EXTERNAL DEBT, CORRUPTION, AND ECONOMIC GROWTH IN SELECTED FIVE SUB-SAHARAN AFRICAN COUNTRIES

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EXTERNAL DEBT, CORRUPTION, AND ECONOMIC GROWTH IN SELECTED FIVE SUB-SAHARAN AFRICAN COUNTRIES

BY

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ABSTRACT

External Debt has become a serious issue of concern among the sub-Saharan African countries because of the rising burden of debt servicing. The main objective of this study is to examine the impact of external debt and corruption on economic growth of the selected five SSA countries from 1990 to 2015, using two-gap and the modified-Solow growth models. Panel Unit Root and Panel Cointegration tests were employed to test for stationarity of the series and the long run relationship respectively. FMOLS estimation technique was then employed to examine the long-run coefficients of the variables of the model, and panel granger causality test, in order to examine the direction of causality among the variables. The results indicate that there is negative relationship between external debt and economic growth, as well bi-directional causality between the two variables. The results also indicate a positive relationship between corruption and economic growth, as well as the existence of no causality between the two variables. The study therefore recommends that the governments should address the menace of the rising debt through the adoption of other sources of capital for investment, such as more openness of the economy for more capital, by easing the restrictions on genuine imports and exports of valuable goods and services. It also suggests that the issue of corruption be tackled head-on, by such penalties that tend to make corruption less attractive.

Keywords: external debt, SSA, corruption, FMOLS, economic growth

ABSTRAK

Hutang luar negara telah menjadi satu isu serius yang membimbangkan di kalangan negara-negara sub-Sahara Afrika kerana peningkatan beban dalam khidmat hutang. Objektif utama kajian ini adalah untuk mengkaji kesan hutang luar negara dan rasuah keatas pertumbuhan ekonomi lima negara SSA yang terpilih dari tahun 1990-2015, dengan menggunakan Model Dua Jurang dan ubahsuai pertumbuhan Solow. Panel Unit Root dan ujian Panel kointegrasi telah digunakan untuk menguji kepegunan siri dan hubungan jangka panjang masing-masing. Teknik anggaran FMOLS juga digunakan untuk mengkaji pekali pemboleh ubah jangka panjang dalam model, dan ujian penyebab Granger panel, untuk memeriksa arah sebab akibat antara pembolehubah. Keputusan menunjukkan bahawa terdapat hubungan negatif antara hutang luar negera dan pertumbuhan ekonomi, serta dua arah sebab akibat antara kedua-dua pembolehubah. Keputusan juga menunjukkan hubungan yang positif antara rasuah dan pertumbuhan ekonomi, serta kewujudan tiada sebab akibat antara kedua-dua pembolehubah. Oleh itu, kajian ini mencadangkan bahawa kerajaan perlu menangani ancaman hutang yang semakin meningkat melalui penggunaan sumber-sumber modal untuk pelaburan, seperti keterbukaan ekonomi untuk menarik lebih modal, dengan melonggarkan sekatan ke atas import dan eksport tulen barangan dan perkhidmatan berharga. Ia juga mencadangkan isu rasuah boleh ditangani secara paksaan, sebagai contoh penalti yang cenderung menjadikan rasuah itu kurang menarik.

Kata kunci: hutang luaran, SSA, rasuah, FMOLS, pertumbuhan ekonomi

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LIST OF ABBREVIATIONS

Abbreviation	Full Meaning
FMOLS	Fully Modified Ordinary Least Squares
GLS	Generalised Least Squares
IDS	International Debt Statistics
ICRG	International Country Risk Guide
IMF	International Monetary Fund
OLS	Ordinary Least Squares
SSA	Sub-Saharan Africa
WDI	World Development Indicators

CHAPTER ONE

INTRODUCTION

1.0 Overview of the Sub-Saharan African Countries

The United Nations describes the sub-Saharan Africa (SSA) countries as all African countries located on the south of the Sahara, fully or partially. The region comprises 46 out of the 54 countries in Africa (United Nations Development Programme, 2016). The SSA countries chosen are shown in the map in Figure 1.1, and described thereafter.

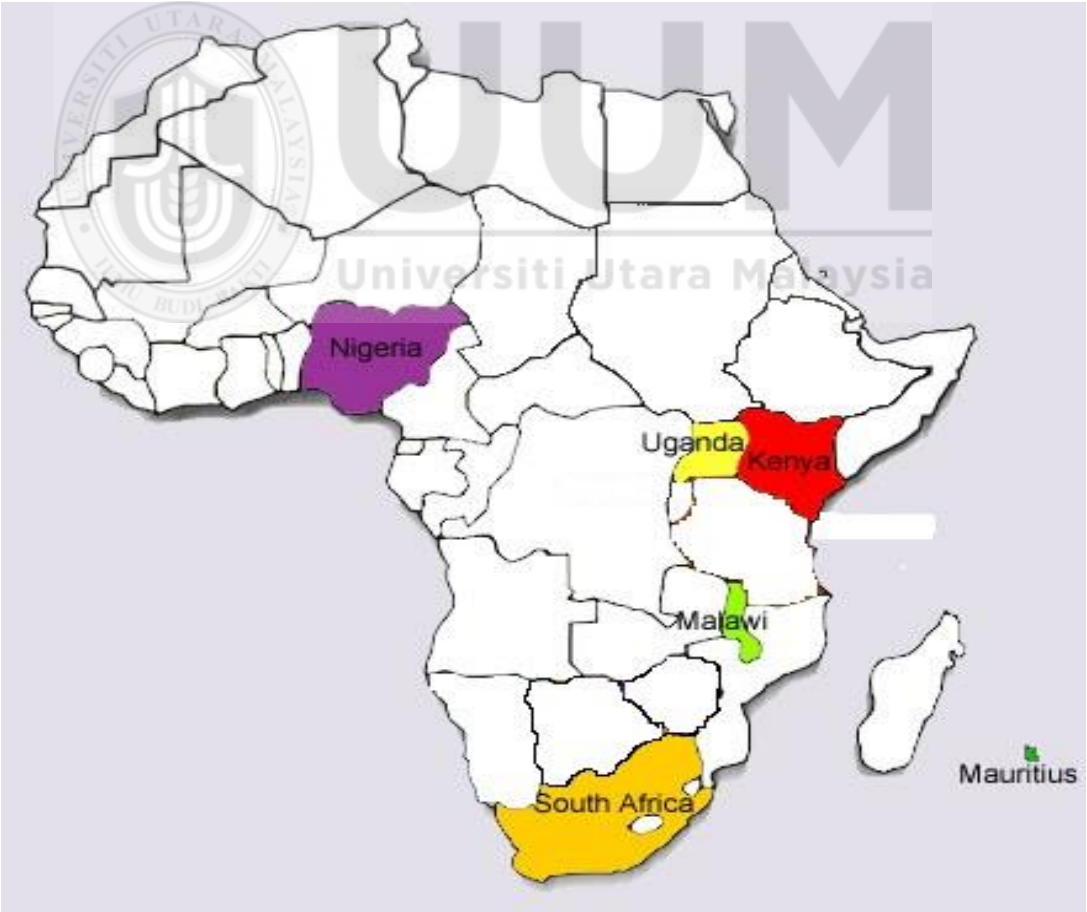

Figure 1.1
Map of SSA Showing the Selected Countries
Source: Google Map

Malawi is located in the Southern part of Africa, with an estimated population of 17.2 million, gross domestic product (GDP) growth rate of 2.8 percent, and inflation rate of 21.9 percent in 2015, the country has a large record of widespread poverty and vulnerability to external shocks. While Malawi is located in the Southern part, Kenya is located in the Eastern part, with an estimated population of 46.1 million, and GDP growth rate of 5.6 percent in 2015, as well as inflation rate of 6.3 percent in 2016. The country has tourism, and information and communication sectors thriving well. Nigeria is a country in the Western part of Africa, with an estimated population of 184 million-which is 47 percent of the West Africa's population and with one of the largest population of youth in the world. Her GDP growth rate in 2015 was an estimate of 2.7 percent, which was a large decline from the 6.3 percent recorded in mid-2014, arising from the fall in the International prices of crude-oil which has plunged the country into economic recession.

Uganda is another country in SSA with an estimated population of 39.03 million and an inflation rate of 5.2 percent in 2015, whose economy grows at an estimated 4.5 percent for five consecutive years, until 2016, as against the 7 percent growth rate recorded in 1990s and 2000s. South Africa has an estimated population of 55.01 million, and GDP growth rate of 1.3 percent in 2015, as well as an estimated inflation rate of 6.3 percent in 2016 (World Bank, 2016).

1.1 Background of the Study

The aspiration of every economy is to translate the periodical growth to development, since the growth of an economy is a *sine-qua-non* for economic development. In the quest for this development through stable growth in economic activities, a country usually supplements domestic resources with external finances. This may be in the form of loans, grants, and remittance; among others. Thus, external finance remains a necessary means of raising funds in order to increase domestic productivity and growth. This is obtained through the financing of public investments in infrastructure and human capital, which fosters economic growth and development. As such, increase in public capital raises the productivity of labour and private capital, while also inducing the accumulation of these productive factors and, therefore, economic growth (Agénor, 2012).

Financing development initiatives is particular to both the developed and developing countries. In the areas of external finance, it has been reported that external debt stock of low- and middle-income countries declined (for the first time in more than two decades) six percent, from USD6.968 trillion, during the 2008 global financial crisis, to USD6.7 trillion in 2015. This was as a result of the net debt outflows in conjunction with year-on-year exchange adjustments between the currencies in which external debt is denominated and the U.S. Dollar (USD). The outflows were driven by an 18 percent contraction in short-term obligations compared to 2014.

As of 2013, as reported by the World Bank, 27 African countries are among the 36 countries classified as low-income; most of these countries have been heavily burdened by debts and their financial systems have been largely defective, thereby creating problems in the course of servicing the debts obligations. Similarly, the systems of economic and social welfare have largely declined, and the system of government has fallen drastically (Megersa, 2015; Richards, Nwanna, & Nwankwo, 2003). The joint stock of external debt of countries in SSA, with the exception of South Africa, were continuous on a rising path in 2015, increasing by 7.5 percent, which is in contrast to the declining stock of external debt recorded by other low- and middle-income countries within the same period. The overall debt profile explains wide divergence in debt accumulation at the individual-country level, as some countries in the sub-region have recorded the fastest rising levels of external debt of any low- and middle-income countries (International Debt Statistics, 2017).

