-run coefficients to be equal 0.

Ho: $= \tau_1 = \tau_2 = \tau_3 = \tau_4 = \tau_5 = \tau_6 = \tau_7 = 0$ for equation (3) according to Pesaran, Shin and Smith (2001).

However, the bound specification for the short-run dynamics is estimated based on the Error Correction Model (ECM) as represented in our equation (4). Furthermore, the lagged residual term (ecm_{t-1}) connotes the disequilibrium in a long-run relationship and τ's reflects the rates of each variable change in the model. It further provides insight on the influence of economic growth on the previous values and other shocks in the system.

Empirical Result

As it is a common practice with time series analysis to ensure a long-run relationship amongst the variables in the model, the authors engaged the Augmented Dickey–Fuller and Phillip–Perron test to assess the stationarity of all variables in the model to ensure that none is I (2) or above. If the variables have the same level of stationarity at I (1), it presumes a long-run relationship or suggests the existence of co-integration between the variables (Abdullah & Habibullah, 2009). The implication is that the regression results are not spurious, as they involve a similar pattern of movement.

Table 2 depicts the output of the unit root statistics for the individual variable of the time series. The empirical results confirm that we can reject the existence of unit roots in the variables in the model at a significant level at I (1) at intercept and the trends signifying stationary at first difference, except for the total expenditure at intercepts in addition to the trend before assuming stationary.

Table 2. Result of the unit root test

Variables	ADF		PP		Decision
	LEVEL	1ST DIFFERENCE	LEVEL	1ST DIFFERENCE	
	Intercept and Trend	Intercept and Trend	Intercept and Trend	Intercept and Trend	
LDD	−1.445	−4.307*** (0.0022)	−1.445	−4.307*** (0.0000)	I(1)
LTR	−1.923	−3.419*** (-6.2431)	−1.923	−3.4190*** (0.0004)	I(1)
LTX	−0.387	−4.489*** (0.0064)	−0.387	−4.489** (0.0101)	I(1)
LTSV	−2.721	−3.863** (0.0100)	−2.427	−3.781** (0.0244)	I(1)
LED	−3.492	−7.718*** (0.0000)	−3.591** (0.0100)	−8.445*** (0.0012)	I(1)
FD	−3.100	−5.563*** (0.0003)	−2.545	−9.547*** (0.0032)	I(1)
RGDP W	−0.357	−5.296*** (0.0045)	−3.467*** (0.0000)	−0.363*** (0.0002)	I(1)

Note: the figures reported are t-ratio and showed the p-values of MacKinnon (1996) one-sided at various levels of significance. The asterisk (***) is at 1%; (**) is at 5% and (*) is at 10%.

Co-integration Test

The construction of the co-integration bounds test entails the evaluation of F statistics against the critical values; in this case, we use the one generated by Narayan (2005) due to the short period covered by the data. The bounds test model for the study of Nigeria is presented in Table 5. The results revealed that the test is highly significant at 1% level. This warrants the rejection of the null hypothesis of no co-integration, irrespective of whether the series are strictly at I (0) or I (1) or a mix of both. Similarly, the results also confirm the presence of a long-run

relationship between the regressors and regressants, which suggests the co-integration exits between ln*RGDPW*, ln*TSV*, ln*ED*, ln*DD*, ln*TR*, *FD*, ln*TX* with an *F* statistic of 4.250, which exceeds the upper critical bound value.

Table 3. Growth in Nigeria: Results of Model Lag Selection for ARDL, the long-run relationship of domestic debt, and economic growth

Model	LogL	AIC*	BIC	HQ	Adj-R-sq	Specification
1089	55.992697	−2.77372	−2.172373	−2577697	0.986906	ARDL (1,1,1,1,2,0,0)

Note. * = Akaike Information Criterion.

Table 4. Result of the bounds test

Test statistic		Bounds	Level of significance			Decision
F-statistic	4.250	Critical value	10%	5%	1%	
Value		I(0)	1.99	2.27	2.88	I(0)
K	6	I(1)	2.94	3.28	3.99	I(1)

