

Impact of Public Debt on Economic Growth, Results of a Fixed Effects Econometric Model from African Data

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Abstract: This paper discusses the Impact of Public Debt on Economic Growth in Africa. It recommends that our findings should be incorporated into public debt strategies. We raise a key question of; “how does the change in the rate of growth of public debt affect the change in the rate of growth of economies in Africa?” To answer this we adopt a model based on the Savings – Investment identity. We test the likelihood of public debt affecting economic growth using this model. The paper concludes that Public Debt has a relationship with Economic Growth.

Keywords: Debt Sustainability, Economic Growth, Gross National Income, Public Debt, Gross Domestic Product.

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I. INTRODUCTION

➤ *The Impact of Public Debt on Economic Growth in Africa*

Government activities, like that of any formal institutional set up, attract costs. These costs have to be financed through the income of such an institution. For a government, this income or revenue is derived, mostly, from taxation (which includes seigniorage) of its; people, private enterprises, public enterprises and in some cases revenue earned through dividends from governments’ own business enterprises. Taxation and these other means of raising revenue, however, may not always generate enough income to finance all of a government’s activities when this revenue is required. This leads to a gap or deficit between governments’ revenues and expenditures. To finance this deficit governments often resort to other means of raising revenue. These may include; borrowing, either internally or externally. This borrowing leads to public debt. In this paper, we test the effect of this public debt on the growth rate of economies of countries using data from Africa.

The purpose of this testing and, therefore, of this paper is to investigate how public debt affects economic growth.

➤ *Theoretical Framework*

• *The Classical School of Thought on Public Debt*

Classical economists as pioneered by Adam Smith argue that economies are largely self-regulating systems, governed by natural laws of production and exchange (Smith, 1776). Their main argument is that governments should not run deficits. The accumulation of debt is considered as “pernicious” for nations. They frown upon the subject of interest payment on public debt, which Adam Smith said is

like “the right hand which pays the left hand” (Wagner R. E., 2004).

We note such sentiments from other Classical economists like Ricardo (1817), Mill (1848) and recently from Bilan (2016) and Tsoulfidis (2007).

• *The Keynesian School of Thought on Public Debt*

Keynesians argue that public debt is not harmful and, in fact, it should be encouraged. Keynesians believe that active involvement of government in economic activity through government revenue and expenditure activity leads to multiplier effects and corrects market imperfections. These multiplier effects lead to more economic activity and, therefore, to higher levels of income in an economy. If raising of government revenue necessitates public debt then public debt is good for economic activity and will lead to higher incomes (Keynes, 1936).

Such likes of Keynes’ main argument is found in the works of Hansen (1887), Lerner (1943), Samuelson (1958), Hicks (1972), Saed and Ghazala, (2011) and Blinder, (2020).

• *The Neo Classical School of Thought*

The neo-classical economists disapprove of the state’s active involvement in economic activity. They dispute public debt to be an active driver of economic growth. These were the views of Milton Friedman who argued that, “a primary excuse for the expansion of government activity has been the supposed necessity for government spending to eliminate unemployment”. He said this was a mere attempt to increase public expenditures which, however, did not give the results claimed by Keynesians. He said Keynesians, further, attempted to justify increasing government expenditure, and

hence, increased government participation in the economy by arguing that the injection of more money by public authorities would not last but that it was only a phase to pass after full employment was achieved. He said the excuse given by Keynesians that temporary expenditure would set the economy going and the government could eventually then step out of the picture did not work to reduce instability in the economy nor did it manage to grow the economy (Friedman, 1962).

In line with this thinking were arguments by; Barro, (1979), Buiter & Tobin (1979) and Stiglitz (1983).

Our next section reviews public debt in Africa and its impact on economic growth.

➤ Background

Africa's economic growth has, generally, lagged behind the rest of the World. Figure 1 below gives us this illustration. It shows countries in the World segmented by their Gross National Income (GNI) per capita in 2018. A country's GNI per capita indicates a country's economic strengths and needs, as well as the general standard of living enjoyed by the average citizen of that country (Rogers & Welford, 2020).

The picture below illustrates Africa as a region with the lowest GNI per capita. It indicates that Africa is the poorest region in the World. In the diagram, the African region's highest per capita income is only between US \$5,000.00 and US \$7,500.00 whilst the World's highest per capita income level is in excess of US \$50,000.00. The African region has the lowest income of less than US \$1,000.00.

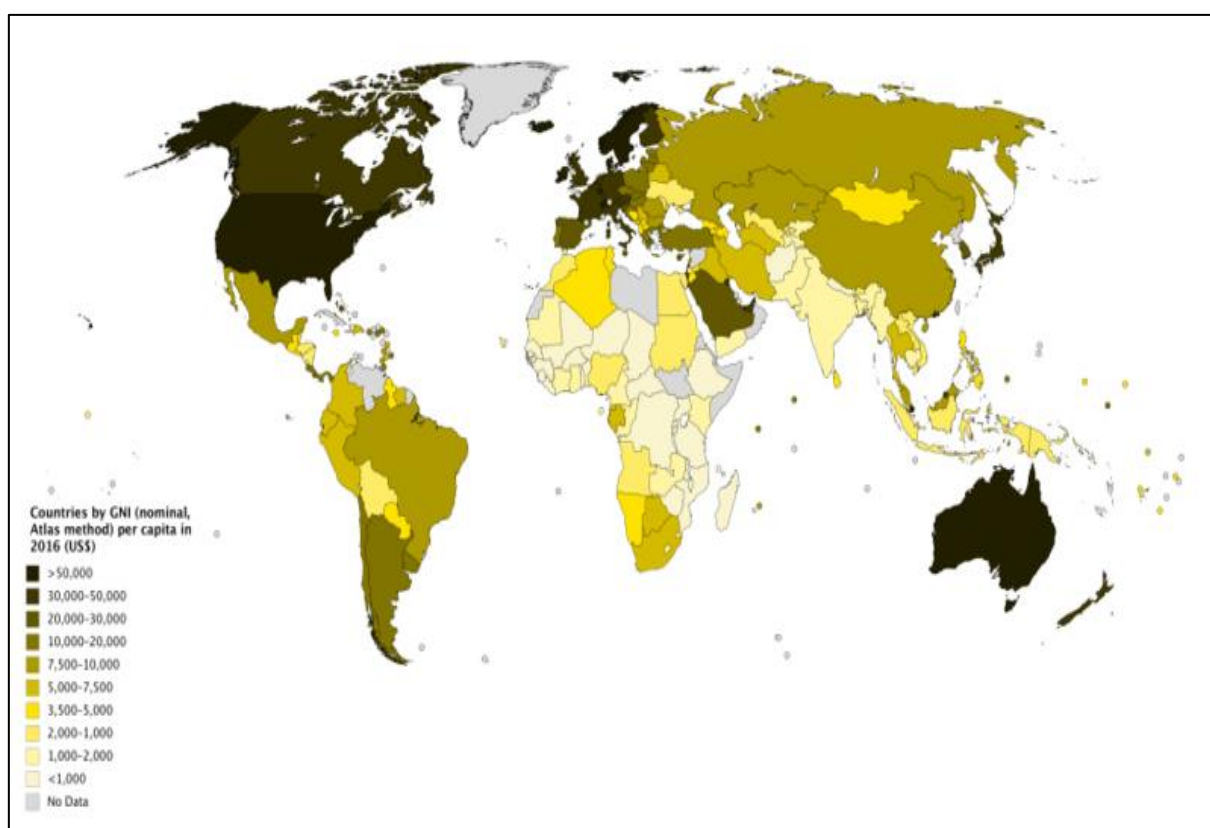


Fig 1 Picture of Gross National Income (GNI) Per Capita for African Countries Versus the Rest of the World

Source: Wikipedia: Countries by nominal GNI Per Capita According to Atlas Method (2016) Africa is Indicated, Above, as the Poorest Region in the World with the Lowest GNI Per Capita.

In order to try and change this picture, African countries' governments have tried putting up an assortment of economic policies meant to spur their investment levels with the hope of improving economic growth. To do this, countries have to have a lot of savings. However, the majority of the countries in Africa have very low savings levels. This means low investment levels and hence low economic activities leading to low income levels which, in turn, translate into low economic growth.

In an effort to break Africa's vicious cycle of poverty African governments are left to look for development

resources outside their budgets. This has included borrowing from those who have excess savings.

Of a total number of 51 countries surveyed in Africa (Appendix 1) 26 countries had Public Debt to GDP ratio of more than 50%, 11 had a ratio of less than 25%. What is interesting is that there seems to be a heavy reliance on public debt for financing budgets in Africa, with no recourse to try and expand capacity for internal revenue generation. Even in the face of today's pandemic crisis of the Corona Virus (COVID-19) African countries are becoming heavily reliant on outside borrowing instead of building up sustainable

revenue sources for their economies and are not building up resilience against such external and internal shocks.

Public debt management as is the case with management of the whole economy, is of great essence. Management of public debt impinges on the equitable distribution of the wealth of a nation. In the following section, (2.0), we firstly highlight the literature that is associated with the investigation of the effect of public debt on economic growth in general. We then look at the literature, in section 2.4, that discusses effects of public debt on economic growth in Africa.

II. LITERATURE REVIEW

➤ *Pessimists on the Impact of Public Debt on Economic Growth*

This group of economists have always argued that public debt is detrimental to economic growth. Writing in 2010, Kumar and Woo analyzed a panel of advanced and emerging economies between 1970 and 2007. They found an inverse relationship between public debt and economic growth. They said, “a key issue relates to the extent to which large public debts are likely to have adverse effects on capital accumulation, as well as productivity, and reduce economic growth”. They outlined that, “this can occur through a variety of distortionary taxation, high inflation, greater uncertainty and vulnerability to crises” (Kumar & Woo, 2010).

The above argument gets support from a study by Reinhart and Rogoff in 2010. These two studied historical data sets on central government debt and current data on external public debt. They searched for a systematic relationship between public debt levels, economic growth and inflation in forty four countries spanning up to two hundred years of data on central government debt, inflation and growth. They explained that whereas the link between economic growth and public debt seemed relatively weak at “normal” public debt levels, median growth rates for countries with public debt over 90% of GDP were roughly 1% lower. They concluded that high levels of public debt are associated with lower economic growth outcomes (Reinhart & Rogoff, 2010).

Further support for the above argument came from Checherita-Westphal and Rother in 2011. Their analysis found evidence for a nonlinear impact of public debt on per capita GDP growth rate. This was done across twelve Euro area countries over a long period of time starting in 1970. They found that, government budget deficits were linearly and negatively associated with the growth rate of both real and potential output. They concluded that, “while the economic growth rate is likely to have a linear negative impact on the public debt to GDP ratio, (a decline in the economic growth rate is to be, *ceteris paribus*, always associated with an increase in public debt to GDP ratio) high levels of public debt are likely to be deleterious for growth, potentially, after a certain threshold has been reached” (Checherita-Westphal & Rother, 2011).

Similar findings were made by Egert who put the Reinhart-Rogoff data set to a formal econometric testing. Using nonlinear threshold models, Egert claimed to have confirmed the negative effect of public debt on economic growth. Egert went on to demonstrate that when nonlinearity is detected, the negative nonlinear effect kicks in at much lower levels of public debt, between 20 per cent and 60 per cent. Egert identified three main channels through which public debt is likely to hamper long term economic growth. (1) The tax hikes which are required to service increasing public debt. This crowds out the private sector investment as it reduces disposable income and savings, raises the distortionary costs of taxation, and is more likely to result in non-neutral tax treatment within and across asset classes, thus amplifying distortions. (2) Increased public debt in form of long term sovereign yields which will be pushed up in a nonlinear fashion as the likelihood of default increases. These high long term yields then crowd out the productive public investment and, more pertinently, reduce private sector investment through an increase in the cost of capital. (3) Public authorities (especially in countries with weak institutions) could decide to inflate away the public debt. The resulting high inflation has a notoriously detrimental effect on economic growth (Egert, 2013).