In SSA countries, the level of aggregate external debt stood at USD416.3 billion in 2015, which was 4.05 percent increase from the 2014 balance; with interest payment rising from USD3.8 billion to USD9.3 billion between 2010 and 2015. Out of the total debt accrued to this sub-region of forty-six countries, five of these countries alone accounted for 46.49 percent in 2015. The changes in the debt stocks of the selected SSA countries between 2010 and 2015 are presented in Table 1.1.

Table 1.1
Changes in the Selected SSA Countries' External Debt Stock (2010-2015)

Country	Debt Stock (2010) (million USD)	Debt Stock (2015) (million USD)	Remarks (% increase)
Nigeria	15,484	29,029	87.5
Uganda	2,975	5,756	93.5
Kenya	8,848	19,148	116.4
Malawi	1,021	1,735	69.9
South Africa	108,392	137,887	27.2

Source: Author's computation

As shown in the table, the rise in debt stocks in the five SSA countries are exorbitant, ranging from 69.9 percent in Malawi to 116.4 percent in Kenya. South Africa recorded the lowest rise in the stock of external debt, with an estimate of 27.2 percent increase. However, the debt stock of South Africa alone is more than the total debt stocks of the remaining four countries combined. This is a clear indication of the extent to which these SSA countries heavily rely on external debts, while the average infrastructural development necessary to attract both the foreign direct and portfolio investments are grossly inappropriate (World Bank, 2017).

The SSA countries still remain heavily indebted despite the increased share of net financial inflows through portfolio investments, as a result of which flows to Nigeria became negative due to the fall in international oil prices and the simultaneous decline in the country's macroeconomic prospects; which in turns created opportunity for South Africa as it results in increased investment into the country, which saw the latter's portfolio equity inflows rising to USD7.3 billion, almost triple the 2014 level. The net financial flows into Nigeria in 2015, for instance, fell (12.8 percent) to USD7,017 million from USD8,048 in 2010; rose marginally from USD415 to

USD1,721 in the case of Uganda, between 2010 and 2015; rose from USD430 in 2010 to USD4,393 in Kenya; rose from USD199 in 2010 to USD428 in 2015 in Malawi; and rose to USD20,582 in 2015 from USD5,607 in 2010 (World Bank, 2017). Despite the increased debt accumulation and rising net financial flows into four of these countries, with a decline in Nigeria, the average rate of growth still continuously decline both for the countries with the rising financial flows, and for that with the falling flows. Specifically, Nigeria witnessed a falling economic growth between 2010 and 2015 when it fell from 7.8 percent to 2.7 percent respectively, just as the inflows into the country fell as a result of lower oil prices, as well as delays in major exploration projects; given that some of the highly affected countries are oil-dependent economies.

Similarly, South Africa's and Uganda's economic growth fell by 58.4 percent and 9.34 percent (from 3.04 percent to 1.26 percent) and (from 5.67 percent to 5.14 percent) respectively, between 2010 and 2015. The fall in average annual growth rate also saw Kenya's and Malawi's declining from 8.40 percent to 5.65 percent and from 6.87 percent to 2.83 percent, respectively, for the same periods (World Development Indicators, 2016).Therefore, as the rising burdens of debt advances the sustainability issues, these countries, alongside some others, have a high risk of debt distress. This is more so, considering that public debt could have a larger negative effect on economic outcomes if it affects the productivity of public expenditures, increases uncertainty or creates expectations of future financial repression, and increases sovereign risk, leading to higher real interest rates and lower private investment (Cochrane, 2011; Teles & Mussolini, 2014), International Debt Statistics (2017).

Table 1.2 presents the details and the categories of external debt incurred by SSA countries; while Figure 1.2 explains the patterns of external debt and economic growth in each of the selected five SSA countries, between 2000 and 2015.

Table 1.2
External Debt and Interest Payment by SSA Countries (USD billion)

External Debt	2000	2005	2010	2011	2012	2013	2014	2015
External debt stocks	212.8 (3.3)	234.7 (7.8)	282.9 (3.8)	312.7 (4.8)	352.6 (6.3)	377.6 (6.9)	400.1 (7.9)	416.3 (9.3)
Public & Publicly Guaranteed	162.2 (2.9)	174.9 (7.4)	159.5 (3.0)	177.3 (3.6)	200.3 (4.8)	222.8 (5.6)	244.5 (6.0)	260.8 (7.0)
Long-Term External Debt	172.9	192.5	220.0	250.8	280.0	302.8	327.9	342.0
Official Creditors	135.9 (1.8)	135.6 (5.9)	106.4 (1.1)	115.4 (1.2)	118.7 (1.6)	133.4 (1.9)	144.5 (2.1)	151.9 (2.4)
Of Which: IMF	8.7	8.1	19.5	20.7	21.6	21.9	20.4	19.4
Private Creditors	26.3 (1.1)	39.4 (1.5)	53.1 (1.9)	61.9 (2.4)	81.6 (3.2)	89.4 (3.6)	100.0 (3.9)	108.9 (4.6)
Of Which: Bonds	9.1 (0.6)	16.0 (0.9)	34.7 (1.7)	41.7 (2.1)	58.0 (2.7)	59.5 (2.8)	66.7 (2.9)	72.5 (3.6)
Private Non-Guaranteed	10.7 (0.4)	17.6 (0.4)	60.5 (0.8)	73.5 (1.2)	79.7 (1.5)	79.9 (1.3)	83.4 (1.9)	81.2 (2.2)
Of Which: Bonds	1.4 (0.0)	3.2 (0.2)	8.8 (0.5)	13.1 (0.7)	15.0 (0.8)	14.4 (0.7)	15.2 (1.1)	15.8 (1.1)
Short-Term External Debt	31.2	34.0	43.4	41.1	51.0	52.9	51.9	54.9
Interest Arrears on Long-Term	13.6	14.3	11.3	9.1	9.6	10.1	9.5	9.6

Source: *International Debt Statistics,* 2017
( ) depicts the interest payment on each in each period

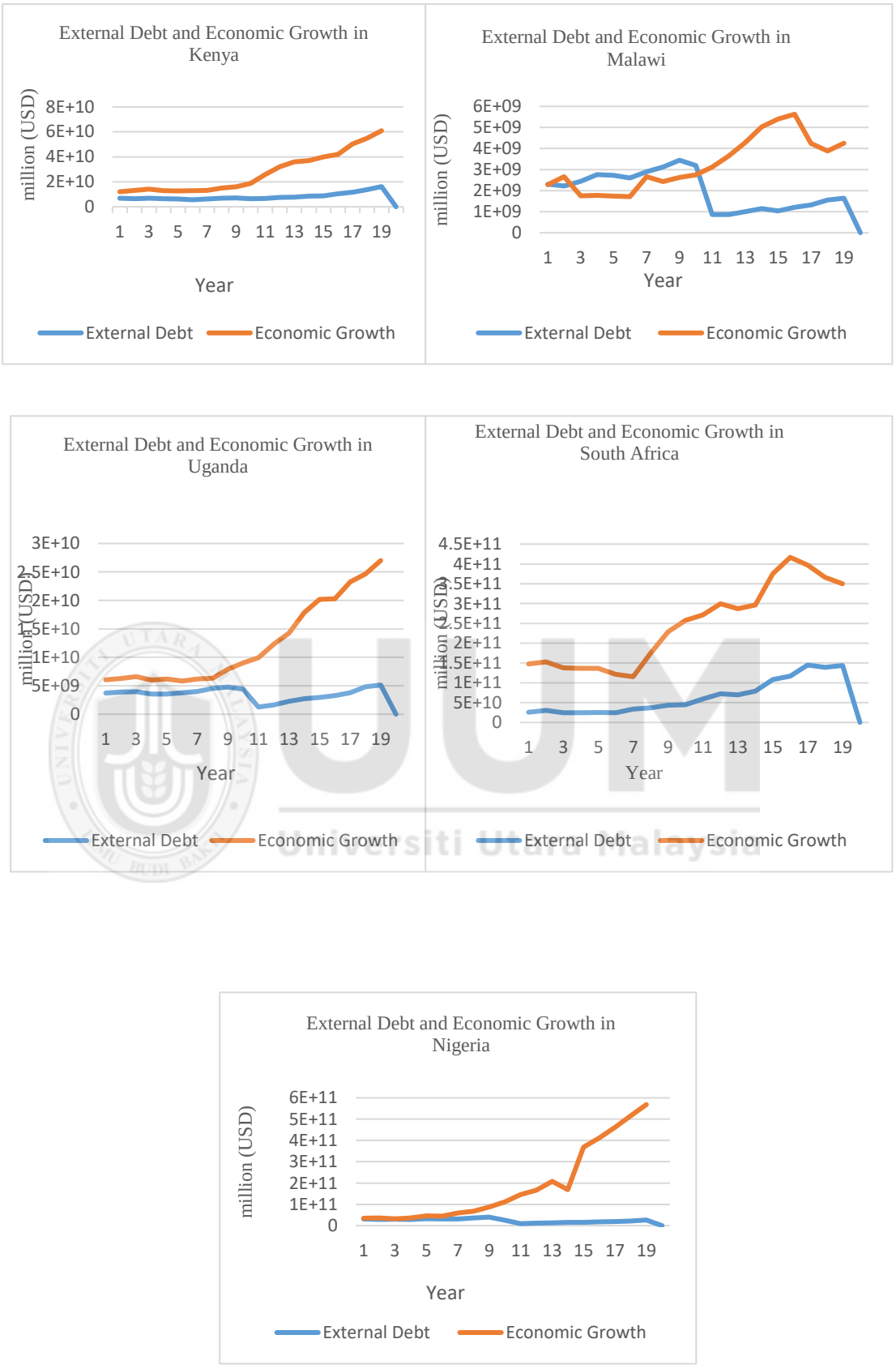

Figure 1.2
Trends in External Debt Stock and Interest Payment in Each of the Selected SSA Countries

The debt components that make up the total debt stock for these SSA countries are the short-term, long-term and the interest arrears on long-term external debts; publicly guaranteed and private creditors; International Monetary Fund (IMF) and private non-guaranteed; among other sources. While the table presents the stock of external debt and interest payment (as shown in the parenthesis) for the SSA countries, as well as the different sources of external debt stock, each of the graphs shows that while the stock of external debt keeps trending upwards over the years, specifically as external debt rises, economic growth declines, except in the case of South Africa where the trends in external debt and economic growth simultaneously rise and fall. These continuous rise in these SSA countries' debt profiles may lead to investment distortion, when the debt is too high, as a result of investor's believe that the proceeds of any project will be taxed away in order to service the pre-existing debt (Aguiar, Amador, & Gopinath, 2009; Krugman, 1988).