Meanwhile, we conducted several diagnostic and stability tests to check for the robustness of the ARDL model. Most tests results were successful, with the exception of the Breusch–Godfrey Serial Correlation LM test, which suggests that the model has the problem of autocorrelation, and this problem was subsequently corrected. The Jarque–Bera normality test, Ramsey RESET stability test, and ARCH were also passed successfully. In accordance with Pesaran and Pesaran (2009), who stresses the need to analyze the stability of the long-run coefficients in conjunction with the short-run dynamic model, the cumulative of the recursive residuals (CUSUM) as well as the cumulative sum of squares of recursive residual (CUSUMQ) were investigated empirically. This is graphically represented in Figures 1 and further emphasized in Figure 2, which portray the plots of CUSUM and CUSUMQ test statistics as resting neatly within the boundaries at 5% significant level. Hence, this confirms the stability of the long-run coefficient of domestic debt reforms with respect to fiscal policy variables and economic growth in the ARDL model (Adekoya & Abdul Razak, 2017; Pesaran & Pesaran 2009).
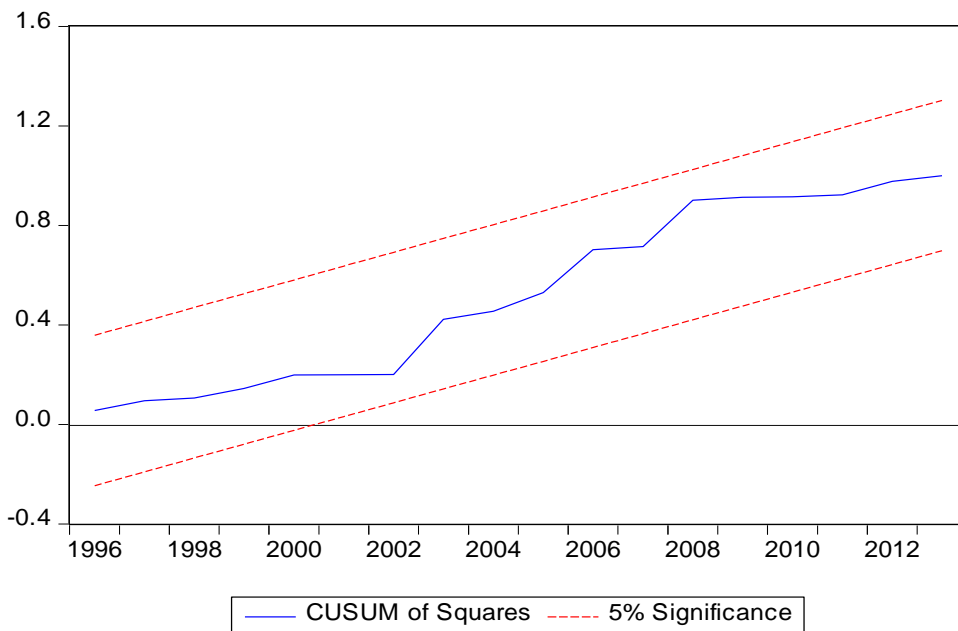
Table 5. Result of the diagnostic test for ARDL model

Tests	Jarque-Bera	Ramsey's RESET Test	LM Tests	BPG Test
Value for J-B	2.578			
F-statistic		0.836	2.173	0.722
Prob. F		(0.8357)	(0.1462)	(12.18)
p-value	[0.276]	[0.044]	[0.036]	[0.584]

Note: the p-values are in parentheses [p]
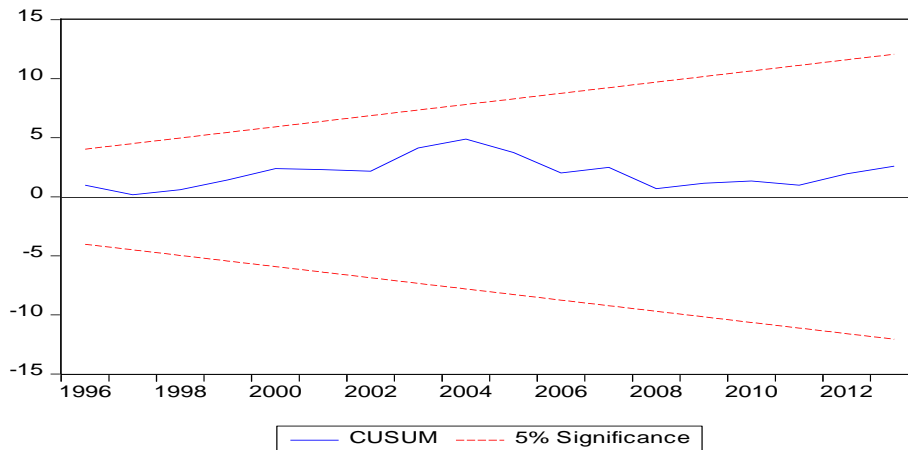
Figure 1. CUSUM