Similarly, Panizza and Presbitero (2013) reviewed and presented their “evidence” as suggesting that the public debt, economic growth link is more complex than commonly thought”. They say that there is evidence of public debt being negatively correlated with economic growth. Their main contention, however, is on the strength of a case to be made by any study yet to be published showing a causality relationship going from public debt to economic growth. The link between public debt and economic growth could be driven by the fact that it is low economic growth that leads to high levels of public debt, they say. Alternatively, they say, the observed correlation between public debt and economic growth could be due to a third factor that has a joint effect on these two variables. However, Panizza and Presbitero admit that their findings should not be interpreted as suggesting that public debt accumulation is not a relevant policy issue or that high public debt levels are not a problem in general. They agree that an assessment of the complex relationship between public debt and economic growth requires a lot of research (Panizza & Presbitero, 2013).

In 2015 Tourinho and Sangoi also tested the hypothesis of the negative relationship between public debt and economic growth. They used an empirical model based on the neo classical growth model using data on a panel of 86 countries over the period 1983 to 2013. Their finding was that increases in public debt reduce the rate of economic growth (Tourinho & Sangoi, 2015).

The above was re-emphasized by Gómez-Puig & Sosvilla-Rivero in 2017. They used annual data from both central and peripheral countries of the European Area for the 1961-2013 period. They estimated a production function augmented with a public debt stock term by applying the Autoregressive Distributed Lag bounds testing approach. Their results supported the view that public debt always has

a negative impact on the long run economic growth performance of European area member states, (Gómez-Puig & Sosvilla-Rivero, 2017).

In a study by Mousa & Shawawreh (2017) of Jordan between 2000 and 2015 the ordinary least squares regression model was employed to capture the impact of public debt on economic growth. Their results indicated that there is a negative impact of public debt, especially the external public debt, on economic growth (Mousa & Shawawreh, 2017).

Later, Trenovski & Mijovic-Spanova (2018) studied the European experience and found adverse effects of public debt on economic growth, monetary stability and public finance. Their argument is that though the 2008 global economic crisis highlighted the importance of fiscal intervention, the drastic worsening of many nations' fiscal health and the European public debt crisis proved that fiscal sustainability problems are not typical only of developing countries. They said such problems are also real for developed countries with growing public debt, stagnant economic growth, unfavorable demographic trends and liabilities passed on from the financial sector (Trenovski & Mijovic-Spanova, 2018).

Other works that have examined the relationship between public debt and economic growth include one done in 2019 by Dombi and Dedak who quantified the crowding out effect of public debt and the related loss in long-run output. They also concluded, among other things, that public debt reduces long-run output (Dombi & Dedák, 2019).

➤ *Optimists on the Impact of Public Debt on Economic Growth*

Amongst the writers contending that public debt positively affects economic growth are Agnello and Sousa (2011). These two attributed the positive effect of Public Debt to its potential effects on asset markets. This comes, they contend, when there is a prompt response from an expansionary monetary policy and a large fiscal stimulus which act as ingredients of the attempt to grow or recover economic activity through significant fiscal multiplier effects. They say this gives rise to the importance of the implementation of fiscal stimulus packages (Agnello and Sousa, 2011).

The above argument is in tandem with the thinking of Rosoiu who in 2019 analyzed the impact of public debt on economic growth in Romania over the period 1995-2020. Rosoiu stated that public debt has a significant effect on capital accumulation, economic growth, unemployment and stability. Rosoiu uses an unrestricted Vector Auto Regression model to investigate the effect of public debt on economic growth. With this model, Rosoiu wrote, economic growth was stimulated by the public debt. However, Rosoiu was careful and quick to warn that an uncontrolled increase in public debt will negatively impact the economy. Rosoiu guided that it is important for the government to only borrow funds for exceptional situations and allocate them efficiently with a focus on capital expenses (Rosoiu, 2019).

Other studies that argue that public debt has positive effects on economic growth include that of Teliti and Kotori who in 2017 contended that, “put together, the level of public debt affects precisely these parameters specifically: the level of public and private investment, the level of employment, the level of consumption in an economy and the level of production affecting the level of imports and exports”. They said that the public debt level impact analysis at the level of the Gross Domestic Product is to be measured by the Keynesian public debt multipliers. They firstly state that, “a government cash flow into public investment is expected to trigger an increase in private investment in a multiplied chain”. They point out that this logic is the main argument for expectations for increased investment, employment, output and the economy, as a whole, driven by additional investment flows.

They say it would be beneficial to increase consumption by reducing savings through setting a savings tax in order to encourage people to consume more and more”. This works as follows: if the add-on to public investment is financed through increased taxes then we have to consider the fact that some of the money is withdrawn from the economy, causing a multiplier effect of falling spending and investment in the economy. Likewise, domestic public debt financing has the same effect by increasing competition for private investment. “Only the increase of external public debt investment gives the full effect of the current level of investments and expenditures of economic operators in the country”, they state (Teliti & Kotorri, 2017).

➤ *The Mixed Effect of Public Debt on Economic Growth*

Writing on public debt in 1961, Franco Modigliani said effects of public debt on economic growth are of a mixed nature. This depended, he said, on how the public debt is utilized. Modigliani summarizes the effect of public debt on economic growth as: (1) Government increase of purchase of goods and services, which leads to an increase of the (real) national debt, whether internal or external, is generally advantageous to those present at the time of the increase (or to some subset thereof). (2) Such an increase will generally place a “gross burden” on those living beyond that time through a reduction in the aggregate stock of private capital, which as long as the (net) marginal productivity of capital is positive, will in turn cause a reduction in the flow of goods and services. Furthermore, this loss (as well as the gain under (1) above) will tend to occur even when lack of effective private demand would prevent the maintenance of full employment in the absence of the deficit. (3) These conclusions hold in reverse in the case of a reduction in the real national debt. (4) If the rate of interest at which the Government borrows can be taken as a good approximation to the marginal productivity of private capital, then gross burden (or gain) to “future generations” referred to under (2) and (3) above can be measured by the interest charges on the national debt. (5) The gross burden may be offset in part or in total, or may be even more than offset, in so far as the increase in the public debt is accompanied by government expenditure which contributes to the real income of future generations, e.g. productive capital formation (Modigliani, 1961).

Our study follows up this line of thought by Modigliani when we review works by Buiter and Tobin. These two stated that, “The evidence is that tax and debt finance of government expenditure are not equivalent in their effects on private saving and consumption”. They looked at the effect of public debt on economic growth and argued that public debt issue does absorb private saving. They said that this is why it is more of a stimulus to the economy in the short run than tax finance, and why it may diminish private capital formation in the long run” hence giving a position of a mixed effect of public debt (Buiter & Tobin, 1979).

A mixed effect of public debt on economic growth is also illustrated by Pattillo et.al (2002) when they assessed the nonlinear impact of external public debt on growth using a large panel data set of 93 developing countries over 1969-98. They discovered that, “A lower public debt level has the propensity to have a positive effect on growth levels”. They then went on to emphasize the contrast to this and concluded that, “however, the adverse can be accounted for, in the case of high public debt level record of above a particular threshold”. They say that, “an additional debt will only result in the birthing of a rather negative impact on economic growth” (Pattillo, Poirson, & Ricci, 2002).

Other writers who have argued for a mixed effect of public debt on economic growth include Abbas and Christensen who stated that, “moderate levels of non-inflationary domestic debt exert a positive overall impact on economic growth”. They argue that compared to other forms of budgetary finance, market based domestic borrowing contributes more to macroeconomic stability, low inflation and reduced vulnerability to external real and domestic monetary shocks, domestic savings generation and private investment. This, seems to be supported by the experience of fast growing Emerging Markets such as China, India and Chile, which have maintained relatively low external indebtedness and avoided major financial or fiscal crises. However, Abbas and Christensen go on to outline a contrary view that, “there is some evidence that, above a ratio of 35% of bank deposits domestic public debt begins to undermine growth, lending credence to traditional crowding out and bank efficiency concerns”. They base this assertion on their observation that given shallow financial markets, financial repression propensities, and poor debt management capacity, in many low income countries and say, “many observers believe that domestic public debt expansion will have significant negative implications for private investment, fiscal sustainability and, ultimately, economic growth and poverty reduction”. In addition, given that most low income countries have access to cheap external finance, governments in poor countries are advised to avoid expensive domestic borrowing. In other words, low domestic public debt issuance is considered beneficial for economic development (Abbas & Christensen, 2007).

The above position gets a somewhat ‘mirrored view’ from Bouthevilain et.al. (2011), who hold the view of a mixed effect of public debt on economic growth. Bouthevilain et.al say that links between public debt and economic growth may not be linear. They say that for a given level of public debt,

several levels of economic growth can be achieved. They attribute the outcome to private sector expectations. They say that in the case where public debt is considered sustainable, short-term Keynesian effects (an increase in consumption) results in a positive impact on economic growth. In a case where private sector expectations are that the public debt is not going to be sustainable, long term non-Keynesian effects (an increase in savings) influence the outcome as there will be expectations of an increase in taxes to finance the public debt and, therefore, some kind of “Ricardian Equivalence” outcome is that case (Bouthevilain, Dufrénot, & Jaillet, 2011).

A discussion by Çifligu in 2018 pondered the following questions: 1) Does a high public debt negatively affect economic growth? 2) Does a low economic growth level boost public debt growth? 3) What are the factors that influence the performance of these indicators and transmission mechanisms from one to another? Looking at the Albanian economy Çifligu said this economy managed to maintain a positive economic growth, though its public debt remained too high and worrying. The position of this work was that a short term public debt means high risk of fiscal financing and in the medium term growth may lower private sector lending and economic growth. A sustainable economic growth, Çifligu notes, is very important for every economy as it is the growth of production. Public debt should be kept below 60% of GDP (the level seen as maximum allowable in the European Union), Çifligu says. Theoretically, Çifligu goes on to say, public debt can only be owed when a country has a lack of liquidity and in cases when it faces major difficulties that would have serious consequences for the domestic economy and public debt remains the only option when other measures have failed (Çifligu, 2018).

➤ Evidence from Africa

Our review of writings on African economies included one by Kwasi Fosu (1996) who said, “both public debt outstanding and public debt service may be burdensome and deleterious to economic growth even if they do not affect investment levels”. He pointed out that such an impact is channeled “directly” via the deterioration of (capital) productivity associated with high public debt. Regardless of the public debt burden measure used, Fosu says, the results are in concert with what he calls the Direct Effect of Debt Hypothesis. This suggests that public debt negatively influences GDP growth via a reduction in the marginal productivity of capital (Fosu, 1996).

Further evidence on Africa was given by José et.al. They looked at 52 African countries and analyzed the implications of public debt on economic growth and inflation between 1950 and 2012. They state that, “the high levels of public debt are reflected in reduced rates of economic growth and rising levels of inflation” (José, Alexandra, & Tiago, 2014).

Anning et.al in 2016 also looked at the impact of public debt on the economic growth of Ghana in 2016. They investigated this impact by testing three related models at the domestic and external levels including the growth of the

Ghanaian economy. Their research revealed that there is a negative relationship between public debt and economic growth in Ghana (Anning, Ofori, & Affum, 2016).