In other words, as debt level rises in relation to GDP, the cost of financing and constraining investment increases since creditors demand higher rates of interest in order to compensate the risk of default (Greenlaw, Hamilton, Hooper, & Mishkin, 2013). These factors have high tendency to exacerbate the problem of capital flight, where investors take out their domestic investment temporarily and engage in short-term foreign investment until the situation of debt becomes favourable to them; thus the growth rate of the economy is retarded.

The issue of foreign currency denomination is likely to be particularly relevant in the countries under consideration and other SSA countries, among many other developing countries. This is as a result of the presence of foreign currency debt, which increases

financial fragility; tends to heighten inflation rate, as in Kenya (from 2.09 percent to 9.14 percent) and Malawi (from 12.13 percent to 21.08 percent) who recorded hike in essential commodity prices between 2010 and 2015; and has a tendency to decrease the growth rate as a consequence of sub-optimal macroeconomic policies (Dell'Erba, Hausmann, & Panizza, 2013; Panizza & Presbitero, 2014). On the other hand, even as investment in infrastructure and public capital has tendency to promote economic growth (given that investment expenditures can be financed by both equity and debts), inadequate savings, and borrowing in anticipation of revenues can expose the economy to debt sustainability risks, especially with declining investment efficiency or when future resource revenues turn out to be lower than expected. Hence, public debt accumulation triggers the distortion of fiscal adjustments via changes in taxes or in government transfers to households (Melina, Yang, & Zanna, 2016).

Besides, the burdens of heavy debts, corruption, and declining growth have gone a long way in undermining economic recovery and stabilization efforts, alongside their devastating effects on African economy, being the continent with the highest debts and highest dependence on aid/grants in the world. Similarly, the experience of debt in the SSA countries in particular, and Africa in general has revealed that much of the region's resources are either being used for debts servicing (interest payments on external debts) or are being misappropriated (or even both), instead of their being channeled into viable investment in both physical and human capital. The supposed efforts of the Bretton-Woods Institutions (IMF & World Bank) to cushion the effects of debts on debtor nations have largely compounded the amount and burden of debts; and the debt-rescheduling initiatives of these institutions have also enhanced more debts in attempts to repay old loans; thus debts are being used for debts and interests

on these debts keep compounding. In fact, despite the years of various policy initiatives, the market and economic changes instigated by these institutions have not resulted in any tangible improvement in welfare standard and poverty reduction (Richards et al., 2003).

Part of the reasons for the continued rise in external debts in the SSA (and Africa) countries has been the failure of IMF, World Bank and other creditor agencies to consider both the economic and non-economic environments of these countries while advancing loans to them. Such environments include, among others, the exchange rates devaluation, political unrest, and the volatility of primary commodity prices, which are part of the major challenges in the SSA countries, as evident from their continued increase in external indebtedness and slowing economic growth.

The level of corruption and resources mismanagement, which is a common characteristic in the SSA countries, has gone a long way in weakening virtually all economic institutions, including social and political institutions; with the resultant effect of undermining equity, fairness, efficiency and transparency, thereby preventing the emergence of well-performing government and social structures. In most of these countries, these rent-seeking activities have almost become a daily routine, commonplace, and are such institutionalized that they have been tagged these countries' second nature. These sometimes result in political instability, hunger, social insecurity and sometimes civil wars and military takes-over, as in the historical occurrence of the military takes-over of the mantle of leadership in Burkina Faso in 2015; Nigeria between 1966 and 1983; Ghana in 1994; and Mali in 1991; and anti-

apartheid rally against racial segregation in South Africa in 1994; all justified on the basis of mismanagement, corruption and embezzlement by some privileged public officials (Richards et al., 2003). All these have the consequences of disrupting the efficient functioning of the market system, weakening economic, political and social institutions, and as well destabilize the entire economy.

It is pertinent to note that without addressing the issue of corruption, the debt relief initiatives would become meaningless propositions and can only achieve the purpose of wiping the old debt slate clean but at the same time create a new impetus for further misappropriation, corruption and capital flight. Corruption has been identified as a major impediment to the growth and development as a result of its impact on impeding economic growth; weakening the legal, economic and political institutions of government; among others (Coupet Jr, 2011; Lambsdorff, 2005). Figure 1.3 shows the trend patterns of corruption (CORR) and GDP in the selected SSA countries. The horizontal line explains the prevalence of corruption in these countries; the horizontal nature of the graph clearly explains that corruption is largely pervasive in these countries due to the constancy of occurrence as shown by the horizontal graph. In fact, it has been identified as the main impediment to the growth of the countries, as it forms one of the main issues of concern that impede growth and development. Also, the pattern of economic growth shows upward trend. This clearly shows that, despite the prevalence of corruption (which has practically become the norms in these countries), the GDP still trends upward for most of the periods. This is connected to the views of some economists, who argue that corruption has tendency to facilitate economic exchange, by helping to overcome cumbersome regulations (Huntington, 1968; Lambsdorff, 2005; Leff, 1964).

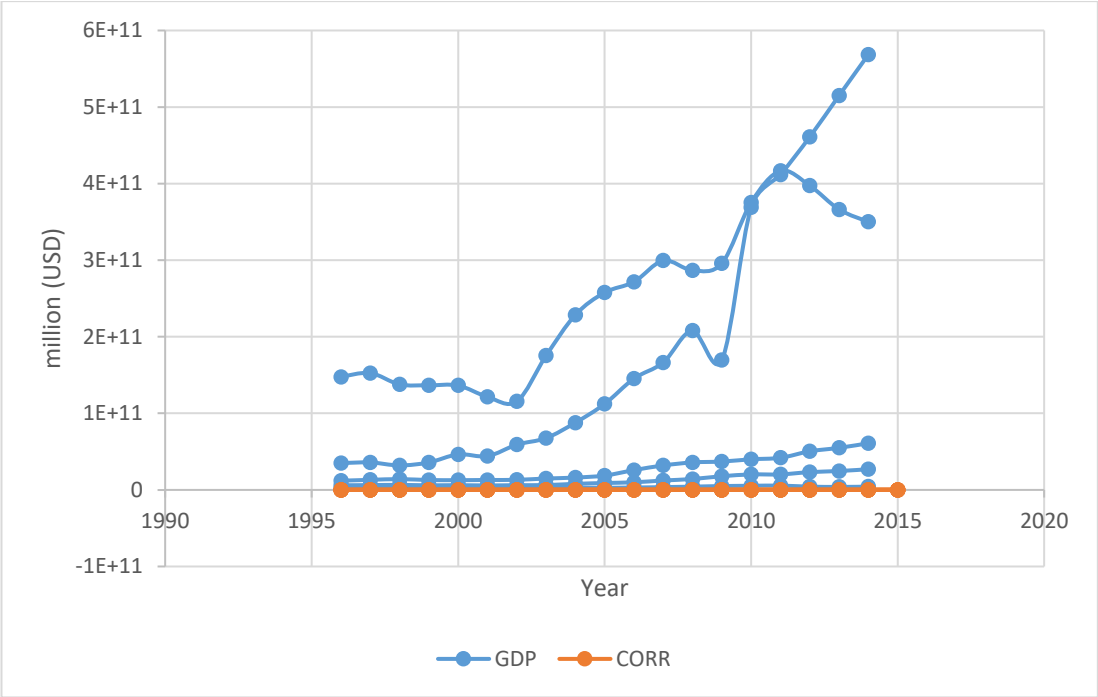

Figure 1.3
Corruption and Economic Growth in the Selected SSA Countries

There is no doubt in the fact that a moderate and well productive level of debt is desirable for sustained economic growth. In fact, the issue of debts might not have been such debatable in the concerned countries if there had been experiences of their proper channel into productive economic activities (given that effective debt management is essential for economic growth). However, as part of the effects of resources mismanagement which has become pronounced in the SSA countries, attempts to obtain loans have been largely opposed by citizens and activists, and its adverse effects have been largely felt. This occurs alongside the severe deficits in current accounts balances, in addition to low level of savings and declining balance of payments, rising public spending, as well as increased prices of imports (being countries that largely depend on imported products and services). All these factors,

among others, result in increased external debt (Suma, 2007; Were, 2001) as cited in Abdullahi, Hassan, and Bakar (2016).

1.2 Statement of Problem

The stock of external debt has witnessed a sustained increase over the years in the selected SSA countries, which frequently results in declining economic growth. These persistent increase have the tendency to create investment distortion, especially when the debt is too high, considering that investors expect that the proceeds of any project will be taxed away in the course of servicing the government debt obligation (Aguiar et al., 2009; Krugman, 1988). Similarly, the rise in government debt level, in relation to GDP, raises the cost of financing and constraining investment since creditors demand higher rates of interest in order to compensate the risk of default (Greenlaw et al., 2013). These factors have high tendency to exacerbate the problem of capital flight, when investors take out their domestic investment temporarily and engage in short-term foreign investment until the situation of debt becomes favourable to them; thus the growth rate of the economy is retarded.

Also, the issue of foreign currency denomination may be particularly relevant in the selected countries, amongst other SSA and developing countries. This is as a result of the presence of foreign currency debt, which increases financial fragility; heightens inflation, and impede the growth rate as a consequence of sub-optimal macroeconomic policies (Dell'Erba et al., 2013; Panizza & Presbitero, 2014). Alternatively, even as investment in infrastructure and public capital largely promotes economic growth, lack

of adequate savings, and borrowing in anticipation of revenues may expose the economy to debt sustainability risks, especially with declining investment efficiency or when future resource revenues turn out to be lower than expected; therefore, public debt accumulation triggers the distortion of fiscal adjustments via changes in taxes or in government transfers to households (Melina et al., 2016).