Fig. 2. CUSUM SQUARE

Long-run and Short-run Estimation

The ARDL framework analysis began with establishing co-integration in the long-run coefficients of the equation. Following this, we proceeded to estimate the results as presented in Table 6. The best executing ARDL model selected is the Akaike Information Criterion, most preferred in relation to the other model specification presented in Table 3, because it produces the least values of -2.774, -2.177, and -2.578 among Schwarz criterion and Hannan–Quinn criterion respectively. The desire to obtain more parsimonious specifications due to the small span of the data set underscores the preference for Narayan (2005). The AIC lag specification for the model is presented with the optimal lag for each variable, as shown in Table 3 with ARDL (1, 1, 1, 1, 2, 0, 0). Thus, our long-run coefficient result for our model indicates that domestic debt ($\ln(DD_t)$), secondary school

enrolment, $(\ln(ED_t))$ and government total revenue $(\Delta\ln(TR_t))$ variables in the model have a statistically significant effect on real GDP $(\ln(RGDPW_t))$ (economic growth) in Nigeria. A 1% increase in these variables led to a 0.5% decrease, 1.38% increase, and 0.34% increase in economic growth, respectively.

As demonstrated earlier, the error correction term in this relationship represents the speed of the adjustment mechanism, which reverts to equilibrium in the dynamic model. The coefficient of −0.305 is the (ECM$_{t-1}$) at 1% significant level and it signals how fast the variables adjust to equilibrium, and it is expected to have a statistically significant negative coefficient sign (Pahlavani *et al*., 2005). Meanwhile, Abdullah and Habibullah (2009), and Mohd Daud, Ahmad, and Azman-Saini (2013) argued that a highly significant error correction term is a further indication of a stable long-run relationship which explains a restoration of about 30% of any shock within a year that arises in the system (Adekoya & Abdul Razak 2017; Pesaran & Pesaran 2009).

Table 6. Long-run and short-run relationship coefficient results
ARDL (1, 1, 1, 1, 2, 0, 0)

Variables/Tests	Long-run statistics $ln(RGDPW_t)$	Variable/Test	Short-run statistics $ln(RGDPW_t)$
$\ln(TSV_t)$	0.077343 (0.447)	$\Delta\ln(TSV_t)$	−0.208 (−2.806)***
$\ln(ED_t)$	1.378 (2.541)***	$\Delta\ln(ED_t)$	0.158 (2.076)**
$\ln(DD_t)$	−0.573 (−3.241)***	$\Delta\ln(DD_t)$	0.036 (0.565)
$\ln(TR_t)$	0.338 (2.670)***	$\Delta\ln(TR_t)$	0.059 (1.991)
FD_t	−0.000119 (−0.0171)	ΔFD_t	0.000 (0.180)
$\ln(TX_t)$	0.032 (0.178)	$\Delta\ln(TX_t)$	−0.007 (−0.178)
C	4.848 (0.622)	$\Delta\ln(TR_{t-1})$ CoinEq(-1)	0.053 (1.997)* −0.309 (−6.531)***

Note: the t-statistic are in parentheses and were significant at 1% (***), 5% (**) and 10% (*).

4. DISCUSION, CONCLUSION AND POLICY IMPLICATION

In conclusion, the paper assessed domestic debt and the effect of long-run relationship on economic growth in Nigeria, the largest economy in Africa. The study period covered the years from 1981 to 2013, using the annual time series data. To achieve the aim of this study, we employed the ARDL co-integration approach in order to determine the long-run relationship of domestic debt in consonance with

the iteration of fiscal policy variables with the economic growth. In addition, we also engaged the unit root tests (ADF and PP) to determine the order of integration for our variables, to ensure none is beyond I (1), and to demonstrate the efficiency of the bounds test co-integrating a long-run relationship from other co-integration approaches.

However, the empirical results supported previous studies in line with the assertions of most debt/borrowing theories postulating that external and public debts have the same implications for economic growth. In other words, the relationship demonstrates how, in the case of domestic debt, the result negatively affects economic growth in Nigeria. Nevertheless, the findings reveal that other variables have potential implications for enhancing economic growth in human capital, such as the level of secondary school educational enrolment and government revenue, which play an important role in economic growth in Nigeria.

Although government savings showed a non-significant positive impact on economic growth, but this was not the case with financial deepening, which revealed a negative sign, though non-significant, for economic growth. Therefore, it can be inferred that government savings are yet to be fully harnessed to the level expected to translate into economic growth. It may also imply that government sector crowds out the savings from the private sector, which is reflected by the negative sign.