The United Nations Conference on Trade and Development (UNCTAD) Report of 2016 examined key policy issues underlying Africa's public debt. The view of this report was that increased domestic public debt accumulation by African countries might crowd out private sector investments, given their shallow financial markets and low levels of domestic savings. Borrowing in the domestic markets in Africa, the report says, is often perceived as being inconsistent with the prospects of achieving and preserving public debt sustainability. Further, financial liberalization and related reforms adopted since the mid 1980s have resulted in increased domestic real interest rates. As a result there are concerns that domestic borrowing may induce elements of macroeconomic instability in African economies and that the high interest burden may absorb a significant portion of government revenues, crowding out pro poor and growth enhancing spending (UNCTAD, 2016).

In 2018 Lartey et.al seemed to pick up from the UNCTAD Report when they underscored the importance of public debt to be at levels deemed sustainable and closely in line with government's fiscal and monetary policies. Using secondary data from 50 African countries from 1980 to 2015, they assessed the impact of public debt on economic growth. Their study revealed that public debts in African countries are generally high and are at unsustainable levels. In their findings, Lartey et.al, state that, "The regression results and correlation analysis show that public debt had a negative association with economic growth in Africa" (Lartey, Musah, Okyere, & Yusif, 2018).

In 2019, Saungweme and Odhiambo examined the impact of public debt on economic growth in Zambia for the period 1970 to 2017. They revealed that aggregate public debt has a positive impact on economic growth in Zambia. Their results, further, show that the relative impact of public debt on economic growth in Zambia is dependent on the type of public debt under consideration. Domestic public debt turned out to have a negative impact on economic growth, while its foreign counterpart had a positive impact, and the relationships apply both in the short run and in the long run (Saungweme & Odhiambo, 2019).

Siméon Kofi also explored the impact of public debt on economic growth in Sub-Saharan African countries over the period 1960 to 2015. He says, "the results strongly suggest the presence of a nonlinear and sufficient relationship between public debt and economic growth". He finds a threshold beyond which the effect of public debt on economic growth becomes negative. This threshold is evaluated at about 36.18 per cent ratio of debt to GDP with its confidence interval associated (13.59). He says public debt boosts economic growth when its level is less than this turning point. Above this threshold, he says, an increase in public debt would lower the economic growth (Kofi, 2019).

III. RESEARCH DESIGN AND METHODOLOGY

➤ The Model

In this section of our study, we seek to test the *null hypothesis*, H_0 : that, "Public debt is not related to economic growth, or: $\beta = 0$ against an *alternative hypothesis* H_a : that, "Public debt is in fact related to economic growth" or: $\beta \neq 0$. This is the relationship that shall form the test that will help us in finding out whether the regression slope in the ensuing equation will be 0. It is the t-test for the regression slope. In relation to this, the question of whether public debt does affect and whether it is also affected by other macroeconomic indicators (including the value of the past GDP) that may affect economic growth was asked. Our study selected these macroeconomic indicators as; the investment and the savings rates. This then makes us construct the equation as stated below:

$$Y_t = \beta_0 + \sum_{i=1}^k \beta_{1i} Y_{t-1} + \sum_{i=1}^k \beta_{2i} D_{t-1} + \sum_{i=1}^k \beta_{3i} I_{t-1} + \sum_{i=1}^k \beta_{4i} S_{t-1} + \epsilon_{1t} \quad (1)$$

Here: Y = Real GDP, $Y_{(t-1)}$ = GDP, D = Public Debt, I = Investment, S = Savings

The outcome of such a measurement would indicate whether public debt affects economic growth.

➤ Data

We intended and tried to collect data on the Public Debt, the Gross Domestic Product, Investment and savings from all African countries as compiled and published by the IMF in their World Economic and Financial Surveys as published in the Regional Economic Outlook of April 2021. We realized that it was, in fact, possible to collect this data from every African country and so we decided to conduct a census of all these African countries. There are only 54 countries in Africa. This made it easy and practical to survey the entire population of the 54 countries. The fact that we collected secondary data from already published reports of the IMF made it cost effective and timeous to collect this data.

With this background the study sought the historical and current profile of public debt in all African countries. Being secondary data from reputable sources we regarded it to be of high quality and of an unobtrusive nature. These factors gave us confidence of getting a reasonably good expectation of our findings. This is because these data were already collected and recorded using the same and comparable method, making it useful to analyze using the same methodology.

However, a challenge arose as to the magnitude of the values of these variables. The figures were inordinately large making it very cumbersome for our computations. In order to address this issue this study, instead, used proxies of these variables. Thus we instead used: Real GDP Per Capita Growth as a proxy for Gross Domestic Product, Public Debt Share of Real GDP as a proxy for Public Debt, Investments Share of Real GDP as a proxy for Investment, Savings levels Share in Real GDP as a proxy of Savings.

➤ Target Population/Sample Selection

We conducted a census of variables from all African countries as the target population and then used this population for all the required economic variables for the analysis. This reasoning arose out of the fact that the total number of countries in Africa is fairly small, barely above 50. Writing in 1990, Henry as quoted by Saunders et. al. (2016) advised against probability sampling for target populations of fewer than 50 cases. There are 54 countries in the whole of Africa. This figure being so close to 50 tempted us to collect data from all 54 countries as this was expected to enhance the accuracy of the predictability of our results.

However, another challenge arose. Some of the countries had gaps in certain data sets whilst other countries did not report figures in some of the years during the period of the study. This was especially so in the early period prior to the 1980's. This made it difficult for us to include such countries in our data collection and take the whole of African countries as a population of interest. This became very difficult to research on as not all variables of interest could be easily accessed for data collection. Thus, such countries were left out of our data collection as we anticipated that this would distort our results. Therefore, *data was collected from only those African countries selected to have had good completeness of data.* This gave us a total of 42 countries out of a total of 54 countries. The 42 countries, therefore, became the target population on which the study conducted the various analyses for the topic.

IV. DATA ANALYSIS AND FINDINGS

➤ Examination of the Data and its Analysis

In this section, we interrogated the data on the GDP, public debt, investment and savings to help answer the

question of whether the GDP, which is this study's proxy for economic growth, is affected by public debt. The study further examined the effect of investment and savings on the GDP. In order to do this all the data collected on these variables was subjected to a regression analysis using the R computer package and we came up with the fixed effects models as outlined in table 1 below.

• The Fixed Effects Model

A fixed effects model refers to a regression model in which the group means are fixed (non-random). The group means could be modeled as fixed or random effects for each grouping. In a fixed effects model each group mean is a group specific fixed quantity (Gomes, 2022).

In a case where panel data of longitudinal observations exist for the same subject, fixed effects represent the subject-specific means. In panel data analysis the term fixed effects estimator (also known as the within estimator) is used to refer to an estimator for the coefficients in the regression model including those fixed effects (one time-invariant intercept for each subject).

The Fixed and Random Effects models assist us in controlling for omitted variables bias due to unobserved heterogeneity when this heterogeneity is constant over time. This heterogeneity can be removed from the data through differencing, for example by subtracting the group level average over time, or taking a first difference which will remove any time invariant components of the model. For the data our study collected from the selected African countries the results of the fixed effects tests were as shown below in Table 1.

Table 1 Results of the Fixed-Effects Model, Using 882 Observations. this Included 42 Cross-Sectional Units Time-Series Length = 21 Dependent Variable: RGDPPCG

	Coefficient	Std. Error	t-ratio	p-value	
Const	-1.07975	0.783634	-1.378	0.1686	
PDSOFGDP	0.172253	0.0328566	5.243	<0.0001	***
TISOFGDP	0.237738	0.0332597	7.148	<0.0001	***
SSINGDP	0.0149957	0.0298455	0.5024	0.6155	

Mean dependent var	4.277875		S.D. dependent var	6.442338
Sum squared residue	29931.26		S.E. of regression	5.979980
LSDV R-squared	0.181418		Within R-squared	0.091058
LSDV F(44, 837)	4.215917		P-value(F)	5.51e-17
Log-likelihood	-2805.794		Akaike criterion	5701.587
Schwarz criterion	5916.786		Hannan-Quinn	5783.874
Rho	0.227445		Durbin-Watson	1.189600

➤ Legend:

- RGDPPCG = Real GDP Per Capita Growth.
- PDSOFGDP = Public Debt Share of the Real GDP.
- TISOFGDP = Total Investments Share of the Real GDP.
- SSINGDP = Savings Share in Real GDP.

➤ Test for Normality of Residuals

- Null hypothesis: error is normally distributed
- Test statistic: Chi-square (2) = 1063.57
- With p-value = 1.11709e-231

Table 1 above has displayed the results of the fixed effects model given the data set in the sample of selected African countries. These results indicate that the given test statistic of the public debt as a share of the Real GDP is 0.172253. This means that when Public Debt share of the Real GDP goes up by 1 per cent then Real GDP per Capita Growth also goes up by 0.172253 per cent. The degrees of freedom for this test is 837 and based on these degrees of freedom the probability (p-value) of the test result of one or more extreme occurring by chance alone is 0.0001. This figure is very low and is less than 0.05 giving us a statistically significant relationship. Therefore, the study rejects the null hypothesis H_0 : that public debt is not related to economic growth, or: $\beta = 0$. Consequently the study accepts the alternative hypothesis, H_a : that public debt is in fact related to economic growth, or: $\beta \neq 0$. The relationship between the public debt as a share of the Real GDP and the Real GDP per capita growth, the study notes, is positive. This, the study observes from the positive sign of the public debt as a share of the Real GDP variable. It implies that when the public debt as a share of the Real GDP goes up the Real GDP per capita also goes up. The study concludes, here, that given the data the study collected from selected African countries public debt, in fact, affects economic growth positively.

Another look at Table 1 above shows us that when the Investment as a share of the Real GDP goes up by 1 per cent the Real GDP per capita growth also goes up by 0.237738 per cent. This means that the Real GDP per capita growth is positively related to the Investment as a share of the Real GDP. This makes us come to a conclusion that economic growth is positively affected by rising Investment levels in the African countries' economies.

Lastly, table 1 shows that when the Savings level as a share of the Real GDP goes up by 1 per cent then the Real GDP per capita will also go up by 0.0149957 per cent. This is an indication that the Savings level, is positively related to the economic growth.

➤ Significance of the Study

This research was aimed at finding out the effect of the Public Debt on economic growth of African countries. The study mooted this topic because, hitherto, the role of Public Debt on Economic Growth in Africa had received very little attention leading to little comprehension. The study observed that when African governments borrow in the name of economic growth and development, their public debt sizes soar to unsustainable levels. This uncontrolled rising of Public Debt is of great concern to scholars and economic managers, alike. In such circumstances, the wellbeing of African countries' economies comes into question.

Given the foregoing, this study has helped to improve the analysis and hence the provision of solutions to the identified problem of public debt, its effect on economic growth in Arica, its effect on the macroeconomic variables of investment and savings as well as its prudent management. Our study has also examined investment and savings levels in Africa and then related them to economic growth. Such an exercise formed part of the significance of this study as it

highlighted the unique effect of these variables on economic growth.

The findings of this research work are intended to directly benefit students, economic managers, governments and economies of all African countries. All these stakeholders will want to understand what effects the act of borrowing is having on their economies. This study also found a specific effect of Public Debt on Economic Growth when the outcome of the study's analysis revealed that *Public Debt has a positive effect on Economic Growth* hence contributing to the body of knowledge of Economics and Finance.

The methods of analysis that we employed in this study and the resulting recommendations are expected to benefit not only a student of economics and finance in Africa but also the African governments.