Furthermore, the various economic recovery and stabilization efforts have been largely weakened by the declining growth rate, which is a consequence of heavy debts, on one hand, and corruption, on the other hand. Similarly, the experience of debt in Africa and in the selected countries, who accounts for about 47 percent of SSA's combined external debt, has shown that a large share of the region's resources are either being used for debts servicing or are being misappropriated instead of their being channelled into viable investment in both physical and human capital, or even both.

1.3 Research Questions

This study attempts to answer the following questions;

i. to what extent have governments' external debts affected the selected SSA countries' economic growth?

ii. what are the direction and magnitude of the effects of corruption on economic growth?

iii. what are the directions of causality between external debt, corruption, and economic growth?

1.4 Research Objectives

The objective of the study is to examine the inter-link between economic growth, corruption and external debt in the selected SSA countries.

The specific objectives are;

i. to examine the impact of government external debts on economic growth,
ii. to measure the extent to which corruption affects economic growth, and
iii. to examine the directions of causality between external debt, corruption, and economic growth.

1.5 Significance of the Study

This study basically examines the relationship between government external debt, corruption, and economic growth in selected five SSA countries, by estimating the magnitude and direction of the regression relationship, as well as the causal relationship.

In addition, as a contribution in the direction of government and economic policy-makers, this study intends to proffer recommendations as to the efficient management of public resources, in order to cushion the adverse effects of external indebtedness on other macroeconomic variables and welfare standards. Such effects include high cost of servicing, corruption, and capital flight, considering that investors fear being highly taxed when debts get to a certain level by the government.

1.6 Scope of the Study

This research is limited to the analysis of external debts, corruption and economic growth in the selected five SSA countries; namely: Kenya, Malawi, Nigeria, Uganda, and South Africa. The selection of these SSA countries is based on their large size of economies and the fact that the five SSA countries' external debt stock is about 47 percent of the entire SSA countries' stock of external debt; availability of sufficient literature to support the arguments; as well as data availability for these SSA countries for period 1990-2015.

1.7 Organisation of the Study

This research is organised in five chapters. Chapter One presents the introduction to the study; this covers the background of the research, statements of problem, research questions and objectives, significance and the scope of the study. Chapter Two details both the theoretical and empirical reviews of existing literatures on related areas. Chapter Three focuses on the methodology employed in achieving the research objectives. Chapter Four entails the data analysis, results and discussions of the research findings. Finally, chapter Five gives the summary of findings, conclusion, and recommendations on the basis of the research findings.

CHAPTER TWO

REVIEW OF RELATED LITERATURE

2.1 Introduction

This chapter reviews both the theoretical and empirical studies on external debt, corruption and economic growth. As such, the chapter is classified on the basis of theoretical and empirical literatures.

2.2 Review of Theoretical Literature

This section reviews the theoretical relationship between external debt and economic growth on one hand, and corruption and economic growth on the other hand.

2.2.1 External Debt and Economic Growth

Many researchers hold on to the view that a high level of debt has adverse effects on economic growth (Claessens, 1990; DiPeitro & Anoruo, 2012; Megersa, 2015), even as the economic growth theorists support the borrowing by poor countries in a bid to complement domestic resources and finance growth and development (Carlin & Mayer, 2003). The focus on external debt is due to its vulnerability, which may result in debt crisis considering that developing countries' central banks do not print the hard currencies required for external debt repayment; as well as the consequence of transfer

problem arising from the economies' access to foreign resources, given that internal borrowing only enhances domestic transfer of resources (Keynes, 1929). The rationale behind the adoption of external finance as a means of financing growth and ensuring sustained development, as against domestic borrowing, is based on the Two-Gap theory which upholds that the level of investment, which requires domestic savings, is not adequate to ensure economic development; hence, the need for complementary external resources, including debt. On the other hand, the attainment of the target growth rate requires foreign assistance, especially in developing and SSA countries where the level of domestic savings and investment are relatively low. The theory regards external finance as a way by which any development gap could be filled in order to achieve the target growth rate of the economy.

Similar to that on the relationship between external debt and economic growth is the debt overhang theory. This upholds that if debt exceeds the country's repayment ability with some probability in the future, expected debt service is likely to be an increasing function of the country's output level. Thus some of the returns from investing in the domestic economy are effectively 'taxed' away by existing foreign creditors, and investment by domestic and new foreign investors is discouraged, thereby hampering economic growth (Claessens, Detragiache, Kanbur, & Wickham, 1997). Therefore, the debtor-country shares only partially in any increase in output and exports because a fraction of that increase will be used to service the external debt. The theory implies that debt reduction results in economic growth through increased investment and repayment capacity and, as a result, the portion of the debt outstanding becomes more likely to be repaid.

In the areas of external finance, including external indebtedness, there have been large claims that assistance from the donor countries dispatched to the low-income countries likely follows the formers' political and strategic importance, and not based on the needs of the countries. Bauer (1991) claims that foreign assistance has some distorting outcomes on the recipient countries' political system; and leads these economies into making inappropriate economic policies, such as the limit on the inflow of private capital, enhancement of rent-seeking activities, as well as pricing systems that tend to retard the growth of other primary sectors (such as agriculture). In addition, the liquidity constraint theory is incorporated as a 'crowding out' effect, by which the requirement to service debt reduces funds available for investment and growth. A reduction in the current debt service should, therefore, lead to enhanced economic growth through an increase in current investment for any given level of future indebtedness (Cohen, 1993).

According to Hofman and Reisen (1991), the requirement for debt service has a tendency to reduce available funds for investment and therefore hindering the attainment of the target growth rate. As such, a binding liquidity constraint on debt would produce a negative effect on investment. Using a more comprehensive framework that takes into account other factors influencing investment, they discover little evidence for the debt overhang theory on the basis of outstanding debt; however, they find liquidity availability to be an important determinant of the level of investment. Therefore, both the debt overhang and liquidity constraint theories imply an adverse effect of debt on economic growth the fall in the level of investment. In more general terms therefore, debt overhang may raise the discount rate of potential investors, due to the future tax accompanying an outstanding debt burden in such a

way that the short-term investment projects would be favoured over longer-term ones that might otherwise be more productive in terms of higher net present discounted value. That is, the existence of a debt overhang would influence the nature of investment undertaken, skewing investment projects toward those yielding faster returns that are less productive.

In the works of Colaco (1985), the vulnerability of debt service in developing countries is explained by the size of external loans, which has been much larger than equity finance, thereby resulting in debt-equity imbalance; the ratio of debts at floating interest rates which has risen dramatically to the extent that borrowers are directly affected upon the rise in interest rates; and the fact that the maturities of debts have largely shortened as a result of declining share of official flows. As argued by Mehran (1986), the effective management of debt management is important in an increasingly complex financial environment. Therefore, he contends that the crucial elements of debt management are the effective regulatory environment, policy co-ordination, as well as a system of accountability. Similarly, the level of debts that is development-driven largely relies on the adoption and implementation of fiscal adjustment and structural reforms by the borrowing countries. These include, among others, the stemming of corruption, transparency and high level of accountability in public service, as well as improved debt management structures.

The poorer countries may be required to borrow more than relatively richer countries as a result of financial constraints and the need for capacity building. The increased levels of debt, however, implies that more funds must be diverted away from public capital formation onto interest and amortisation payments. Therefore, borrowing,

either locally or abroad, can have either positive or negative effects on economic growth. Conversely, debt accumulation provides financing for capacity building projects that can enhance the nation's productive capacity. In Miller and Modigliani (1961) aggregate model, debt accumulation can have a positive impact on growth if the increase in debt is accompanied by government expenditure on productive public capital formation which have the likelihood to raise the real income of future generations). For example, the negative effects of a recession on private capital formation can be offset by the government incurring additional expenditure, and thus debt, to maintain the full-employment rate of capital formation.

On the determination of sustainable level of debt, Ajayi and Khan (2000) assert that a sustainable external indebtedness is measured by numerous ratios, such as the debt to export, debt service to export, debt to GDP/GNP, and external debt to GNI. The increase in the burden of debt service beyond capacity, occasioned by expansion in external debt, requires that the situation be substituted through expansion in exports; unless increased borrowings will be required for debt servicing, while external debt keeps increasing beyond sustainable threshold. The inability of the country to realize the required revenue necessary to meet the repayments obligations further compound the debt problem (Greene, 1989). This is supported by Nguyen, Clements, and Bhattacharya (2003), who is of the view that the adverse effect of both external and domestic debts on economic growth is through their likelihood of compounding an economy's debt stock and interest payments, with the resultant effect of crowding-out both public and private investment, alongside its adverse effect on domestic currency occasioned by the inflow of foreign currency through external debt.

2.2.2 Corruption and Economic Growth

Some economic researchers, such as Bayley (1966), Huntington (1968), and Leff (1964) have argued in favour of corruption as an enhancing factor of economic exchange, as they claim it helps to overcome some cumbersome regulations. This, in their arguments, explains that corruption positively influences economic growth as the productivity of labour is assumed to rise with illegal incentives to economic agents in order to speed up their activities. They are of the views that individuals or corporations may bribe policy makers to turn around unfavorable situations caused by existing laws and regulations and other political inflexibilities, which in turn ends up promoting economic efficiency. Similarly, Klitgaard (1988), and Acemoglu and Verdier (1998) contend that when a nation is pursuing the maximization of national output, an optimal level of corruption exists. The studies suggest that while the optimal level of corruption may be relatively low, it exists because anti-corruption efforts represent a cost in itself. This is as Wedeman (1997) discovered that many countries enjoy rapid economic growth despite facing corruption.

These are, however, in contrast to the view suggested by Bardhan (1997), corruption effect on growth was likely to be negative, but based his conclusion on historical experience rather than contemporary empirical research, while Wei (1999) concluded that corruption had an adverse effect on growth through its reducing domestic investment, discouraging foreign direct investment, encouraging overspending in government, and distorting the composition of government spending. This is as Mauro (1995) argues that much of the effect of corruption on growth comes through its effect on investment.