The aforementioned results can be used to argue that although in line with the objectives of fiscal policy makers as a transition required to lead and promote the development of the debt market, the establishment of a domestic debt laffer curve can possibly serve as a benchmark for the private sector, which would enable it to access credit facilities in the international debt market. The DMO (2014) hinted that a number of Nigerian private enterprises were able to, for the first time, obtain funding from the international debt market to the tune of over $US 2B. Likewise, both banks and non-banks are major holders of government bonds, and this may be attributed to the appeal of the interest income, safety, or both. Furthermore, reports from CBN (2012) and DMO show that corporate and infrastructure bonds are yet to be fully tapped and explored as negatively affecting financial deepening through crowding out of the private sector credit by the government (Friedman 1978; 1985). This may have justified the insignificant level of savings and the crowding out effect of credit to the private sector, as reflected in the results of financial deepening. However, the positive impact of revenue on growth and educational enrolment indicates the presence of a growth-enhancing effect on the economy. Therefore, the government should focus on policies and programs that will garner revenue drive to tap and incentivize the non-oil sectors by diversifying the revenue base into activities that can capture and promote the revenue drive of relevant tax authorities through increase in the tax base given the country's large population. In this respect, the efforts to improve the quantity and quality of education should be vigorously pursued.

Policy makers should also endeavour to explore and vigorously implement the concept of public–private partnerships as a financing option for economic infrastructure. This will reduce the pressure and overreliance on government debt financing and provide the impetus for local and foreign private sectors to participate

in economic activities. Future studies can consider disaggregation of domestic debt variables as well as their relationship with other components of the economy, both at the national and subnational level.

REFERENCES

Abbas, S. M., & Christensen, J. E. (2010). The Role of Domestic Debt Markets in Economic Growth: An Empirical Investigation for Low-Income Countries and Emerging Markets. *IMF Staff Papers, 57*(1), 209–255. https://doi.org/10.1057/imfsp.2009.24

Abdullah, H., & Habibullah, M. S. (2009). An Investigation on Trade Openness, Fiscal Policy and Economic Growth in Malaysia: Using an ARDL Bounds Testing Approach. *International Journal of Management Studies (IJMS)*, *16*(2), 177–197. Retrieved from http://repo.uum.edu.my/577/1/Hussin_Abdullah.pdf

Adekoya, A. F., Abdul Razak, N. A. (2017). The Dynamic Relationship Between Crime and Economic Growth in Nigeria *International Journal of Management and Economics, 53*(1), 47–64. https://doi.org/10.1515/ijme-2017-0004

Adofu, I., & Abula, M. (2009). Domestic Debt and the Nigerian Economy. *Current Research Journal of Economic Theory*, *2*(1), 22–26.
Retrieved from http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.470.8550&rep=rep1&type=pdf

Afonso, A. (2005). Fiscal Sustainability: The Unpleasant European Case. *Finanz Archiv/ Public Finance Analysis*, *61*(1), 19–44. https://doi.org/10.1628/0015221053722532

African Development Bank (AfDB). (2013). *Economic Report on Nigeria* (1–30). Tunis.

Aghion, P., & Kharroubi, E. (2008). Cyclical Macro Policy and Industry Growth: The Effect of Countercyclical Fiscal Policy. *WP Harvard University,* 1–28. Retrieved from https://www.imf.org/external/np/seminars/eng/2008/strureform/pdf/cyclical.pdf

Amassoma, D. (2011). External Debt, Internal Debt, Economic Growth and Investment in Nigeria Using Causality Approach. *Current Research Journal of Social Sciences, 3*(4), 320–325. Retrieved from http://maxwellsci.com/print/crjss/v3-320-325.pdf

Arrow, K.J., Bernheim, B.D., Feldstein, M.S., McFadden, D.L., Poterba, J.M., Solow, R.M. (2011). 100 Years of the American Economic Review: The Top 20 Articles. *American Economic Review, 101*(1), 1–8. https://doi.org/10.1257/aer.101.1.1

Baldacci, E., & Kumar, M. (2010). Fiscal Deficits, Public Debt, and Sovereign Bond Yields. *IMF Working Papers No. 10/184*, 1–28.