All these stakeholders have continually sought solutions to the perennial public debt problems facing the continent. It is apparent that gaps exist on public debt analysis and there is still room for better understanding of the scale of the gaps in the literature. This has been the general contribution of this study in this sphere. This, in fact, is what forms the interest and the overall significance of this research topic.

V. LIMITATIONS OF THE STUDY

Data on African countries' economies has undergone various stages of change. These countries, being relatively new sovereigns, have had to change their statistics on economic variables several times to align these statistics with international standards. It is, therefore, a very difficult task to get uniform data in African countries. This poses a limitation on the collection of most historical data and the consequent analysis of such data.

Additionally there still occurs, in most African countries, a dichotomy of areas of economic development. One area is a relatively well developed modern economy comparing fairly well with all countries of the World. Another area is a rural, relatively backward, underdeveloped and is highly influenced by local cultural beliefs. This poses a big limitation on this study. To begin with, the collection of data, especially economic variables' data becomes very difficult. This is because most of these rural areas are comprised of informal businesses. These businesses are agricultural based and usually comprise of subsistence farmers with little or no extra produce for the market. These economic activities, therefore, are not easily captured in national statistics. This became a limitation during this study as the statistics collected and compiled by the IMF might have understated the sizes of the Real GDP in these African countries, for instance. The limitation posed was in the accuracy of the measurement of the size of economic variables in the data.

The study might also be of limited use when it comes to policy formulation and recommendations in these underdeveloped areas. Take for instance, the prescription of

Public Debt strategies such as an increase or decrease in the size of public debt at a particular time. This might be understated, or indeed overstated, due to lack of complete information regarding the size of economic activities in such areas. This also means that the study needed to take into consideration the ethical context and peculiar backgrounds of these areas. The implication is that a uniform policy prescription might not necessarily be suitable for whole economies, hence, posing a limitation of the effectiveness of this study's policy recommendations.

Further, this study used secondary data. This meant that there could be distortions of the values of the data collected as regards the informal economies (especially in the rural areas. We should note, here, that sizable informal sector activities occur even in the urban areas in most countries in Africa). In such areas there is usually a proliferation of hidden money and false non-responses at the time of data collection (Saunders M., 2016). This, therefore, is likely to pose a limitation on the impact or scope of our suggested policies.

VI. CONCLUSIONS, CONTRIBUTIONS AND RECOMMENDATIONS

➤ Summary and Conclusions

After laying a theoretical bedrock, our study reviewed literature on the influence of Public Debt on Economic Growth. We also analyzed data collected on these variables from 42 African countries. Our findings in the model we constructed and consequently employed for analysis are that, *Public Debt has a relationship with Economic Growth*. Further analysis revealed that *Public Debt is not deleterious to Economic Growth in Africa*.

➤ Contributions

The essence of this research work was to discover more knowledge on the subject of the effects of Public Debt on Economic Growth. In so doing the study added more knowledge to the existing body on the effects of Public Debt on Economic growth.

Other contributions can be said to be “four-fold”. These are:

- The unique review of the literature relating to this topic
- The collection of the data on African economic variables
- The presentation of this data
- The analysis of the data

➤ Recommendations

This study's findings are suggesting that Public Debt does not adversely affected economic growth in Africa. However, conventional wisdom favors the notion that limited government borrowing is conducive to a healthier economic environment. This is because there occurs less inflationary pressures, predictable investment levels and steady growth, normally, being spurred by previous real GDP per capita levels. Against this premise, this study recommends the following for African countries:

- Avoid borrowing directly from central banks to reduce inflationary pressures and also to have a better accountability of Public Debt.
- Endeavor to raise financing from local and or international capital markets.
- Improve capacity for record and disseminate data on the structure of public debt, real GDP, investment and savings.

➤ Recommendations for Further Studies

On the African continent some countries are well developed whilst others are not. Reasons for such disparities have included: slavery, colonialism and more recently internal wars. It is, therefore, important that further studies on such African regions with these peculiarities are done separately. Such studies should separate these distinct groups of African countries and look at the same issues as this study has done.

Further, disparities in development between two distinct areas within the same countries exist. This forms a dichotomy of two economies in the same African countries. Data collected in these two regions is always distinct. Therefore, measurement of economic variables and their consequent use poses a big challenge. Further studies may want to look at studying separated data from these two different areas. This would enable governments and other authorities to come up with appropriate intervention measures on the effect of Public Debt on the economies of such areas.

Public Debt though compiled and aggregated to form one annual figure for each year, really arises not only for different needs but also comes from different sources. Governments raise Public Debt either internally or externally. These different sources of Public Debt affect African economies differently. Further studies may want to compare the impact of public debt on economic growth by segregating the sources of public debt. This would enable the researcher to see how each of these different sources of public debt affects the growth of economies of African countries.

In addition, this study relied and focused, principally, on secondary data. Future studies might want to look at collecting primary data. This might bring out varied outcome(s) to what this study has done or, indeed, might restate what this study has concluded.

REFERENCES

- [1]. Wagner, R. E. (2004). Handbook of Public Finance (Vol. 1). (J. G. Backhaus, & R. E. Wagner, Eds.) Boston, Massachusetts, USA: Springer. Retrieved MArch 2020, from [rwagner, debt: https://mason.gmu.edu](https://mason.gmu.edu)
- [2]. Sachs, J. D. (1985). External Debt and Macroeconomic Performance in Latin America and East Asia. Harvard University. Cambridge: Harvard University.
- [3]. Bilan, I. (2016). Overview of the Main Theories on the Economic Effects of Public Indebtedness. In D. U.

- Editorial Board (Ed.), EIRP Proceedings. 11, pp. 1-6. Galati: DANUBIUS University Press.
- [4]. Ricardo, D. (1817). *Principles of Political Economy and Taxation* (Vol. 3 (1821)). (B. Books, Ed.) Kitchener, Ontario, Canada: Batoche Books.
- [5]. Smith, A. (2007). *An Inquiry into the Nature, and Causes of the Wealth of Nations* (Vol. 5). (S. M. Soares, Ed.) New York, New York, USA: MetarLibri.
- [6]. Lerner, A. P. (1943). *Functional Finance and the Federal Debt*. Social Research, 38-51.
- [7]. Blinder, A. S. (2020, March 28). *Keynesian Economics*. Retrieved from Econlib: <https://www.econlib.org/library/Enc/KeynesianEconomics.html>
- [8]. Keynes, J. M. (1936). *The General Theory of Employment, Interest and Money*. London: MacMillan.
- [9]. Saeed, K. M., & Ghazala, A. (2011, March 16). *Munic Personal RePEc Archive*. Retrieved from MPRA: <https://mpra.ub.uni-muenchen.de/62856>
- [10]. Friedman, M. (1962). *Capitalism and Freedom* (Vol. 1). Chicago, Illinois, USA: The University of Chicago Press.
- [11]. Barro, R. J. (1979, October 1). *On the Determination of the Public Debt*. Journal of Political Economy, 87(5), 940-971.
- [12]. Buiter, W. H., & Tobin, J. (1979). *Debt Neutrality: A Brief Review of Doctrine and Evidence*. In G. M. Von Furstenberg, *Social Security versus Private Saving* (pp. 39-63). Ballinger Publication Company.
- [13]. Stiglitz, J. E. (1983, April 1). *On the Relevance or Irrelevance of Public Financial Policy: Indexation, Price Rigidities and Optimal Monetary Policies*. NBER Working Paper Series, 1(1106), 1-54.
- [14]. Wikipedia. (2020, April 2). *Wikipedia*. Retrieved from List of countries by GNI (nominal) per capita: [https://en.wikipedia.org/wiki/list_of_GNI_\(nominal\)_per_capita](https://en.wikipedia.org/wiki/list_of_GNI_(nominal)_per_capita)
- [15]. Wikipedia. (2020, June 1). *COVID-19 pandemic - Wikipedia*. Retrieved from Wikipedia: https://en.wikipedia.org/wiki/COVID-19_pandemic
- [16]. Sambria. (2019, December 10). *Borrowing Responsibility: Africa's Debt Challenge*. Retrieved from www.un.org: <http://www.un.org>
- [17]. Kumar, M. S., & Woo, J. (2010). *Public Debt and Growth*. IMF Working Paper, Fiscal Affairs Department, O40, 47, H62, H63.
- [18]. Reinhart, C. M., & Rogoff, K. S. (2010). *Growth in a Time of Debt*. National Bureau of Economic Research, 1-25.
- [19]. Checherita-Westphal, C., & Rother, P. (2011). *The Impact of Government Debt on Growth, An Empirical Investigation for the Euro Area*. Dans *Revue Économique*, 1015 À 1029.
- [20]. Egert, B. (2013). *Public Debt, Economic Growth and Nonlinear Effects: Myth or Reality*. CESifo Area Conference on Macro, Money & International Finance (pp. 2-25). Munich: Center for Economic Studies & Ifo Institute.
- [21]. Panizza, U., & Presbitero, A. (2013, December 17). *Public Debt and Economic Growth, One More Time*. Retrieved from www.Vox, CEPR Policy Portal: <https://voxeu.org/article/public-debt-and-economic-growth-one-more-time>
- [22]. Tourinho, F. O., & Sangoi, R. (2015, January 13). *Public Debt and Economic Growth: Tests of the Reinhart-Rogoff Hypothesis*. Retrieved from www.researchgate.net: <http://www.researchgate.net/publication/298971893>
- [23]. Gómez-Puig, M., & Sosvilla-Rivero, S. (2017, February 25). *Public Debt and Economic Growth: Further Evidence for the Euro Area*. Barcelona, Barcelona, Spain. Retrieved from www.ub.edu/irea: <https://www.ub.edu/irea>
- [24]. Mousa, T. A., & Shawawreh, A. M. (2017, March 27). *The Impact of Public Debt on the Economic Growth of Jordan: Empirical Study (2000-2015)*. Accounting and Finance Research, 6(2), 114-120.
- [25]. Trevnoski, B., & Mijovic-Spanova, T. (2018). *"Public Debt in Southeast Europe" - Why to enable public participation? Munich Personal RePEc Archive*, 4-75.
- [26]. Dombi, Á., & Dedák, I. (2019, 2018 10). *Public Debt and Economic Growth: What Do Neoclassical Growth Models Teach us? Applied Economics*, 3104-3121. Retrieved from www.Applied Economics.
- [27]. Agnello & Sousa. (2011, June 1). *Can Fiscal Policy Stimulus Boost Economic Recovery? Dans Revue Économique*, pp. 1045-1066.
- [28]. Arshia, A., & Bruno, V. (2011, January 8). *Forecasting the role of public expenditure in economic growth using DEA-neutral network approach*. Retrieved from www.mpra: <https://mpra.ub.uni>
- [29]. Rosoiu, I. (2019). *The Impact of Public Debt on Economic Growth*. Cross-Cultural Management Journal, 1-21.
- [30]. Teliti, D., & Kotorri, A. (2017, October 1). *The Impact of Public Debt on GDP Growth - the Debt Multiplier in the Case of Albania*. International Journal of Innovation and Economic Development, 3(4), 60-67.
- [31]. McCarthy, N. (2020, May 21). *Global Coronavirus Packages Compared*. Retrieved from Statista: <https://statista.com>
- [32]. Modigliani, F. (1961, December 1). *Long-Run Implications of Alternative Fiscal Policies and the Burden of the National Debt*. Economic Journal, 71(284), 730-755.
- [33]. Buiter, W. H., & Tobin, J. (1979). *Debt Neutrality: A brief Review of Doctrine and Evidence*. In G. M. Von Furstenberg, *Social Security Versus Private Saving* (pp. 39-63). Ballinger Publishing Company.
- [34]. Pattillo, C., Poirson, H., & Ricci, L. (2002, April 1). *External debt and growth*. International Monetary Fund, Working Paper, pp. 2002-2069.
- [35]. Abbas, A. S., & Christensen, J. E. (2007). *The Role of Domestic Debt Markets in Economic Growth: An Empirical Investigation for Low-income Countries and Emerging Markets*. International Monetary Fund, African Department. Washington DC: IMF.
- [36]. Bouthevillain, C., Dufrénot, G., & Jaillet, P. (2011). *New Challenges for Public Debt in Advanced Economies*. Dans *Revue Économique*, 971 À 974.