2.3 Review of Empirical Literature

The empirical studies on external debt, corruption, and economic growth have been given wide attention by researchers in recent times, as a result of its use in policy analysis.

2.3.1 External Debt and Economic Growth

Considering the relationship between external debt and economic growth, the effective use of debts is expected to increase government investible capital on infrastructure, which will enhance investment and increase the level of domestic economic activities. Conversely, especially with years of experience in the third-world countries, most of the debts incurred from both domestic and external, sovereign and private, sources have largely not been put into judicious use as to foster the development of basic infrastructures that attract investment and enhance growth.

In the studies carried out by Eberhardt and Presbitero (2015) on public debt and long-run growth, taking the sample of 118 countries (22 Low-Income, 27 Lower Middle-Income, 33 Upper Middle-Income and 36 High Income countries), between 1961 and 2012; using both the standard linear and non-linear regression models (where the non-linearity is specified by simple inclusion of a squared debt stock term), while employing the common correlated effect mean group (CMG) and common correlated effect (CCE) estimation techniques, they obtained that the long-run relationship between debts and GDP is statistically significant and positive; while the error correction terms are negative, significant and less than one, for each of the estimation

techniques as in Siddique, Selvanathan, and Selvanathan (2015). Using the mean group (MG) estimator in the short-run however, the coefficient of debt is found to be negative and statistically significant, which implies a negative relationship between debt and GDP.

The positive coefficient is in line with the studies conducted by Megersa (2015), and Jayaraman and Lau (2009). In his analysis of the laffer curve and the debt-growth link in 22 low-income SSA countries between, 1990 and 2011, employing the pooled ordinary least squares (POLS) estimation technique, Megersa (2015) found that the effect of debt on economic growth is significant and positive up to a certain threshold. Adegbite, Ayadi and Ayadi (2008) also toed the line when they found that each of external debt (as well as its square), and the interest on external debt has a positive relationship with GDP for the periods under consideration, and concludes that external debt contributes positively up to a point after which the contribution becomes negative; thus implying its non-linear effect on economic growth.

Also, Jayaraman and Lau (2009) obtained that a higher level of debt promotes economic growth, while examining the effect of external debt on economic growth in six Pacific island countries, for the period 1988 to 2004 using the fully modified ordinary least squares (FMOLS) estimation technique. They equally observe the existence of a significant causal relationship running from external debt through economic growth in the short-run. Similarly, Mohd Dauda, Ahmad, and Azman-Saini (2013), in their analysis of Malaysia's external debt-growth nexus, used quarterly data between 1991Q1 and 2009Q4 and employed the autoregressive distributed lag (ARDL) estimation technique. They found that the accumulation of external debt is

associated with an increase in Malaysia's economic growth up to an optimal level, and an additional increase of external indebtedness beyond the level has inversely contributed to the Malaysian economy. The coefficient of interest on external debt is also found to be both positive and negative.

On the contrary, in the static linear and non-linear models (for the full sample analysis) using the MG and CMG estimators, Eberhardt and Presbitero (2015) found that the coefficient of debt is negatively and significantly related to the GDP. This is also similar to the findings of Megersa (2015) whose estimated debt and debt-square coefficients are each negative; Adegbite, Ayadi and Ayadi (2008), who employed the ordinary least squares (OLS) and generalized least squares (GLS) estimation techniques while estimating both the linear and non-linear effects of external debt on economic growth in Nigeria, between 1975 and 2005, thereby obtaining that each of external debt and interest on external debt has a negative and significant relationship with economic growth; as well as DiPietro and Anoruo (2012), who examined the impact of debt and government size on economic growth in 175 countries between 1997 and 2008, using the traditional Fixed and Random effects (FE/RE) estimation techniques.

In addition, Siddique et a. (2015), employed the pooled mean group (PMG), MG, and dynamic fixed effect (DFE) estimation techniques for heavily-indebted poor countries (HIPCs) between 1970 and 2007, found the coefficient of external debt to be negative and significant with respect to economic growth, both in the short-run and the long-run. Similarly, in the works of Abdullahi et al. (2016) using ARDL technique in his analysis of external debt and economic growth for the period 1980 to 2013, with capital

formation as the dependent variable, each of the coefficients of external debt and external debt service has negative and significant relationship with capital formation, in both the short-run and the long-run, at 5% level of significance**.** In the same way, Fosu (1999) studies the effect of external debt on economic growth in 35 SSA countries between 1980 and 1990, using the OLS technique, and found that the net outstanding debt has a negative effect on economic growth, and that a negative correlation exists between external debt and the level of investment.

2.3.2 Corruption and Economic Growth

While examining the impact of corruption on economic growth in 13 Asia-Pacific countries, using panel data between 1997 and 2013, Huang (2016), employed the bootstrap panel Granger causality approach to incorporate both cross-sectional dependence and heterogeneity across countries, and obtained that there is a significant positive causality running from corruption to economic growth in South Korea, a significantly positive causality running from economic growth to corruption in China. The author, however, does not support the common perception that corruption is bad for economic growth for all the thirteen Asia-Pacific. Rather, he suggests that the grease the wheels hypothesis is supported for South Korea; and that governments' use of anti-corruption policies to promote economic development may not be effective; while the growth rate increase in economic growth in China is found to increase corruption. In the works of Coupet Jr (2011) obtained a positive and significant relationship between corruption and economic growth, using the OLS technique in the case of the OECD countries between 1960 and 1989. An explanation given for the positive coefficient, according to Coupet Jr (2011), is that the eradication of corruption

carries an opportunity cost, such that as a developing country deploys its resources from productive activities to the detection and prevention of corrupt ones, there are positive, but diminishing returns.

These results are, however, in contrast to the studies conducted by Lambsdorff (2005) on corruption and economic development, wherein he used the OLS and Two-Stage Least Squares (TSLS) techniques to establish the empirical relationship between corruption and economic growth between 1970 and 1995. The result explains that a unit increase in the level of corruption by one point on a scale of 0 (highly corrupt) to 10 (highly clean) lowers productivity by 2 to 4 percent of GDP; while decreasing the net annual capital inflows by 0.5 per cent of GDP. Campos, Dimova, and Saleh (2010) considered 460 estimates of the effect of corruption on growth from 41 empirical studies and found that factors including whether the model accounted for institutions and trade openness, the authors affiliation (academics systematically report less negative impacts), and the use of fixed-effects tended to reduce but not eliminate the negative effect of corruption on economic growth.

In the same manner, Ugur (2014) considered 327 estimates of the direct effects of corruption on growth from 29 primary studies and while the findings are heterogeneous, because of different measures of corruption and growth, estimation methods, country coverage, and sample periods, the primary studies tended to report negative effects. Also, Coupet Jr (2011) in the same study, but for non-oil and non-OECD countries, obtains that corruption negates the society's welfare standard through economic growth and the level of investment. This is as a result of the negative

and significant relationship obtained between corruption and economic growth, using both the linear and non-linear OLS estimation techniques; and the square of corruption is found to have a negative and significant relationship with economic growth, thereby suggesting a strong negative non-linear relationship between corruption and output per worker for the OECD countries.

The results of corruption obtained by Lambsdorff (2015) may also be used to explain the impact of control of corruption on economic growth and external debt. This result is explained as "Absence of Corruption", wherein a positive and significant relationship is found between absence of corruption and the average net annual capital inflows (to GDP ratio), for all the country categories (OECD, non-OECD, Oil, non-Oil), between 1970 and 1995 with the employment of OLS and TSLS estimation techniques. The same coefficient is obtained for government stability in relation to the net annual capital inflows (to GDP ratio), using the TSLS technique. This implies that a high level of government unity, strong legislative power and popular support for the government are crucial to productivity.

2.4 Literature Gap

Having reviewed both the theoretical and empirical literatures on economic growth in relation to corruption and external debt, it is observed that most of the studies on these aspects of knowledge have been related individually with economic growth. In other words, the relationship among economic growth, external debt and corruption have been largely treated separately (Lambsdorff, 2005; Coupet Jr, 2011; DiPietro and Anoruo, 2012; and Megersa, 2015). This study, contrary to many recent works,

combines the trio of economic growth, corruption and external debt in a model in order to examine the effects of rising external debt and resources mismanagement on economic growth.

Similarly, the selected SSA countries have not been found to have been captured in related studies involving panel data analysis, in recent times. Also, most of the studies on economic growth and corruption have largely concluded that corruption negatively affects economic growth. To the best of my knowledge, only few (such as Leff, 1964; Coupet Jr, 2011; Huang, 2016) researchers have gone in the direction of positive relationship between the two variables. Finally, the study employs the FMOLS estimation technique, which has not been largely found in related recent literatures, despite its advantages of correcting for endogeneity and serial correlation problems.

2.5 Conclusion

The findings imply that the relationship between external debt and economic growth is inconclusive, and whatever the shape and form of the debt–growth relationship, it differs across countries so that appropriate policies for one country may be seriously misguided in another. In the case of corruption-growth nexus, the coefficient of corruption is negative for most of the studies, even though some researchers argue the relationship to be positive based on the prevailing economic and governance systems.

CHAPTER THREE

METHODOLOGY

3.1 Introduction

This chapter discusses the theoretical backing and the methodology adopted in this research. It equally describes the variables to be used for the empirical analysis as well as the sources of the data and estimation techniques.

3.2 Theoretical Framework and Model Specification

3.2.1 Hollis Chenery's Two-Gap Theory

Chenery and Strout (1966) have put forward, the two-gap approach to economic development. The basic idea is that *foreign exchange* and *savings gaps* are two separate and independent constraints to attaining the target growth rate in less developed countries (LDCs). Thus, they see *external finance* as a way by which these two gaps may be filled in order to achieve the target growth rate of the economy. Specifically, the authors identified that to achieve the target growth rate, an economy is required to supplement domestic resources with external finance, which may be in the forms of grants, remittance or debt.