Baier, S. L., & Glomm, G. (2001). Long-Run Growth and Welfare Effects of Public Policies with Distortionary Taxation. *Journal of Economic Dynamics and Control*, *25*(12), 2007–2042. https://doi.org/10.1016/S0165-1889(00)00017-8

Barro, R. J., & Sala-i-Martin, X. (1992). Convergence. *The Journal of Political Economy*, *100*(2), 223–251. https://doi.org/10.1086/261816

Barro, R. J. (1995) Inflation and Economic Growth. *National Bureau of Economic Research Working Paper 5326*, 1–34. Retrieved from https://www.nber.org/papers/w5326.pdf

Barro, R. J. (1979). On the Determination of the Public Debt. *The Journal of Political Economy, 87*(5–1), 940–971. https://doi.org/10.1086/260807

Beaugrand, P., Loko, B., & Mlachila, M. (2002). The Choice Between External and Domestic Debt in Financing Budget Deficits: The Case of Central and West African Countries. *International Monetary Fund*, No.02/79.

Burnside, C., Eichenbaum, M., & Rebelo, S. (2001). Hedging and Financial Fragility in Fixed Exchange Rate Regimes. *European Economic Review*, *45*(7), 1151–1193.
https://doi.org/10.1016/S0014-2921(01)00090-3

Central Bank of Nigeria (CBN). (2012). *Bulletin, 23*. Abuja. 1–326.

Chalk, N., & Hemming, R. (2000). *Assessing Fiscal Sustainability in theory and Practice.* No. WP/00/81, 1–28. Washinton, DC.

Chowdhury, A. R. (2001). *The Impact of Financial Reform on Private Savings in Bangladesh* (No. 2001/78). WIDER Discussion Papers/World Institute for Development Economics (UNU-WIDER).

Cochrane, J. H. (2010). Greek Myths and the Euro Tragedy. *The Wall Street Journal*, *18*. Retrieved from https://www.wsj.com/articles/SB10001424052748703745904575248661121721980

Cornford, A. (2009). Overview: Debt Sustainability in Theory and Practice. In *Compendium on Debt Sustainability and Development*, 1–15. Retrieved from https://vi.unctad.org/resources-mainmenu-64/digital-library?task=dl_doc&doc_name=414_debtsustdev

Debt Management Office (DMO). (2014). *Public Debt Stock as at June 2014*. Abuja.

Detragiache, E., Gupta, P., & Tressel, T. (2005). Finance in Lower-Income Countries: An Empirical Exploration. *IMF Working Paper WP/05/167*, 1–47. Retrieved from http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.596.6960&rep=rep1&type=pdf

Dotsey, M. (1994). Some Unpleasant Supply Side Arithmetic. *Journal of Monetary Economics, 3*3(3), 507–524. https://doi.org/10.1016/0304-3932(94)90041-8

Egbetunde, T. (2012). Public Debt and Economic Growth in Nigeria: Evidence from Granger Causality. *American Journal of Economics*, *2*(6), 101–106. https://doi.org/10.5923/j.economics.20120206.02

Eichengreen, B., & Hausmann, R. (2007). Currency Mismatches, Debt Intolerance, and the Original Sin: Why They Are Not the Same and Why It Matters. In *Capital controls and capital flows in emerging economies: Policies, practices and consequences.* Sebastian Edwards, (ed), 1–51. University of Chicago Press. Retrieved from https://www.nber.org/chapters/c0150.

Fabella, R., & Madhur, S. (2003). Bond Market Development in East Asia: Issues and Challenges. *Asian Development Bank ERD Working Paper Series No. 35,* 1–24. Retrieved from https://www.adb.org/sites/default/files/publication/28182/wp035.pdf

Fan, G., & Lv, Y. (2012). Fiscal Prudence and Growth Sustainability: An Analysis of China's Public Debts. *Asian Economic Policy Review*, *7*(2), 202–220. https://doi.org/10.1111/j.1748-3131.2012.01234.x

Filardo, A. J., Mohanty, M. S., & Moreno, R. (2012). Central Bank and Government Debt Management: Issues for Monetary Policy. *BIS Paper*, *67*(d), 51–71. Retrieved from https://www.bis.org/publ/bppdf/bispap67d_rh.pdf

Fischer, S. (1993). The Role of Macroeconomic Factors in Growth. *Journal of Monetary Economics*, *32*(3), 485–512. https://doi.org/10.1016/0304-3932(93)90027-D

Fox, L., & Palmer, E. (2001). New approaches to multipillar pension systems: What in the world is going on. *New Ideas About Old Age Security*, 90–132. https://doi.org/10.5709/ce.1897-9254.46

Foncerrada, L. (2005). Public Debt Sustainability. Notes on debt sustainability, development of a Domestic Governmet Securities Market and Financial Risks. *Análisis Económico*, *20*(44), 259–272, Retrieved from http://www.redalyc.org/articulo.oa?id=41304409#

Foss, N. J. (2012). Linking Ethics and Economic Growth: A Comment on Hunt. *Contemporary Economics*, *6*(3), 4–9. https://doi.org/10.5709/ce.1897-9254.46

Friedman, B. M. (1978). Crowding out or crowding in? The economic consequences of Financing Government Deficits. *NBER Working paper Nr. 284*. https://doi.org/10.3386/w0284

Friedman, B. M. (1985). The Substitutability of Debt and Equity Securities. In *Corporate Capital Structures in the United States,* University of Chicago Press. 197–238. https://doi.org/10.7208/chicago/9780226264233.001.0001

Fry, M. (1997). Emancipating the Banking System and Developing Markets for Government Debt. London: Routledge.