- [37]. Semmlero, W., Greiner, A., Diallo, B., Rajaram, A., & Rezai, A. (2019, December 23). Fiscal Policy, Public Expenditure Composition and Growth. Theory and Empirics. Retrieved from doi.org: <https://doi.org/10.1080/23322039.20191622998>
- [38]. Juvaria, J. (2014, October 24). Should we be Austere? A Normative look at Public Debt. National Debt Conference (pp. 1-15). Islamabad: Munich Personal RePEc Archive. Retrieved from www.MPRA.de: <https://mpra.ub.uni-muenchen.de/63337>
- [39]. Magazzino, C., Giolli, L., & Mele, M. (2015). Wagner's Law and Peacock and Wiseman's Displacement Effect in European Union Countries: A Panel Data Study. *International Journal of Economics and Financial Issues*, 5(3), 812-819.
- [40]. Butkus, M., & Seputiene, J. (2018, November 23). Growth Effect of Public Debt: The Role of Government Effectiveness and Trade Balance. *economies*, 6(62), 1-27.
- [41]. Çifligu, E. P. (2018, November 1). Public Debt and Economic Growth in Albania. *Mediterranean Journal of Social Sciences*, 9(6), 185-191.
- [42]. Saungweme, T., & Odhiambo, N. M. (2019, December 22). The Impact of Debt on Economic Growth: A Review of Contemporary Literature. Retrieved January 2020, from National Economic Association: <https://doi.org/10.1177/0034644619833655>
- [43]. Wagner, A. (1883). *Finanzwissenschaft*. Leipzig: C.F. Winter.
- [44]. Keynes, J. M. (1936). *The General Theory of Interest, Employment and Money*. London: McMillan.
- [45]. Fosu, A. K. (1966, June 1). The Impact of External Debt on Economic Growth in Sub-Saharan Africa. *Journal of Economic Development*, 21(1), 93-118.
- [46]. José, L., Alexandra, F.-L., & Tiago, S. (2014, July 17). Public Debt, Economic Growth, and Inflation in African Economies. Retrieved February 2020, from Munich Personal RePEc Archive: <https://mpra.ub.uni-muenchen.de/57377>
- [47]. Santos, A. R. (2014, January 8). A Time Series and Panel Analysis of Government Spending and National Income. Retrieved from www.MPRA.de: <https://mpra.ub.uni-muenchen.de/56994/MPRA>
- [48]. Anning, L., Ofori, C. F., & Affum, E. K. (2016, December 1). The Impact of Government Debt on the Economic Growth of Ghana: A Time Series Analysis from 1990-2015. *International Journal of Innovation and Economic Development*, 2(5), 31-39.
- [49]. UNCTAD. (2016). *Economic Development in Africa: Debt Dynamics and Development Finance in Africa*. In UNCTAD (Ed.), *The Economic Development in Africa Report 2016*. 3, pp. 1-12. Geneva: United Nations Conference on Trade and Development.
- [50]. Anning, L., Haisu, W., & Riti, J. S. (2017). *International Journal of Management Science and Business Administration*, 50-58.
- [51]. Kimea, A. J., & Kiangi, R. F. (2018). Economic Growth and Public Spending on Selected Sectors in Tanzania. Retrieved March 2020, from doi:10.12691/ijefm-6-1-2.: <http://www.wscipub.com/reference/2333952>
- [52]. Lartey, E. Y., Musah, A., Okyere, B., & Yusif, A.-N. (2018, August 4). Public Debt and Economic Growth: Evidence from Africa. *International Journal of Economics and Financial Issues*, 8(6), 35-45.
- [53]. Saungweme, T., & Odhiambo, N. M. (2019, March 21). Government Debt, Government Debt Service and Economic Growth Nexus in Zambia: a multivariate analysis. (C. C. Attribution, Producer, & cogent economics and finance) Retrieved December 2019, from cogent, economics & finance: <https://doi.org/10.1080/23322039.20191622998>
- [54]. Saungweme, T., & Odhiambo, N. M. (2019). Does Public Debt Impact Economic Growth in Zambia? An ARDL-BOUNDS Testing Approach. University of South Africa, Economics. Pretoria: University of South Africa.
- [55]. Kofi, S. (2019, September 13). Nonlinear Impact of Public Debt on Economic Growth: Evidence from Sub-Saharan African Countries. Retrieved February 2020, from Munich Personal RePEc Archive: <https://mpra.ub.uni-muenchen.de/96067>
- [56]. Brooman, F. (1979). *Macro-Economics*. London: George Allen & Unwin.
- [57]. Downs, J., & Goodman, J. E. (1995). *Dictionary of Finance and Investment Terms*. Hauppauge: Baron's Educational Series Inc.
- [58]. Samuelson P.A. (1983). *Economics*. Tokyo: McGraw-Hill.
- [59]. Moor, E. R. (1992). How the Economy Works. *Business Economics*, 27(2). Retrieved from <https://link.gale.com/apps/doc/A12255974/AONE>
- [60]. Gray, S. (1996). *The Management of Government Debt*. UK: Centre for Central Banking Studies, Bank of England.
- [61]. Jácome, L. I., Indorf, M. M., & Townsend, M. S. (2012). Central Bank Credit to the Government: What Can We Learn From International Practices? IMF Working Paper, 1-25.
- [62]. Ugo, P. (2008, March 1). Domestic and External Public Debt in Developing Countries. United Nations Conference on Trade and Development Discussion Paper(188), 1-26. Retrieved from <https://ssrn.com/abstract=1147669>
- [63]. Christensen, J. (2005). Domestic Debt Markets in Sub-Saharan Africa. *IMF Staff Papers*, 52(3), 518-538.
- [64]. Beaugrand, P., Loko, B., & Mlachila, M. (2002). The Choice Between External and Domestic Deficits, the Case of Central and West African Countries. IMF Working Paper, 1-28.
- [65]. 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 Paper*, 57(1), 209-255.
- [66]. Aiyar, S., Berg, A., & Hussain, M. (2005). The Macroeconomic Challenge of More Aid. *Finance & Development*, 42, 28-31.
- [67]. Panizza, U. (2008). Domestic and External Public Debt in Developing Countries. UNCTAD Discussion Papers(188).

- [68]. Weisweiller, R. (1990). *How the Foreign Exchange Market Works*. New York: New York Institute of Finance.
- [69]. Williamson, J. (2009). *Policy Brief: Drawing Rights*. Massachusetts Ave NW: The Peterson Institute for International Economics.
- [70]. Saunders, M. N., Lewis, P., & Thornhil, A. (2016). *Research Methods for Business Students*. Nueva York: Pearson Education.
- [71]. Bland, J. M., & G, A. D. (1996). *Statistics Notes: Measurement Error*. BMJ Publishing Group, 312(7047), 1654.
- [72]. Blumberg, B., Cooper, D. R., & Schindler, P. S. (2014). *Business Reserch Methods*. Berkshire, London: McGraw-Hill Education.
- [73]. Portney, L. G., & Watkins, P. M. (2000). *Foundation of Clinical Research: Application to Practice*. Prentice Hall Health, 516-517.
- [74]. Hair, J. F., Hult, G. T., Ringle, C. M., & Sarstedt, M. (2022). *A Primer on Partial Least Squares Structural Equation Modeling (PLS-SEM) (3rd ed.)*. Thousand Oaks, CA: Sage.
- [75]. Saunders M., L. P. (2016). *Research Methods for Business Students*. Harlow: Pearson.
- [76]. Safiullin, N. Z., & Safiullin, B. L. (2018, May 22). *Static and Dynamic Models in Economics*. Journal of Physics Conference Series, 1015(3).
- [77]. Gomes, G. E. (2022, January 20). Should I Use Fixed Effects or Random Effects when I have Fewer Than Five Levels of a Grouping Factor in a Mixed-Effect Model? *Peer J Life and Environment*, 10.
- [78]. Diggle, J. P., Patrick, H., Kung-Yee, L., & Scott, Z. L. (2002). *Analysis of Longitudinal Data*. Library Genesis, 169-171.
- [79]. Black J., H. &. (2012). *Dictionary of Economics*. Oxford: Oxford University Press.
- [80]. Bizfluent. (2019, December 22). *bizfluent.com*. Retrieved from [www.bizfluent.com: https://bizfluent.com>info-7832927](https://bizfluent.com>info-7832927)
- [81]. Pinzon, E. (2016). *Dealing With and Understanding Endogeneity*. Barcelona: StataCorp LP.
- [82]. Engle R F. et al. (1983). *Exogeneity*. *Econometrica*, 51(2), 277-304.
- [83]. Downs J., &. G. (1995). *Dictionary of Finance and Investment Terms*. Hauppauge: Baron's Educational Series Inc.
- [84]. Encyclopaedia, B. (Ed.). (2018, October 19). *Merriam - Webster Dictionary*. Springfield, Massachusetts, United States: Encyclopedia Britannica. Retrieved from <http://www.britannica.com/topic/Merriam-Webster-dictionary>
- [85]. Wallis, W. (2014). *The Nature of Statistics Illustrated*. New York: Dover Publications.
- [86]. Knaub, J. N. (2007). *Heteroscedasticity and Homoscedasticity*. In E. o. Statistics, & N. Salkind (Ed.). Thousand Oaks, CA: Safe Publication Inc.
- [87]. Daoud, J. (2017). *Multicollinearity and Regression Analysis*.
- [88]. McClendon, J. M. (2002). *Multiple Regression and Casual Analysis*. Prospects Heights, III: Waveland Press.
- [89]. Brealey, A. R., Myers, C. S., & Allen, F. (2005). *Corporate Finance*. New York: McGraw-Hill Irwin.
- [90]. Buchanan, M. J. (1976). *Barro on the Ricardian Equivalence Theorem*. *Journal of Political Economy*, 84(2), 337-342.
- [91]. Kirchner, J. (2001). *Serial Correlation: Data Analysis Toolkit*.
- [92]. M. Saunders, P. L. (2016). *Research Methods for Business Students*. Harlow: Pearson.
- [93]. Madala, G. (1998). *Introduction to Econometrics*. New York: Macmillan.
- [94]. Ndung'u, S. (1996). *An Exchange Rate Pass-Through Equation for Kenya: 1970-1993*. *African Journal of Econometric Policy*, Vol 3. No.1.
- [95]. Hair J.F., B. B. (2013). *Multivariate Data Analysis*. Harlow: Pearson.
- [96]. Saungweme, N. O. (2019). *The Impact of Public Debt on Economic Growth: A Review of Contemporary Literature*. *National Economic Association*, 1-12.
- [97]. Wikipedia. (2019, December 22). *Richardian equivalence*. Retrieved from [www.Ricardian equivalence - wikipedia: https://en-wikipedia.org/wiki/Ricardian-equivalence](http://www.Ricardian-equivalence-wikipedia: https://en-wikipedia.org/wiki/Ricardian-equivalence)
- [98]. Investopedia. (2023, June 3). *The Real GDP*. Retrieved from www.Investopedia.com on 3rd June 2023.
- [99]. Anning, L., Haisu, W., & Riti, J. S. (2017). *Government Spending and Economic Growth in Ghana: Evidence from Granger Causality Analysis*. *International Journal of Management Science and Business Administration*, 50-58.
- [100]. Anning, L., Haisu, W., & Riti, J. S. (2017). *Government Spending and Economic Growth in Ghana: Evidence from Granger Causality Analysis*. *International Journal of Management Science and Business Administration*, 50-58.
- [101]. Salwindi, N., & Seshamani, V. (2016, March 1). *The Relevance of Wagner's Law to Zambia*. *International Review of Reserach in Emerging Markets and the Global Economy*, 2(2), 808-822.
- [102]. Barro, R. J. (1974, November 6). *Are Government Bonds a Net Wealth?* *Journal of Political Economy*, 84(2), 1095-1117.
- [103]. Damodar N. Gujarati and Dawn C. Porter: *Basic econometrics 5th Edition*, New York, The McGraw-Hill Companies, Inc, 2009.)
- [104]. Carter Hill R., William E. Griffiths and Guay C. Lim, 2018. *Principles of Econometrics*, 5th Edition, ISBN: 978-1-119-32094-4
- [105]. Solomon, R. (1984). "Brazil vs Korea: Differing Experiences as Debtors", *International Economic Letter*. Washington DC, Washington DC, USA: RS Associates Inc.
- [106]. Taylor, L. (1985). "The Thoery and Practice of Developing Country Debt" *An Informal Guide for the Perplexed*. Massachuttes: Massachuttes Institute of Technology.
- [107]. Justice, G., & Paliu, A. (2006).
- [108]. Saungweme, T., & Odhiambo, N. M. (2019). *Does Public Debt Impact Economic Growth in Zambia? An*