This model is an extension of the popular Domar (1946), and Harrod (1939) model, down from Keynes (1929) the Neo-classical model. The pre-conditions for economic

growth were identified such that the *Savings Gap* arises when the domestic savings is less than the investment required to achieve the target growth rate. For instance, if the growth target of national real income is 6 percent, and the capital-output ratio is 3:1, then the economy must save 18 percent of its national income to achieve this growth rate. On the other hand, inadequate foreign exchange, which may arise from lower export values relative to import values, results in fall in the stock of foreign exchange. This is known as the *Foreign Exchange Gap*. Offsetting these two gaps, therefore, requires the inflow of *foreign aids*, which may be in the form of grants, remittances, loans and/or any other form of foreign debts or assistance (Chenery & Strout, 1966; Chenery & Bruno, 1962). Hence, such external finance supplements the available domestic resources and brings the *two-gap* model into play.

The major assumption of the model is that developing countries are either prone to shortage of domestic savings (to augment for investment opportunities) or foreign exchange constraints to finance the needed capital and intermediate goods. Todaro and Smith (2004) further claimed that the *two-gap* model largely assumes that the *savings gap* and the *foreign-exchange gap* are independent in nature, and not equal in magnitude. The implication of this is that one of the two gaps would be dominant at any point in time, for any less developed country.

Assuming a fundamental macroeconomic identity in which the aggregate output equals the aggregate expenditure (Y=AE), such that Y = C + I + (X - M), where: Y = national income; C= consumption; I= investment (or domestic capital formation); X = exports; and M = imports. By subtracting C from both sides, the resulting equation is: Y – C = I + (X - M); where (Y – C) = S (domestic savings). Thus, these two constitute

the two separate constraints, and the elimination of one does not get rid of the other. Since it is assumed that domestic investment can be financed through domestic savings and through the inflows of capital (F), where F = M – X, the equation may be presented as F = I – S (or I = F + S).

Thus, savings may be too small to permit the level of investment that the country would otherwise undertake; hence, a *savings gap* exists. Similarly, exports may be too small to permit the level of imports required for efficient use of the economy's resources of the economy; thus, a *foreign exchange (or trade) gap* exists. The *two-gap* theory is adopted based on its relative importance in the analysis of capital flow.

It useful for estimating the less-developed country's capital requirement for growth; in terms of how much capital can be generated within the economy and the requirement through foreign sources, so as to achieve the target growth rate. In addition, it aids proper understanding of the extent to which foreign resources are required to fill the savings gap and foreign exchange gap in order to attain sustainable development. Also, the divergence between the two gaps highlights the role of external finance in economic development. If the *savings gap* exceeds the *foreign exchange gap*, it may be narrowed by the inflow of capital; and the foreign exchange gap between investment and savings will be bridged in the long-run, hence the *two-gap* model comes into play. Alternatively, if the *foreign exchange gap* exceeds the *savings gap*, external finance results in increased investment and, therefore, economic growth.

3.2.2 The Modified-Solow Growth Model

In order to examine the impact of corruption on economic growth, the augmented Solow Growth Model, propounded in 1956, has been adopted from the studies conducted by Coupet Jr (2011), who modified the Solow model to incorporate the impact of corruption on the level of productivity in a country.

Assuming an economy which concentrates on the production of a single commodity, with a given Neo-classical production function:

[3.1] $$Y_t = K_t^{\alpha} H_t^{\beta} [A_t(\rho) L_t]^{1-\alpha-\beta};$$

where: where Y_t is the aggregate level of real income, K_t is the level of physical capital, H_t is the level of human capital, L_t is the amount of labor employed, A_t is the level of multifactor productivity and ρ is the level of corruption in a country; such that A'(ρ) <0.

Supposing that $0 < \alpha < 1$, $0 < \beta < 1$ and $\alpha + \beta < 1$, the production function is assumed to exhibit a positive, yet diminishing marginal returns to labour and capital;

[3.2] $$\frac{dK}{dt} = S_K Y_t - \delta_K K_t \quad \text{and} \quad \frac{dH}{dt} = S_H Y_t - \delta_H H_t;$$

where S_H, S_K, δH and δK are exogenous parameters, which represent the shares of income that are allocated to human capital investment, physical investment, and depreciation rates of human and physical capital, respectively. Population is assumed

exogenously determined and defined as $L_t = L_o e^{nt}$ so that the population growth is constant over time, i.e $(dL/dt)/Lt = n^2$.

Also, if A_t represents the economy's multifactor productivity, then:

[3.3] $$A_t(\rho) = \tilde{A}_t e^{-\gamma\rho}, \text{where } 0 \leq \rho \leq 1 \text{ and } \tilde{A}_t = A_o e^{gt}$$

Corruption is being incorporated into this model, which is assumed exogenous, and deteriorates input productivity. This deterioration may take various forms, ranging from the effects of externalities to the diminished quality of inputs. The firm who pays a bribe to a bureaucrat to avoid fines not only reduces its level of investment, but it may also impose externalities onto other firms. When a high government official makes an attempt to provide public goods by doing business with his unqualified cronies, this comes at the cost of reduced productivity in the private sector (Tanzi & Davoodi, 1998). Hence, the corruption parameters, ρ and γ, jointly the influence the effects of corruption on multifactor productivity. While, ρ alone measures of the economy's overall level of corruption, γ captures the sensitivity of corruption to the production function.

The conventional multifactor productivity, $\tilde{A}_t$, is assumed exogenous and grows at rate g, thereby implying that: $dA_t/d\rho < 0$, while $d^2A_t/d\rho^2 > 0$. Therefore, in the absence of corruption (such that ρ=0), $\tilde{A}_t = A_t$; a positive (or negative) value of ρ results in corruption reducing (or improving) the multifactor productivity, since the value and sign of γ are instrumental in modeling the net effect of corruption on multifactor productivity.

In line with the Two-Gap and the modified-Solow Growth theories, as well as existing studies, such as that of Lamdsdorff (2005), Eberhardt and Presbitero (2015), as well as Leff (1964), the following model is specified in order to test the empirical relationships between *EXDBT, CORR* and *GDP*.

[3.4] $GDP = f\ (EXTDBT, EXPRT, GCF, CORR, DEBTIN)$

[3.5] $GDP_{it} = \beta_0 + \beta_1 EXTDBT_{it,} + \beta_2 EXPRT_{it,} + \beta_3 GCF_{it,} + \beta_4 CORR_{it,} + \beta_5 DEBTIN_{it} + \varepsilon_{it}$

β_i is the parameter representing the intercept and slope coefficients; ε_{it} is the stochastic term which captures the effects of other variables that are not included in the model. It is a white-noise error term, whose mean is zero with constant variance and covariance; the variables, whose choices are premised on data availability, are as defined in Sub-section 3.3 below; *i* represents the cross-section (countries); *t* is the time-series (in years).

The model examines the relationship between *EXDBT* and *GDP* on one hand, and *GDP* and *CORR* on the other hand. This is to particularly measure how external debts affects the level of economic growth in SSA countries, and the extent and direction of the effect of corruption on the levels of productivity and output in the five countries.

3.3 Justification of Variables

The definitions and measurement of these variables are based on the World Bank's World Development Indicators and World Governance Indicators; IMF's; and the organization for economic cooperation and development's (OECD) definitions and estimates. References different from the above sources are cited in the definitions.

3.3.1 Economic Growth

This refers to aggregate value added by all resident producers in the economy plus products taxes less subsidies not included in the value of the products. It is measured as by the countries' gross domestic product at the current market prices in US Dollar in order to control for the effect of exchange rate. This variable has been used in studies, such as Eberhardt and Presbitero (2015), Christopoulos and Tsionas (2004), and Were (2001), and tests the direction of the effect of external debt and corruption. It is used as the dependent variable of the model.

3.3.2 External Debt

This is the form of debt owed to non-residents, which are repayable in currency, goods, or services. External debt is measured, in USD, by the countries' stock of foreign debts; including both the short-term and the long-term public and publicly guaranteed, as well as private nonguaranteed debts. The expected sign of the coefficient, based on past literature, such as Dell'Erba et al. (2013), Mohd Dauda et al. (2013), as well as Panizza and Presbitero (2014) is either positive or negative.

3.3.3 Interest on External Debt

This defines the interest payment on both short-term and long-term foreign debts by the countries under consideration. The interest on external debt is measured as the percentage of total interest payments to national income. Based on the *a priori* expectation, and the studies by Siddique et al. (2015), and Mehran (1986), the expected coefficient is negative.

3.3.4 Corruption

Corruption refers to misuse of public resources for private gains. It also implies that public servants are appointed on the basis of nepotism or bribes, without regard to honesty and the willingness to serve the public (Lambsdorff, 2005). The corruption index is an estimator of the degree of political corruption in a political system. This subjective measure, according to the International Country Risk Guide (ICRG), ranges between zero (the highly corrupt) and six (the least corrupt). The expected coefficient, based on previous studies by Lambsdorff (2005), and Coupet Jr (2011), among others, is either negative or positive.

3.4 Source of Data

The secondary data sources are used in this study. The nature of the data is formed by pooling the cross-section and time-series data; composed of annual data on gross domestic products (*GDP*), external debt stock (*EXDBT*), export of goods and services (*EXPRT*), gross capital formation (*GCF*), corruption (*CORR*), and interest on external

debt (*DEBTIN*), for the selected SSA countries, between 1990 and 2015. The data on *GDP, EXDBT, EXPRT, GCF,* and *DEBTIN* are obtained from the IMF's International Financial Statistics and Direction of Trade Statistics; World Bank's World Development Indicators and International Debt Statistics; while data on *CORR* is obtained from the International Country Risk Guide (ICRG), developed by the IRIS Center in the University of Maryland.

3.5 Method of Estimation

This section presents the techniques of estimation employed in the study. These techniques include the unit root test, cointegration analysis, and the coefficient estimation using the FMOLS technique, as well as the pairwise granger causality test.

3.5.1 Panel Unit Root Test

The first step in model estimation is the unit root test, which is a formal test of statioanrity of the variables, usually carried out to avoid obtaining spurious and misleading results (Asteriou & Hall, 2007). The technique developed by Im, Pesaran, and Shin (IPS, 2003), which is based on the Dickey-Fuller procedure, has been adopted in order to test the existence of panel cointegration, by first examining the stationarity of the data. This method is an advancement of the Levin, Lin, and Chu (2002) test of stationarity as it permits for heterogeneity on the coefficient of the variable, Y_{it}; and suggests a fundamental testing procedure according to the mean-average of the individual unit-root statistics.