Fry, M. (1978). Money and Capital or Financial Deepening in Economic Development? *Journal of Money, Credit, and Banking*, *10*(4), 464–475. https://doi.org/10.2307/1991576

Furman, J., & Stiglitz, J. E. (1998). Economic Crises: Evidence and Insights from East Asia. *Brookings Papers on Economic Activity*, *2,* 1–135. Retrieved from https://www.brookings.edu/wp-content/uploads/1998/06/1998b_bpea_furman_stiglitz_bosworth_radelet.pdf

Gale, W. G., & Orszag, P. R. (2003). Economic Effects of Sustained Budget Deficits. *National Tax Journal*, *56*(3), 463–85. https://doi.org/10.17310/ntj.2003.3.02

Gale, W. G., Orszag, P. R., Brainard, W., Cumby, R., Dickens, B., Elmendorf, D., & Russek, F. (2004). Budget Deficits, National Saving, and Interest Rates. *Brookings Papers on Economic Activity*, 1–83. Brookings Institution Press . https://doi.org/10.1353/eca.2005.0007

Gulde, A., Pattillo, C., and Christensen, J. (2006). Sub-Saharan Africa: Financial Sector Challenges. Washington, International Monetary Fund. Retrieved from https://www.imf.org/external/Pubs/NFT/2006/Africa/eng/ssa.pdf

Hanson, J. A. (2007). *The Growth in Government Domestic Debt: Changing Burdens and Risks* (Vol. 4348). World Bank Publications. https://doi.org/10.1596/1813-9450-4348

Hauner, D. (2006). A Fiscal Price Tag for International Reserves. *International Finance*, *9*(2), 169–195. https://doi.org/10.1111/j.1468-2362.2006.00179.x

Hussein, K. A., & Thirlwall, A. P. (1999). Explaining Differences in the Domestic Savings Ratio Across Countries: A Panel Data Study. *The Journal of Development Studies*, *36*(1), 31–52. https://doi.org/10.1080/00220389908422610

International Monetary Report. (2014). *Nigeria IMF Country Report No. 14/103*. Washinton DC. pp. 103.

Hunt, S. D. (2012). Understanding the Drivers of Economic Growth: Grounding Endogenous Economic Growth Models in Resource-Advantage Theory. *Contemporary Economics*, *6*(4), 4–8. https://doi.org/10.5709/ce.1897-9254.62

Jawadi, F., Mallick, S.K., & Sousa, R.M. (2011). Fiscal Policy in the BRICs. Universidade do Minho. Nucleo de investigacao empolicas Economicas. Retrieved from http://hdl.handle.net/1822/12792.

Kahn, B. (2005). Original Sin and Bond Market Development in Sub-Saharan Africa. *In* Africa in the World Economy: The National, the Regional and International Challenges. The Hague: Fondad, 67–87. Retrieved from http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.729.3797&rep=rep1&type=pdf

Kemal, A.R. (2001). Debt Accumulation and its Implications for Growth and Poverty. *The Pakistan Development Review, 40*(4), 263–281. https://doi.org/10.30541/v40i4Ipp.263-281

King, R. G., & Levine, R. (1993). Finance, Entrepreneurship and Growth. *Journal of Monetary Economics*, *32*(3), 513–542. https://doi.org/10.1016/0304-3932(93)90028-E

Koo, C. M. (2008). Fiscal Sustainability and its Implication for Fiscal Policy in Korea. *The Journal of Korean Economy, 9*(3), 497–521.

Kumar, M., & Woo, J. (2010). Public Debt and Growth. *IMF Working Papers*, 1–47. https://doi.org/10.5089/9781455202188.001

Kurz, H. D., & Salvadori, N. (1998). The 'New' growth Theory: Old Wine in New Goatskins. In *New Theories in Growth and Development*. UK: Palgrave Macmillan. 63–94.