- ARDL-BOUNDS Testing Approach. UNISA, Department of Economics. Pretoria: UNISA.
- [109]. Tsoulfidis, L. (2007, August 16). Classical Economists and Public Debt. *International Review of Economics*, 54(1), 1-12.
- [110]. Landais, B. (1998). *Budgetary Policy Lessons*. Bruxelles: De Boeck Universite.
- [111]. Buchanan, J. M. (1958). *Public Principles of Public Debt*. Homewood: Irwin.
- [112]. L., S. N. (2018). Static and dynamic models in economics. *Journal of Physics: Conference Series*, Volume 1015, Issue 3, 1-15.
- [113]. Wooldridge, M. J. (2010). *Econometric Analysis of Cross Section and Panel Data*. Michigan: MIT Press.
- [114]. Cuthbertson, K., & Nitzche. (2004). *Quantitative Financial Economics* (2nd ed.). Chichester: John Wiley and Sons.
- [115]. bizfluent. (2019, December 22). bizfluent.com. Retrieved from [www.bizfluent.com: https://bizfluent.com/info-7832927](https://bizfluent.com/info-7832927)
- [116]. Beaugrand, P., Loko, B., & Mlachila, M. (2002). The choice between eternal and domestic deficits. the case of central and west african countries. *IMF Working Paper*, 1-28.
- [117]. 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 Paper*, 57(1), 209-255.
- [118]. Aiyar, S., Berg, A., & Hussain, M. (2005). The Macroeconomic Challenge of More Aid. *Finance & Development*, 42(3), 28–31.
- [119]. Panniza, U. (2008). Domestic and External Public Debt in Developing Countries. *UNCTAD Discussion Papers*(188).
- [120]. Smith, A. (1776). *Inquiry into the Nature and Causes of the Wealth of Nations*. Scotland, Great Britain: W. Strahan and T. Cadell, London.
- [121]. Mill, J. S. (1848). *Principles of Political Economy with some of their Applications to Social Philosophy*. London: John W. Parker, West Strand.
- [122]. Rogers, G. R., & Welford, S. (2020, April 2). Life Expectancy in Less Developed Countries: Socioeconomic Development or Public Health. *Journal of Biosocial Science*, 21(2), 245-252.
- [123]. Dean, S., & Illowsky, B. (2012, May 16). Descriptive Statistics: Skewness and the Mean, Median, and Modes. Retrieved June 23, 2022, from Connexions website: <http://www.cnx.org>

APPENDIX 1: PUBLIC DEBT TO GDP RATIOS IN AFRICA - 2018 – 2019

Country	Last	Previous	Reference	Unit
Algeria	46.1	36.9	Dec/19	%
Angola	111	80.5	Dec/19	%
Benin	26.2	23.1	Dec/18	%
Botswana	13.4	21.1	Dec/18	%
Burkina Faso	23.6	24.9	Dec/18	%
Burundi	13.2	14.4	Dec/18	%
Cameroon	34	35.7	Dec/18	%
Cape Verde	124	127	Dec/18	%
Central African Republic	48.5	52.9	Dec/18	%
Chad	46.6	52.4	Dec/18	%
Comoros	31.2	28.7	Dec/18	%
Congo	98.5	125	Dec/18	%
Djibouti	104	90.7	Dec/18	%
Egypt	90	90.5	Dec/19	%
Equatorial Guinea	43.3	38	Dec/18	%
Eritrea	20.1	20.1	Dec/18	%
Ethiopia	60	35.6	Dec/18	%
Gabon	60.7	62.6	Dec/18	%
Gambia	81.8	65.6	Dec/18	%
Ghana	59.3	57.3	Dec/18	%
Guinea	18	16.4	Dec/18	%
Guinea Bissau	28.1	26.9	Dec/17	%
Ivory Coast	24	24.4	Dec/18	%
Kenya	57	57.1	Dec/18	%
Lesotho	40.9	35.6	Dec/18	%
Liberia	32	28.8	Dec/18	%
Libya	16.5	15.3	Dec/16	%
Madagascar	35.1	41.9	Dec/18	%
Malawi	62	54.7	Dec/18	%
Mauritania	79	82	Dec/18	%
Mauritius	63	64.8	Dec/18	%
Morocco	65.2	65.1	Dec/18	%
Mozambique	113	110	Dec/18	%
Namibia	45.1	40.3	Dec/18	%
Niger	34.7	35.9	Dec/18	%
Nigeria	17.5	18.2	Dec/18	%
Republic of the Congo	15.7	18.1	Dec/18	%
Rwanda	41.1	40.2	Dec/18	%
Sao Tome and Principe	70.6	78.4	Dec/18	%
Senegal	45.7	37.1	Dec/18	%
Seychelles	55	62	Dec/18	%
Sierra Leone	63	57.9	Dec/18	%
South Africa	62.2	56.7	Dec/19	%
Sudan	62	53.5	Dec/18	%
Swaziland	10.75	9.23	Dec/18	%
Tanzania	37.8	37.6	Dec/19	%
Togo	20.4	19.4	Dec/18	%
Tunisia	71.4	69.2	Dec/18	%
Uganda	40	38.6	Dec/18	%
Zambia	59	55.6	Dec/18	%
Zimbabwe study				

APPENDIX 2: SUMMARY OF WORLD OUTPUT – APRIL 2022**➤ Summary of World Output¹**

Average 2004–13		2014	2015	2016	2017	2018	2019	2020	2021	Projections		2027
										2022	2023	
World	4.1	3.5	3.4	3.3	3.7	3.6	2.9	–3.1	6.1	3.6	3.6	3.3
Advanced Economies	1.6	2.0	2.3	1.8	2.5	2.3	1.7	–4.5	5.2	3.3	2.4	1.6
United States	1.8	2.3	2.7	1.7	2.3	2.9	2.3	–3.4	5.7	3.7	2.3	1.7
Euro Area	0.9	1.4	2.0	1.9	2.6	1.8	1.6	–6.4	5.3	2.8	2.3	1.3
Japan	0.7	0.3	1.6	0.8	1.7	0.6	–0.2	–4.5	1.6	2.4	2.3	0.4
Other Advanced Economies ²	2.7	3.0	2.2	2.3	2.9	2.5	1.9	–3.9	5.5	3.4	2.5	2.0
Emerging Market and Developing Economies	6.4	4.7	4.3	4.4	4.7	4.6	3.7	–2.0	6.8	3.8	4.4	4.3
Regional Groups												
Emerging and Developing Asia	8.5	6.9	6.8	6.8	6.6	6.4	5.3	–0.8	7.3	5.4	5.6	5.2
Emerging and Developing Europe	4.3	1.8	1.0	1.9	4.1	3.4	2.5	–1.8	6.7	–2.9	1.3	2.4
Latin America and the Caribbean	4.0	1.3	0.4	–0.6	1.4	1.2	0.1	–7.0	6.8	2.5	2.5	2.4
Middle East and Central Asia	5.0	3.3	2.8	4.1	2.4	2.7	2.2	–2.9	5.7	4.6	3.7	3.7
Sub-Saharan Africa	5.6	5.0	3.2	1.5	3.0	3.3	3.1	–1.7	4.5	3.8	4.0	4.4
Analytical Groups												
By Source of Export Earnings												
Fuel	5.4	3.1	1.4	1.6	0.4	0.6	0.4	–4.5	5.6	4.6	3.2	2.8
Nonfuel	6.6	5.0	4.7	4.8	5.3	5.1	4.1	–1.7	6.9	3.7	4.5	4.5
Of Which, Primary Products	4.8	2.2	2.9	1.9	2.9	1.9	1.2	–5.2	7.8	3.4	3.4	3.4
By External Financing Source												
Net Debtor Economies	5.4	4.5	4.1	4.1	4.7	4.6	3.4	–3.7	6.4	4.4	4.8	4.7
Net Debtor Economies by												
Debt-Servicing Experience												
Economies with Arrears and/or												
Rescheduling during 2016–	4.7	2.4	1.2	2.6	3.3	3.5	3.4	–0.9	3.2	0.2	5.0	5.5

20												
Other Groups												
European Union	1.2	1.7	2.5	2.1	3.0	2.2	2.0	−5.9	5.4	2.9	2.5	1.7
Middle East and North Africa Emerging Market and Middle-Income	4.7	3.1	2.6	4.4	1.8	2.0	1.7	−3.3	5.8	5.0	3.6	3.5
Economies	6.4	4.6	4.3	4.5	4.7	4.6	3.6	−2.2	7.0	3.8	4.3	4.2
Low-Income Developing Countries	6.1	6.1	4.8	3.9	4.9	5.1	5.3	0.2	4.0	4.6	5.4	5.6
<i>Memorandum</i>												
Median Growth Rate												
Advanced Economies	1.9	2.3	2.2	2.2	3.0	2.8	2.1	−4.3	5.2	2.9	2.6	2.0
Emerging Market and Developing Economies	4.7	3.8	3.3	3.4	3.7	3.5	3.2	−3.6	4.0	3.5	3.8	3.5
Emerging Market and Middle-Income Economies	4.1	3.3	3.0	3.0	2.8	3.0	2.4	−6.1	4.4	3.3	3.6	3.0
Low-Income Developing Countries	5.3	5.0	4.3	4.4	4.5	4.4	4.5	−0.6	3.5	3.8	4.5	5.0
Output per Capita³												
Advanced Economies	1.0	1.5	1.7	1.3	2.0	1.9	1.3	−5.0	5.0	3.0	2.1	1.3
Emerging Market and Developing Economies	4.7	3.1	2.8	2.8	3.3	3.3	2.4	−3.3	5.9	2.7	3.3	3.2
Emerging Market and Middle-Income Economies	4.9	3.2	3.0	3.1	3.5	3.6	2.5	−3.2	6.1	3.1	3.5	3.5
Low-Income Developing Countries	3.6	3.8	2.2	1.5	2.6	2.7	2.9	−2.1	2.5	2.4	3.1	3.4
World Growth Rate Based on Market												
Exchange Rates	2.7	2.8	2.8	2.6	3.2	3.2	2.5	−3.5	5.8	3.5	3.1	2.7
Value of World Output (billions of												

US dollars)												
At Market Exchange Rates	61,95 5	79,322	75,043	76,267	80,945	86,085	87,536	85,239	96,293	103,86 7	110,75 1	136,38 4
At Purchasing Power Parities	84,65 2	109,35 0	111,56 8	115,86 3	122,02 4	129,36 6	135,34 6	132,48 7	146,12 4	160,24 4	170,83 0	211,53 0

(Annual percent change)

- ¹Real GDP.
- ²Excludes euro area countries, Japan, and the United States.
- ³Output per capita is in international dollars at purchasing power parity.