The IPS statistic offers different estimations for each of the cross-sections, and permits different specifications in terms of the residual variance, lag lengths, and parametric values. The model of IPS-unit root test is:

$$[3.6] \quad \Delta Y_{i,t} = \alpha_i + \rho_i Y_{i,t-1} + \sum_{k=1}^{n} \phi_{ik} \Delta Y_{i,t-k} + \delta_i t + \varepsilon_{it} ;$$

where: *Y* denotes each of *GDP*, *EXTDBT*, *EXPRT*, *GCF*, *CORR*, and *DEBTIN* whose stationarity test are required in order to determine the presence of unit root.

The formulated model of the IPS (2003) presupposes that *T* is the equal across cross-sections. Economic researchers that have adopted IPS include, but not limited to, Hassan, Bakar, and Abdullah (2014), Chou and Suk-Yee Lee (2003), and Sarantis and Stewart (1999).

The IPS *t-statistic* and mean of the *t-statistic* used in testing for unit roots in panel analysis is given by:

$$[3.7] \quad t_{IPS} = \frac{\sqrt{N}\left(\bar{t} - \frac{1}{N}\sum_{i=1}^{N} E\left[t_{iT} \middle| \rho_i = 0\right]\right)}{\sqrt{\frac{1}{N}\sum_{i=1}^{N} Var\left[t_{iT} \middle| \rho_i = 0\right]}} \Rightarrow N(0,1) \qquad \bar{t} = \frac{1}{N}\sum_{i=1}^{N} t_{\rho_i}$$

The reduced cross-sectional version of the *t-test* and $\bar{t}$ −test may be employed where the residuals have a time-specific component; and the mean of *t* ($\bar{t}$) may be

standardized since the standardized $\bar{t}-$ statistic converges to the standard normal distribution as *N, T*→ ∞ such that $\bar{t}$ gives a better estimate when *N and T* are small.

3.5.2 Panel Cointegration Test

The test of cointegration is next examined to determine the long-run relationship among the variables. There are many methods of testing the cointegration of the variables, such as Kao (1999), Maddala and Wu (1999), and Pedroni (1999). This study employs the technique developed by Pedroni (1999), which allows for considerable heterogeneity and uses the residual estimates from the hypothesized long-run regression. The long-run relation is of the form:

[3.8] $$Y_{it} = \alpha_i + \delta_{i_t} + \sum_{m=1}^{M} \beta_{mi} X_{mi,t} + \varepsilon_{it}$$

where $t = 1,...,T;\ i = 1,...,N;\ and\ \ m = 1,...,M;\ T$ denotes the number of observations over time, *N* represents the number of cross-sections in the panel, and *M* denotes the number of regressors. Also, α_i denotes the fixed effects parameter (member specific intercept) such that it varies across individual cross-sections; and δ_{i_t} denotes the deterministic time trend, the coefficients of the slope (member specific time-effect).

In Equation [3.8], Y_{it} represents the dependent variable (GDP_{it}) and $X_{mi,t}$ represent the regressors ($EXTDBT_{it}$, $EXPRT_{it}$, GCF_{it}, $CORR_{it}$, $DEBTIN_{it}$). In order to cover both the *within* and *between* effects, Pedroni (1999) developed seven distinct cointegration statistics which were classified into two, based on the Phillips-Perron and ADF tests

panel versions; thus applying them to residuals from panel estimation. The first of the two classifications is heterogeneous panel tests, which comprises tests based on pooling the residuals along the panel 'within' dimension. These include: panel v-statistic, panel statistic, panel t-statistic (parametric) and panel t-statistic (non-parametric). The statistics are as follows:

[3.9] $$Z_{\hat{v},N,T} = T^2 N^{3/2}\left(\sum_{i=1}^{N}\sum_{t=1}^{T}\hat{L}_{11i}^2\hat{e}_{i,t\ \ 1}^2\right)$$

[3.10] $$Z_{\hat{\rho}N,T\ \ 1} = T\sqrt{N}\left(\sum_{i=1}^{N}\sum_{t=1}^{T}\hat{L}_{11i}^2\hat{e}_{i,t\ \ 1}^2\right)^{1}\sum_{i=1}^{N}\sum_{t=1}^{T}\hat{L}_{11i}^2\left(\hat{e}_{i,t\ \ 1}\Delta\hat{e}_{i,t}\hat{\lambda}_i\right)$$

[3.11] $$Z_{tN,T} = \left(\tilde{\sigma}_{N,T}^2\sum_{I=1}^{N}\sum_{T=1}^{T}\hat{L}_{11i}^2\hat{e}_{i,t\ \ 1}^2\right)^{1/2}\sum_{i=1}^{N}\sum_{t=1}^{T}\hat{L}_{11i}^2\left(\hat{e}_{i,t1}\Delta\hat{e}_{i,t}\hat{\lambda}_i\right)$$

where $\hat{e}_{i,t\ \ 1}$ is the vector of the residual for the OLS estimation in the test procedures; other terms are properly defined by Pedroni.

The last group of statistics is based on pooling the residuals along the between dimension of the panel. This group allows for heterogeneous autocorrelation parameters for each member of the group. The statistics include:

[3.12] $$\tilde{Z}_{\hat{\rho}N,T\ \ 1} = \sum_{i=1}^{N}\left(\sum_{t=1}^{T}\hat{e}_{i,t\ \ 1}^2\right)^{1}\sum_{t=1}^{T}\left(\hat{e}_{i,t\ \ 1}\Delta\hat{e}_{i,t}\hat{\lambda}_i\right)$$

[3.13] $$\tilde{Z}_{tN,T\ 1} = \sum_{i=1}^{N}\left(\sum_{t=1}^{T}\hat{e}_{i,t\ \ 1}^{2}\right)^{1/2}\sum_{t=1}^{T}\left(\hat{e}_{i,t\ \ 1}\Delta\hat{e}_{i,t}\hat{\lambda}_{i}\right)$$

Similarly, the group mean of individual time-series is estimated by these statistics in Equation [3.12] and Equation [3.13], and the distribution of each may be described in the form:

[3.14] $$\frac{X_{N,T}\mu\sqrt{N}}{\sqrt{v}} \Rightarrow N(0,1)\ ;$$

where: $X_{N,T}$ denotes the corresponding *t*-statistics, the variance and mean of each *t-test* are v and μ respectively.

In the alternative hypothesis, panel *v* statistic diverges to positive infinity and therefore implies a one-sided test where the null hypothesis is rejected when the positive value is large. The remaining statistics however diverge to negative infinity and large negative value rejects the null hypothesis.

The Pedroni cointegration analysis tests the null hypotheses (of the absence of cointegration) against the alternative hypothesis (of the presence of cointegration). With the exception of the v-statistic, all statistics have a critical value of -1.64, implying the rejection of null hypotheses when the statistical value is greater than -1.64. The *v-statistic*, on the other hand, has a critical value of 1.64, implying the rejection of null hypotheses when the v-statistic is greater than 1.64.

3.5.3 Estimation of the Long-Run Relationship

The integration of the series at first-difference, with time-trend, and the existence of long-run relationship among the series guides to the estimation of coefficients, using the FMOLS technique. This technique, developed by Pedroni (2001a), and Phillips and Moon (1999), is used to estimate the long-run relationship on a single equation estimators. FMOLS is designed for making inferences in cointegration panels with heteregenous dynamics, as the cross section increases even for panels with relatively short time-series dimensions. It is also aimed at addressing the problems of simultaneity bias, non-stationarity and endegoneity of the regressors that is the main concern in panel analysis (Christopoulos & Tsionas, 2004).

One advantage of the panel group estimators is that it allows for greater flexibility when there is heterogeneity of the cointegrating vectors in such form in which data are pooled. The test statistics obtained from the panel estimators are used to test the null hypothesis (H_0: $\beta_i = \beta_{0,}$ for all *i*) against the alternative hypothesis (H_1: $\beta_i \neq \beta_{0,}$ for all *i*), so that the values of β_i are not constrained to be equal under the alternative hypothesis.

Another advantage of the panel group estimators lies in the fact that the point estimates have a more useful interpretation in the event that the true cointegration vectors are heterogeneous. Specifically, point estimates for the panel group estimator can be interpreted as the mean value for cointegrating vectors (Pedroni, 2001).

Since OLS results may be biased because the independent variables are endogenously determined (in the case of *I* (1)), the OLS system, following the panel data cointegrating system, is:

[3.15] $$y_{it} = \alpha_i + x'_{it}\beta + e_{it}$$

[3.16] $$x_{it} = x_{i,t-1} + \varepsilon_{it}$$

where: $\xi_{it} = [e_{it}, \varepsilon'_{it}]$ is a stationary with covariance matrix Ω_i . The coefficient estimator β will be consistent if the error process $\omega_{it} + [e_{it}, \varepsilon'_{it}]'$ satisfies the assumption of cointegration between y_{it} and x_{it} . The limiting distribution of OLS estimator is due to some nuisance parameters. A semi-parametric correction can be made to the OLS estimator which eliminates the second order bias caused by the endogeneity of the regressors (Hansen & Phillips, 1990). In the light of this, Pedroni adopts the principle in panel analysis, and allows for fixed effects and heterogeneity in the short-run dynamics. Thus, the Pedroni's FMOLS estimator is built:

[3.17] $$\hat{\beta}_{FM} - \beta = \left(\sum_{i=1}^{N} \hat{\Omega}_{22i}^{-2} \sum_{t=1}^{T} (x_{it} - \hat{x}_t)^2 \right)^{-1} \sum_{i=1}^{N} \hat{\Omega}_{11i}^{-1} \hat{\Omega}_{22i}^{-1} \left(\sum_{t=1}^{T} (x_{it} - \bar{x}_t) e_{it}^* - T\hat{\gamma}_i \right)$$

$$\hat{e}_{it}^* = e_{it} - \hat{\Omega}_{22i}^{-1} \hat{\Omega}_{21i}, \qquad \hat{\gamma}_i = \hat{\Gamma}_{21i} + \hat{\Omega}_{21i}^0 - \hat{\Omega}_{22i}^{-1} \hat{\Omega}_{21i} \left(\hat{\Gamma}_{22i} + \hat{\Omega}_{22i}^0 \right)$$

where the covariance matrix may be decomposed as $\Omega_i = \Omega_i^0 + \Gamma_i + \Gamma_i$, where Ω_i^0 is the contemporaneous covariance matrix, while Γ_i the weighted sum of autocovariances. Similarly, $\hat{\Omega}_i^0$ is an appropriate estimator of Ω_i^0 .