Mink, M., & De Haan, J. (2013). Contagion During the Greek Sovereign Debt Crisis. *Journal of International Money and Finance*, *34*, 102–113. https://doi.org/10.1016/j.jimonfin.2012.11.006

Mohammed, S.T. (2009). Domestic Debt Dynamic and Fiscal Sustainability in Nigeria: An Empirical Evidence. *MPRA Paper No18452,* 1–15. Retrieved from https://mpra.ub.uni-muenchen.de/18452/

Mohd Daud, S. N., Ahmad A. H., & Azman-Saini, W. N. W. (2013). Does External Debt Contribute to Malaysia Economic Growth? *Economic Research, 26*(2), 51–68. https://doi.org/10.1080/1331677X.2013.11517606

Muhdi, & Sasaki, K. (2009). Roles of External and Domestic Debt in Economy: Analysis of a Macroeconometric Model for Indonesia. *Interdisciplinary Information Sciences*, *15*(2), 251–265. https://doi.org/10.4036/iis.2009.251

Narayan, P. K. (2005). The Saving and Investment Nexus for China: Evidence from Cointegration Test. *Applied Economics, 37*(17), 1979–1990. http://dx.doi.org/10.1080/00036840500278103

Moss, T. J., Pettersson, G., & Van de Walle, N. (2006). An aid-institutions paradox? A review essay on Aid Dependency and State Building in Sub-Saharan Africa. *Center for Global Development Working Paper*, *74*, 1–28. https://doi.org/10.2139/ssrn.860826

Ogundina, J.A. (2013) Nigerian Banks and Global Challenges – Further Evidence. In *Proceeding book of ICEFMO.* Malaysia. Retrieved from http://www.conscientiabeam.com/ebooks/ICEFMO-224-230.pdf

Okonjo-Iweala, N., Soludo, C.C., & Muhtar, M. (2002). Managing Nigeria's Debt: Institutional and Governance Aspect. In *The Debt Trap in Nigeria: Towards a Sustainable Debt Strategy*, Africa World Pr. 288 p.

Okonjo-Iweala, N., & Osafo-Kwaako, P. (2007). Nigeria's Economic Reforms: Progress and Challenges. *Brookings Global Economy and Development Working Paper* (*6*). https://doi.org/10.2139/ssrn.1080251

Otani, I, & Villanueva, D. (1989). Theoretical Aspects of Growth in Developing Countries: External Debt Dynamics and the Role of Human Capital. *IMF Staff Papers, 36*(2), 307–342. https://doi.org/10.2307/3867145

Pahlavani, M., Wilson, E., & Worthington, A.C. (2005) Trade-GDP Nexus in Iran: An Application of the Autoregressive Distributed Lag (ARDL) Model. *Faculty of Commerce-Papers, 2*(7). 1158–1165. https://doi.org/10.3844/ajassp.2005.1158.1165

Panizza, U. (2008). Domestic and External Public Debt in Developing Countries. In *United Nations Conference on Trade and Development Discussion Paper No. 188*. Retrieved from https://debt-and-finance.unctad.org/Documents/Discussion-papers/Domestic_and_External_Public_Debt_in_Developing_Countries_PANIZZA_2008.pdf

Pattillo, M. C. A., Gulde, M. A. M., Carey, K. J., Wagh, M. S., & Christensen, M. J. (2006). *Sub-Saharan Africa: Financial Sector Challenges*. Washington, D.C.: International Monetary Fund.

Pesaran, B., Pesaran, M. H. (2009). *Time Series Econometrics Using Microfit 5.0*. Oxford University Press, Oxford.

Pesaran, M., Shin, Y., & Smith, R. (2001). Bounds Testing Approaches to the Analysis of Level Relationships. *Journal of Applied Econometrics*, *16*, 289–326. https://doi.org/10.1002/jae.616

Poirson, H., Pattillo, C. A., & Ricci, L. A. (2004). What are the Channels Through which External Debt Affects Growth? *IMF Working Paper*, 1–33. Retrieved from https://www.imf.org/external/pubs/ft/wp/2004/wp0415.pdf

Reinhart, C. M., & Rogoff, K. S. (2011a). From Financial Crash to Debt Crisis. *American Economic Review, 101*(5), 1676–1706. https://doi.org/10.1257/aer.101.5.1676

Reinhart, C. M., & Rogoff, K. S. (2011b). The Forgotten History of Domestic Debt. *The Economic Journal*, *121*(552), 319–50. https://doi.org/10.1111/j.1468-0297.2011.02426.x

Romer, P. M. (1994). The Origins of Endogenous Growth. *The Journal of Economic Perspectives*, *8*(1), 3–22. https://doi.org/10.1257/jep.8.1.3

Sargent, T. J., & Wallace, N. (1981). Some Unpleasant Monetarist Arithmetic. *Federal Reserve Bank of Minneapolis Quarterly Review*, *5*(3), 1–17.