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APPENDIX 3: EMERGING MARKET AND DEVELOPING ECONOMIES: REAL GDP - APRIL 2022

	Average										Projections	
	2004–13	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2027
Sub-Saharan Africa	5.6	5.0	3.2	1.5	3.0	3.3	3.1	-1.7	4.5	3.8	4.0	4.4
Angola	8.4	4.8	0.9	-2.6	-0.2	-2.0	-0.7	-5.6	0.7	3.0	3.3	3.9
Benin	4.0	6.4	1.8	3.3	5.7	6.7	6.9	3.8	6.6	5.9	6.1	6.0
Botswana	3.3	5.7	-4.9	7.2	4.1	4.2	3.0	-8.7	12.5	4.3	4.2	4.0
Burkina Faso	5.9	4.3	3.9	6.0	6.2	6.7	5.7	1.9	6.9	4.7	5.0	5.3
Burundi	4.4	4.2	-3.9	-0.6	0.5	1.6	1.8	0.3	2.4	3.6	4.6	4.5
Cabo Verde	4.1	0.6	1.0	4.7	3.7	4.5	5.7	– 14.8	6.9	5.2	5.8	4.5
Cameroon	3.7	5.8	5.6	4.5	3.5	4.0	3.5	0.5	3.5	4.3	4.9	5.2
Central African Republic	-1.5	0.1	4.3	4.7	4.5	3.8	3.0	1.0	1.0	3.5	3.7	4.7
Chad	7.8	6.9	1.8	-5.6	-2.4	2.4	3.4	-2.2	-1.1	3.3	3.5	3.5
Comoros	3.0	2.1	1.3	3.5	4.2	3.6	1.8	-0.3	2.2	3.5	3.7	4.3
Democratic Republic of the Congo	6.3	9.5	6.9	2.4	3.7	5.8	4.4	1.7	5.7	6.4	6.9	6.6
Republic of Congo	4.8	6.7	-3.6	– 10.7	-4.4	-4.8	-0.4	-8.1	-0.2	2.4	2.7	3.4
Côte d'Ivoire	2.8	8.8	8.8	7.2	7.4	6.9	6.2	2.0	6.5	6.0	6.7	6.0
Equatorial Guinea	7.6	0.4	-9.1	-8.8	-5.7	-6.2	-6.0	-4.9	-3.5	6.1	-2.9	-1.0
Eritrea	1.8	30.9	– 20.6	7.4	– 10.0	13.0	3.8	-0.6	2.9	4.7	3.6	3.8
Eswatini	3.8	0.9	2.2	1.1	2.0	2.4	2.6	-1.9	3.1	2.1	1.8	2.3
Ethiopia	10.9	10.3	10.4	8.0	10.2	7.7	9.0	6.1	6.3	3.8	5.7	7.0
Gabon	2.8	4.4	3.9	2.1	0.5	0.8	3.9	-1.9	0.9	2.7	3.4	3.8
The Gambia	2.5	-1.4	4.1	1.9	4.8	7.2	6.2	-0.2	5.6	5.6	6.2	5.0
Ghana	7.3	2.9	2.1	3.4	8.1	6.2	6.5	0.4	4.2	5.2	5.1	7.5
Guinea	3.6	3.7	3.8	10.8	10.3	6.4	5.6	6.4	4.2	4.8	5.8	5.1
Guinea-Bissau	3.5	1.0	6.1	5.3	4.8	3.4	4.5	1.5	3.8	3.8	4.5	5.0
Kenya	4.8	5.0	5.0	4.2	3.8	5.6	5.0	-0.3	7.2	5.7	5.3	5.4
Lesotho	3.6	2.1	3.3	1.9	-2.7	-0.3	0.0	-6.0	2.1	3.1	1.6	0.1
Liberia	7.4	0.7	0.0	-1.6	2.5	1.2	-2.5	-3.0	4.2	4.5	5.5	5.7
Madagascar	3.1	3.3	3.1	4.0	3.9	3.2	4.4	-7.1	3.5	5.1	5.2	5.0
Malawi	5.8	5.7	3.0	2.3	4.0	4.4	5.4	0.9	2.2	2.7	4.3	5.8
Mali	3.6	7.1	6.2	5.9	5.3	4.7	4.8	-1.2	3.1	2.0	5.3	5.0
Mauritius	4.0	3.7	3.6	3.8	3.8	3.8	3.0	– 14.9	3.9	6.1	5.6	3.3
Mozambique	7.4	7.4	6.7	3.8	3.7	3.4	2.3	-1.2	2.2	3.8	5.0	13.1
Namibia	4.3	6.1	4.3	0.0	-1.0	1.1	-0.9	-8.5	0.9	2.8	3.7	2.5
Niger	5.3	6.6	4.4	5.7	5.0	7.2	5.9	3.6	1.3	6.9	7.2	6.3
Nigeria	7.3	6.3	2.7	-1.6	0.8	1.9	2.2	-1.8	3.6	3.4	3.1	2.9
Rwanda	8.0	6.2	8.9	6.0	4.0	8.6	9.5	-3.4	10.2	6.4	7.4	6.1
São Tomé and Príncipe	5.3	6.5	3.8	4.2	3.9	3.0	2.2	3.0	1.8	1.6	2.8	4.0
Senegal	3.2	6.2	6.4	6.4	7.4	6.2	4.6	1.3	6.1	5.0	9.2	4.0
Seychelles	4.4	4.7	5.6	5.4	4.5	3.2	3.1	-7.7	8.0	4.6	5.6	4.5
Sierra Leone	7.8	4.6	– 20.5	6.4	3.8	3.5	5.3	-2.0	3.2	3.4	4.3	4.3
South Africa	3.3	1.4	1.3	0.7	1.2	1.5	0.1	-6.4	4.9	1.9	1.4	1.4
South Sudan	...	2.9	-0.2	– 13.5	-5.8	-1.9	0.9	-6.6	5.3	6.5	5.6	4.4
Tanzania	6.5	6.7	6.2	6.9	6.8	7.0	7.0	4.8	4.9	4.8	5.2	6.0
Togo	3.0	5.9	5.7	5.6	4.3	5.0	5.5	1.8	5.1	5.6	6.2	6.5
Uganda	7.1	5.7	8.0	0.2	6.8	5.6	7.7	-1.4	5.1	4.9	6.5	6.8
Zambia	7.6	4.7	2.9	3.8	3.5	4.0	1.4	-2.8	4.3	3.1	3.6	4.8
Zimbabwe ¹	1.7	2.4	1.8	0.5	5.0	4.7	-6.1	-5.3	6.3	3.5	3.0	3.0

(Annual Percent Change)

- ¹See the country-specific notes for Afghanistan, India, Lebanon, Libya, Tunisia, Ukraine, Uruguay, and Zimbabwe in the “Country Notes” section of the Statistical Appendix.
- ²Data for Timor-Leste excludes projections for oil exports from the Joint Petroleum Development Area.
- ³Data for 2011 exclude South Sudan after July 9. Data for 2012 and onward pertain to the current Sudan. ⁴Data for Syria are excluded for 2011 onward owing to the uncertain political situation.

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APPENDIX 4: SUMMARY OF NET LENDING AND BORROWING - APRIL 2022**➤ World Economic Outlook: War Sets Back the Global Recovery**

<u>Averages</u>	2004–13 2008–15		2016	2017	2018	2019	2020	2021	Projections		
									2022	2023	Average 2024–27
Canada											
Net Lending and Borrowing	–0.9	–2.7	–3.1	–2.8	–2.4	–2.0	–1.8	0.1	1.1	–0.1	–1.3
Current Account Balance	–0.9	–2.7	–3.1	–2.8	–2.4	–2.0	–1.8	0.1	1.1	–0.1	–1.3
Savings	22.6	21.3	19.7	20.7	21.0	21.0	20.5	23.8	24.5	23.8	23.1
Investment	23.5	24.0	22.8	23.6	23.4	23.1	22.3	23.7	23.4	23.9	24.4
Capital Account Balance	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Other Advanced Economies¹											
Net Lending and Borrowing	4.0	4.2	5.0	4.7	4.6	4.7	5.7	7.1	6.0	5.3	4.8
Current Account Balance	4.0	4.3	5.0	4.7	4.4	4.7	5.6	7.2	5.9	5.3	4.8
Savings	30.4	30.4	30.4	30.7	30.3	30.1	31.5	33.1	32.5	31.8	31.1
Investment	26.2	25.8	25.2	25.7	25.7	25.3	25.6	25.4	25.9	26.0	25.9
Capital Account Balance	0.0	–0.1	0.0	0.1	0.2	0.0	0.1	–0.1	0.0	0.0	0.0
Emerging Market and Developing Economies											
Net Lending and Borrowing	2.4	1.2	–0.2	0.0	–0.1	0.1	0.6	1.0	1.6	1.0	0.2
Current Account Balance	2.3	1.1	–0.3	–0.1	–0.2	0.0	0.5	0.9	1.5	0.9	0.1
Savings	32.0	32.5	31.0	31.5	32.4	32.2	32.8	33.4	34.6	34.5	34.1
Investment	30.0	31.7	31.5	31.9	32.9	32.5	32.8	32.7	33.2	33.7	34.1
Capital Account Balance	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Regional Groups											
Emerging and Developing Asia											
Net Lending and Borrowing	3.3	2.2	1.3	0.9	–0.3	0.5	1.5	1.0	0.6	0.4	0.1
Current Account Balance	3.2	2.2	1.3	0.9	–0.3	0.5	1.5	1.0	0.6	0.4	0.1
Savings	42.0	42.9	39.9	40.1	39.9	39.5	40.1	39.5	39.9	40.3	40.1
Investment	39.0	40.7	38.6	39.2	40.2	39.0	38.6	38.5	39.3	39.8	40.0
Capital Account Balance	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Emerging and Developing Europe											
Net Lending and Borrowing	–0.4	–0.4	0.1	–0.2	2.2	1.8	0.7	2.2	3.9	2.4	0.7
Current Account Balance	–0.6	–0.7	–0.3	–0.5	1.7	1.3	0.0	1.7	3.2	1.7	0.2
Savings	23.2	23.3	23.5	24.1	25.5	24.2	23.7	25.9	25.5	23.8	22.9
Investment	23.6	23.8	23.7	24.6	23.6	22.8	23.7	24.2	22.2	22.0	22.7
Capital Account Balance	0.1	0.3	0.3	0.3	0.5	0.5	0.6	0.6	0.7	0.6	0.6
Latin America and the Caribbean											
Net Lending and Borrowing	–0.6	–2.1	–2.0	–1.7	–2.6	–2.0	0.0	–1.6	–1.2	–1.2	–1.4
Current Account Balance	–0.7	–2.2	–2.0	–1.7	–2.7	–2.1	–0.2	–1.6	–1.2	–1.2	–1.4
Savings	21.0	19.6	16.6	16.3	16.5	16.8	17.1	17.9	19.7	19.7	19.8
Investment	21.7	22.0	18.3	18.3	19.2	18.9	18.0	19.7	20.5	20.7	21.1
Capital Account Balance	0.1	0.1	0.0	0.0	0.0	0.1	0.2	0.0	0.0	0.0	0.0
Middle East and Central Asia											
Net Lending and Borrowing	9.0	6.4	–3.9	–1.1	2.7	0.5	–2.3	3.0	8.2	5.6	2.4
Current Account Balance	9.2	6.3	–4.1	–1.1	2.9	0.5	–2.5	3.0	8.3	5.6	2.4
Savings	35.9	33.8	23.5	26.1	28.9	28.1	25.9	30.6	35.6	33.1	30.3
Investment	28.2	29.1	28.9	29.3	28.4	30.2	30.6	28.7	28.1	28.3	28.5
Capital Account Balance	0.2	0.1	0.1	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.0
Sub-Saharan Africa											
Net Lending and Borrowing	1.4	–1.4	–3.2	–1.8	–1.9	–2.8	–2.5	–0.7	–1.3	–2.1	–2.2
Current Account Balance	0.2	–2.1	–3.6	–2.2	–2.3	–3.2	–3.0	–1.1	–1.7	–2.5	–2.5
Savings	20.6	19.5	17.7	18.4	19.3	19.6	20.3	20.3	19.4	18.9	18.8
Investment	20.5	21.5	21.0	20.5	21.3	22.9	23.2	21.4	21.1	21.4	21.3
Capital Account Balance	1.2	0.7	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.3