Şen, H., & Kaya, A. (2013). The Role of Taxes as an Automatic Stabilizer: Evidence from Turkey. *Economic Analysis and Policy*, *43*(3), 303–313. https://doi.org/10.1016/S0313-5926(13)50033-6

Sheikh, M. R., Faridi, M. Z., & Tariq, K. (2010). Domestic Debt and Economic Growth in Pakistan: An Empirical Analysis. *Pakistan Journal of Social Sciences*, *30*(2), 373–387. Retrieved from https://pdfs.semanticscholar.org/3db8/f3dd948ceef7785be142ef25f4f823ecf50d.pdf

Takashima, K., Kato, K., & Ogibayashi, S. (2014). Analysis of the Influence of Firm's Financing Strategies for Investment on GDP in an Agent-Based Economic System. *Information (Japan), 17*(6), 2583–2603.

Thumrongvit, P., Kim, Y., & Pyum, C. (2013). Linking the Missing Market: The Effect of Bond Markets on Economic Growth. *International Review of Economics and Finance, 27,* 529–541. https://doi.org/10.1016/j.iref.2013.01.008

Trehan, B., & Walsh, C. E. (1988). Common Trends, the Government's Budget Constraint, and Revenue Smoothing. *Journal of Economic Dynamics and Control, 12*(2), 425–444. https://doi.org/10.1016/0165-1889(88)90048-6

Umaru, A., Hamidu, A., & Musa, S. (2013). External Debt and Domestic Debt Impact on the Growth of the Nigerian Economy. *MPRA Paper No. 75122*. Retrieved from https://mpra.ub.uni-muenchen.de/75122/1/MPRA_paper_75122.pdf

Uzochukwu, A. (2003). Nigeria Public Debt and Economic Growth: An Empirical Assessment of Effects on Poverty. *African Institute for Applied Economics*, Enugu, Nigeria. Retrieved from https://econwpa.ub.uni-muenchen.de/econ-wp/pe/papers/0508/0508014.doc

Velinov, A. (2014). Assessing the Sustainability of Government Debt: On the Different States of the Debt/GDP Process (DIW Berlin Discussion Paper No. 1359).

Villanueva, D. P., & Mariano, R. S. (2007). External Debt, Adjustment, and Growth. In *Fiscal Policy and Management in East Asia, NBER-EASE, 16,* 199–221. University of Chicago Press. https://doi.org/10.7208/chicago/9780226387062.003.0007

Wachtel, P. (2001). Growth and Finance: What Do We Know and How Do We Know It? *International Finance*, *4*(3), 335–362. https://doi.org/10.1111/1468-2362.00077

Woo, J. (2003). Economic, Political and Institutional Determinants of Public Deficits. *Journal of Public Economics, 87*(3), 387–426. https://doi.org/10.1016/S0047-2727(01)00143-8

Woo, J., (2009). Why Do More Polarized Countries Run More Procyclical Fiscal Policy? *Review of Economics and Statistics*, *91*(4), 850–870. https://doi.org/10.1162/rest.91.4.850

World Bank (WB). (2002). Financing the Poorest Countries. *Global Development Finance*, *Analysis and Summary Tables*.

AUTHORS' SHORT BIOGRAPHIES

Ibrahim Ayuba K. received a B.Sc. degree in Economics from Ahmadu Bello University, Zaria, Nigeria in 2003. He subsequently received the PGD Accounting & Finance in 2008 and Master of Banking & Finance degrees from the same University in 2009. He earned a PhD degree in Finance & Banking from Universiti Utara Malaysia in 2017. He is a financing for development specialist and possesses research interests in the areas of economic growth, development finance, fiscal policy, digital economy, applied econometrics. He is also a Fintech enthusiast. ORCID ID: https://orcid.org/0000-0001-6887-6808
e-mail: ibrahimayubak@gmail.com

Shazida Jan Mohd Khan is the Deputy Director of the Centre for Testing, Measurements and Appraisal and an Associate Professor at the School of Economics, Finance and Banking at Universiti Utara Malaysia. Her research interests lie in the field of empirical banking, although several of Shazida's research projects are cross-disciplinary and include aspects of Islamic finance, microfinance and economics of education.