(Percent of GDP)

**APPENDIX 5: EMERGING MARKET AND DEVELOPING ECONOMIES: CURRENT
ACCOUNT BALANCE - APRIL 2022**

2014		2015	2016	2017	2018	2019	2020	2021	Projections		
									2022	2023	2027
Sub-Saharan Africa	-3.6	-5.7	-3.6	-2.2	-2.3	-3.2	-3.0	-1.1	-1.7	-2.5	-2.3
Angola	-2.6	-8.8	-3.1	-0.5	7.3	6.1	1.5	11.3	11.0	4.9	-0.3
Benin	-6.7	-6.0	-3.0	-4.2	-4.6	-4.0	-1.7	-4.5	-5.8	-5.5	-4.0
Botswana	11.1	2.2	8.0	5.6	0.4	-7.0	-10.8	-0.5	0.5	2.8	3.3
Burkina Faso	-7.2	-7.6	-6.1	-5.0	-4.1	-3.3	-0.1	-3.1	-5.7	-5.3	-4.9
Burundi	-15.6	-11.5	-11.1	-11.7	-11.4	-11.6	-10.2	-13.5	-18.6	-15.7	-11.8
Cabo Verde	-9.1	-3.2	-3.8	-7.8	-5.2	-0.4	-15.9	-12.5	-11.5	-8.6	-5.6
Cameroon	-3.9	-3.6	-3.1	-2.6	-3.5	-4.3	-3.7	-3.3	-1.6	-2.9	-3.5
Central African Republic	-13.3	-9.1	-5.3	-7.8	-8.0	-4.9	-8.5	-10.6	-11.0	-8.4	-5.4
Chad	-8.9	-13.8	-10.4	-7.1	-1.4	-4.4	-7.6	-4.5	1.3	-2.3	-6.6
Comoros	-3.8	-0.3	-4.4	-2.1	-2.9	-3.3	-1.6	-3.4	-8.3	-8.2	-7.4
Democratic Republic of the Congo	-4.8	-3.9	-4.1	-3.3	-3.5	-3.2	-2.2	-1.0	-0.3	-0.3	-0.1
Republic of Congo	1.0	-39.0	-48.7	-6.0	-0.1	0.4	-0.1	15.4	26.0	14.7	2.3
Côte d'Ivoire	1.0	-0.4	-0.9	-2.0	-3.9	-2.3	-3.2	-3.7	-4.8	-4.4	-3.6
Equatorial Guinea	-4.3	-17.7	-26.0	-7.8	-2.1	-0.9	-4.2	-3.4	-1.6	-2.0	-5.2
Eritrea	17.3	20.8	15.3	24.0	15.4	13.0	11.4	13.5	13.5	13.3	11.4
Eswatini	11.6	13.0	7.9	6.2	1.3	4.3	6.7	0.5	-2.1	-0.2	0.3
Ethiopia	-7.9	-11.5	-10.9	-8.5	-6.5	-5.3	-4.6	-3.2	-4.5	-4.4	-3.7
Gabon	7.6	-5.6	-11.1	-8.7	-2.1	-0.9	-6.0	-6.9	1.7	-0.1	-1.8
The Gambia	-7.3	-9.9	-9.2	-7.4	-9.5	-6.1	-3.2	-9.5	-14.9	-11.8	-9.4
Ghana	-6.8	-5.7	-5.1	-3.3	-3.0	-2.7	-3.1	-3.0	-3.6	-3.5	-3.4
Guinea	-14.4	-12.5	-30.7	-6.7	-19.2	-11.5	-13.7	-4.0	-9.6	-8.5	-6.8
Guinea-Bissau	0.5	1.8	1.4	0.3	-3.6	-8.8	-2.6	-3.1	-5.6	-4.8	-3.6
Kenya	-9.3	-6.3	-5.4	-7.0	-5.5	-5.3	-4.7	-5.4	-5.8	-5.3	-5.0
Lesotho	-5.2	-4.0	-6.7	-2.6	-1.4	-2.1	-2.0	-9.3	-15.6	-8.9	-4.4
Liberia	-34.7	-28.1	-22.9	-22.3	-21.3	-19.6	-16.3	-17.8	-16.1	-15.9	-14.0
Madagascar	-0.3	-1.6	0.5	-0.4	0.7	-2.3	-5.4	-5.5	-6.5	-6.2	-3.6
Malawi	-5.8	-12.2	-13.1	-17.8	-12.0	-12.6	-13.8	-14.5	-17.3	-15.4	-8.3
Mali	-4.7	-5.3	-7.2	-7.3	-4.9	-7.5	-2.3	-4.5	-5.3	-4.9	-4.8
Mauritius	-5.4	-3.6	-4.0	-4.6	-3.9	-5.4	-12.5	-11.1	-14.0	-8.0	-4.8
Mozambique	-36.3	-37.4	-32.2	-19.6	-30.3	-19.1	-27.6	-22.4	-44.9	-39.0	-9.0
Namibia	-9.4	-13.6	-16.5	-4.4	-3.4	-1.8	3.0	-7.3	-6.9	-4.4	-2.3
Niger	-12.1	-15.3	-11.4	-11.4	-12.6	-12.2	-13.4	-15.8	-15.8	-13.8	-7.8
Nigeria	0.2	-3.1	1.3	3.4	1.5	-3.3	-4.0	-0.8	-1.1	-1.1	-0.7
Rwanda	-11.4	-12.7	-15.3	-9.5	-10.1	-11.9	-11.9	-10.5	-11.4	-10.3	-6.2
São Tomé and Príncipe	-20.7	-12.0	-6.1	-13.2	-12.3	-12.1	-10.3	-9.7	-12.1	-8.7	-4.6
Senegal	-7.0	-5.7	-4.2	-7.3	-8.8	-7.9	-10.9	-11.8	-13.0	-8.4	-4.2
Seychelles	-22.4	-18.1	-19.7	-19.1	-17.4	-16.2	-23.0	-20.3	-30.0	-23.6	-16.1
Sierra Leone	-9.4	-23.6	-7.6	-18.3	-12.4	-14.3	-6.8	-13.0	-17.2	-13.7	-7.8
South Africa	-4.8	-4.3	-2.7	-2.4	-3.0	-2.6	2.0	3.7	1.3	-1.0	-2.0
South Sudan	-1.2	1.7	16.8	4.8	7.3	1.5	-15.6	-7.6	9.5	1.1	1.3
Tanzania	-9.8	-7.7	-4.2	-2.6	-3.1	-2.6	-1.8	-3.3	-4.3	-3.6	-2.5
Togo	-6.8	-7.6	-7.2	-1.5	-2.6	-0.8	-1.5	-3.3	-5.9	-6.4	-2.6
Uganda	-6.5	-6.0	-2.8	-4.8	-5.7	-6.2	-9.3	-7.9	-7.0	-9.8	-9.0
Zambia	2.1	-2.7	-3.3	-1.7	-1.3	0.6	12.0	6.7	4.4	4.3	3.6
Zimbabwe ¹	-12.0	-8.0	-3.4	-1.3	-3.7	4.0	4.7	3.6	2.5	1.5	-2.5

(Percent of GDP)

- 1See the country-specific notes for Afghanistan, Lebanon, Libya, Tunisia, Ukraine, and Zimbabwe in the “Country Notes” section of the Statistical Appendix.
- 2Data for Syria are excluded for 2011 onward owing to the uncertain political situation

APPENDIX 6: PUBLIC DEBT DATA**➤ Country List Government Debt to GDP Ratio in Africa**

Country	Last	Previous	Reference	Unit
Algeria	62.5	51.3	Dec/21	%
Angola	85	120	Dec/21	%
Benin	47.2	46.1	Dec/21	%
Botswana	18.2	17.8	Dec/20	%
Burkina Faso	51	46.5	Dec/21	%
Burundi	15.9	15.2	Dec/20	%
Cameroon	46	45.8	Dec/21	%
Cape Verde	157	156	Dec/21	%
Central African Republic	47.6	43.4	Dec/21	%
Chad	58.2	52.1	Dec/21	%
Comoros	31.1	26.5	Dec/21	%
Congo	12.7	15.6	Dec/21	%
Djibouti	43.2	41	Dec/21	%
Egypt	87.2	92	Jun/22	%
Equatorial Guinea	39.9	48.8	Dec/21	%
Eritrea	171	182	Dec/21	%
Ethiopia	57	55.4	Dec/21	%
Gabon	69.5	77.3	Dec/21	%
Gambia	82.9	85	Dec/21	%
Ghana	81.8	78.3	Dec/21	%
Guinea	43.3	43.4	Dec/21	%
Guinea Bissau	36.5	27.4	Dec/19	%
Ivory Coast	51.4	47.7	Dec/21	%
Kenya	68.4	65.6	Dec/21	%
Lesotho	54.7	54.2	Dec/21	%
Liberia	55	52.1	Dec/21	%
Libya	155	110	Dec/20	%
Madagascar	44.8	38.7	Dec/20	%
Malawi	50.7	61.2	Dec/20	%
Mauritania	53.1	52.1	Dec/20	%
Mauritius	89	73.4	Dec/21	%
Morocco	77.9	76.4	Dec/21	%
Mozambique	130	122	Dec/21	%
Namibia	76	69.6	Dec/21	%
Niger	50.9	43.6	Dec/21	%
Nigeria	37	34.5	Dec/21	%
Republic of the Congo	85	102	Dec/21	%
Rwanda	61	51	Dec/20	%
Sao Tome and Principe	88	96.9	Dec/21	%
Senegal	73	68.8	Dec/21	%
Seychelles	94	57	Dec/20	%
Sierra Leone	75	71.9	Dec/21	%
South Africa	69.9	70.7	Dec/21	%
Sudan	259	202	Dec/20	%
Swaziland	15.49	12.14	Dec/20	%
Tanzania	37.8	37.6	Dec/19	%
Togo	61	58.6	Jan/21	%
Tunisia	80	87.6	Dec/21	%
Uganda	49.8	38.2	Dec/20	%
Zambia	96	91.9	Dec/20	%
Zimbabwe	77.2	66.2	Dec/19	%

Source: Focus-Economics