3.5.4 Panel Granger Causality Test

The existence of cointegrating relationship only indicates the existence of long-run relationship among the variables, but does not give detailed information regarding the direction of causality. In order to examine the short-run and long-run causal relationship among the variables, the study adopts the two-step procedure proposed by Engle and Granger (1987). This test is used to examine the direction of causality among the macroeconomic variables of the model. It is a method of investigating the causality between two variables that are closely related. The null hypothesis for the test is that the lagged values of, say X do not explain the variation in another variable, Y.

It may be of interest to know, for instance if *GDP* is the variable that causes *CORR* (*GDP*→ *CORR*) or it is *CORR* that causes *GDP* (*CORR* →*GDP*), such that the arrow is pointing to the direction of causality. This test supposes that the relevant information to the variables prediction, *GDP* and *CORR*, is solely contained in the time-series of these variables. Hence, the Granger causality test entails the estimation of the following pair of regressions:

[3.18] $GDP_{it} = \sum_{t=1}^{n} \propto_i EXDBT_{it-i} + \sum_{j=1}^{n} \beta_j GDP_{it-j} + U_{1it}$

[3.19] $EXDBT_{it} = \sum_{t=1}^{n} \propto_i EXDBT_{it-i} + \sum_{j=1}^{n} \beta_j GDP_{it-j} + U_{2it}$

[3.20] $GDP_{it} = \sum_{it=1}^{n} \propto_i CORR_{it-i} + \sum_{j=1}^{n} \beta_j GDP_{it-j} + U_{3it}$

[3.21] CORRit = $\sum_{it=1}^{n} \gamma_i \, CORR_{it-i} + \sum_{j=1}^{n} \rho_j GDP_{it-j} + U_{4it}$

such that U_{1it}, U_{2it}, U3it, and U_{4it} are assumed not to be correlated.

The two-variable causality assumption is known as 'Bi-Directional Causality'. This postulates that that current GDP is related to past values of itself as well as that of CORR and the current value of corruption is related to both its past past values as well as the past values of GDP (Engle & Granger, 1987; Gujarati, 2004).

There are basically four cases of causality;

i. **Unidirectional causality from CORR to GDP:** This indicates if the estimated coefficients on the lagged CORR are statistically different from zero as a group and the set of estimated coefficients on the lagged GDP is not statistically different from zero.

ii. **Unidirectional causality from GDP to CORR**: This exists if the set of lagged CORR coefficients is not statistically different from zero and the set of the lagged GDP coefficients is statistically different from zero.

iii. **Feedback, or bilateral causality:** This is suggested when the sets of CORR and GDP coefficients are statistically significantly different from zero in both regressions.

iv. **Independence** is postulated when the sets of CORR and GDP coefficients are not statistically significant in either of the regressions.

3.6 Conclusion

The theoretical framework and methodology, as well as the techniques of data analysis have been discussed. Having also explained the model and sources of data, the techniques discussed will be employed in the examination of the magnitude, direction, and causal relationships among the variables of interest.

CHAPTER FOUR

DISCUSSION OF RESULTS

4.1 Introduction

This chapter presents and analyses the empirical relationship between external debts, corruption and economic growth, as well as other macroeconomic variables, for the estimation of the cause-effect relationship in the countries under consideration. As such, the results are presented on technique-by-technique basis, in the course of testing the statistical hypothesis about the relationship among the variables.

4.2 Descriptive Statistics

The results of the descriptive statistics for the variables of the model are presented in Table 4.1, for the years under consideration.

Table 4.1
Descriptive Statistics

Variable	Mean	Maximum	Minimum	Std. Dev.
GDP	6.32E+10	4.17E+11	1.18E+09	9.95E+10
EXDBT	1.63E+10	1.17E+11	8.69E+08	2.14E+10
DEBTIN	1.449	8.351	0.018	1.732
EXPRT	1.89E+10	1.27E+11	1.78E+08	2.93E+10
GCF	1.06E+10	7.98E+10	2.36E+08	1.85E+10
CORR	2.323	5.000	0.500	0.895

The mean value is the average of the values of observation for each variable. As can be observed from the table, each of the variables has relative normal distribution, as the mean value in each case has relatively lower deviation from the standard deviation. This means that each of the variable observation does not have wide deviation from the average value. Similarly, the minimum and maximum values describe each variable as it appears, in terms of the lowest and highest values in each series. As such, the minimum observation, when compared to the maximum observation gives the range of the observation value for each of the variables of analysis.

4.3 Correlation Analysis

The results of the correlation analysis among the variables of analysis are presented in Table 4.2, given that correlation measures the degree/extent of the relationship between two variables. Hence, correlation is a measure of direction, and not of the magnitude.

Table 4.2
Correlation Analysis

Correlation (Probability)	GDP	EXDBT	EXPRT	GCF	CORR	DEBTIN
GDP	1.000					
EXDBT	0.770**	1.000				
	(0.000)	-----				
EXPRT	0.974**	0.799	1.000			
	(0.000)	0.000	-----			
GCF	0.974**	0.795	0.925	1.000		
	(0.000)	0.000	0.000	-----		
CORR	0.056	0.037	-0.013	0.124	1.000	
	(0.571)	0.712	0.895	0.206	-----	
DEBTIN	-0.196**	0.130	-0.136	-0.199	0.114	1.000
	(0.046)	0.185	0.167	0.042	0.248	-----

Note: the probability values are presented in the parenthesis ( )
** denotes significance at 5% level of significance

As may be observed from Table 4.2, there exists a strong positive relationship between GDP and EXDBT. This is because the coefficient of EXDBT is positive and greater than 0.5. Similarly, the coefficient, each, of EXPRT and GCF is positive and greater than 0.5. This also confirms the existence of strong positive relationship between EXPRT and GDP, on one hand, and GCF and GDP, on the other hand. Also, the coefficient of CORR is positive, but less than 0.5, implying a weak degree of inverse relationship between CORR and GDP; the coefficient of DEBTIN is, however, negative (and less than 0.5), which explains the existence of weak negative relationship between DEBTIN and GDP.

4.4 Panel Unit Root Analysis

To examine the order of stationarity of the series, Table 4.3 explains the results of the IPS-unit root test, for heterogeneous panel model.

Table 4.3
Panel Unit Root Test

Variable	Constant	Constant+Trend	Constant	Constant+Trend
GDP	5.752 (1.000)	2.716 (0.997)	-2.476** (0.007)	-2.703** (0.003)
EXPRT	3.747 (0.999)	1.286 (0.901)	-4.171** (0.000)	-3.088** (0.001)
EXDBT	2.644 (0.996)	2.608 (0.996)	-2.431** (0.008)	-1.899** (0.029)
DEBTIN	-1.175 (0.120)	-0.242 (0.404)	-6.321** (0.000)	-5.598** (0.000)
GCF	3.893 (1.000)	1.898 (0.971)	-2.197** (0.014)	-1.658** (0.048)
CORR	-0.620 (0.268)	-0.313 (0.377)	-4.110** (0.000)	-2.863** (0.002)

Note: the probability values are presented in the parenthesis ( )
** denotes significance at 5% level of significance

The results presented in Table 4.3 explains that all the series are shown to have evidence of stationarity only after the first-difference. This is evident from the fact that the probability value in each case is less than 5 percent, at both constant, and constant and trend conditions. Therefore, based on the IPS-panel unit root tests, the series are integrated of order one, I(1). Given these results, the panel cointegration test can be applied to test for the existence of stable, long-run relationship among the variables.

4.5 Panel Cointegration Analysis

Having found the variables to be integrated of first-order, I(1), the results of the cointegration test is presented in Table 4.4, in order to test the existence of long-run relationship.

Table 4.4
Panel Cointegration Analysis (Pedroni Test)

Test	Constant	Constant + Trend
Panel *v* – Statistic	-1.702	-2.734
Panel *ρ* – Statistic	-0.062	0.674
Panel *t* - statistic (non-parametric)	-10.870**	-12.214**
Panel *t* - statistic (*adf*): (parametric)	-6.670**	-6.965**
Group *ρ* – statistic	1.313	1.705
Group *t* – statistic (non-parametric)	-7.888**	-8.403**
Group *t* – statistic (*adf*): (parametric)	-3.344**	-2.687**

Note: ** indicates rejection of null hypothesis at 5% level of significance

At both constant, and constant plus trend conditions, the panel and group *t* – and ADF – statistics (4 of 7) reject the null hypothesis at 5 percent level of significant. Hence, most of the statistics support the rejection of null hypothesis, an indication of the existence of long-run relationship among the variables for the SSA countries under consideration. The panel non-parametric (*t*-statistics) and parametric (ADF-statistics) are more reliable in constant plus trend conditions (Pedroni, 1999). Therefore, the results presented in Table 4.4 can sufficiently lead to the conclusion that the variables of the analysis have long-run relationship.

4.6 Panel Coefficient Estimation

The results of the panel coefficient estimation, using the FMOLS regression estimation technique, is presented in Table 4.5, with GDP as the dependent variable.

Table 4.5
FMOLS Regression Results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
EXDBT	-0.620	0.105	-5.932	0.000**
DEBTIN	-2.300	9.090	-2.525	0.013**
CORR	3.050	1.710	1.783	0.078*
EXPRT	1.385	0.130	10.621	0.000**
GCF	3.483	0.201	17.365	0.000**

Note: * and ** indicate rejection of null hypothesis at 10% and 5% levels of significance, respectively.

Given the regression results in Table 4.5, EXDBT is statistically significant at 5 percent, and negatively related to the GDP. The coefficient explains that USD1 increase in EXDBT results in the reduction in GDP by USD0.62. This result is in line with that debt overhang hypothesis, wherein a continuous rise in debt accumulation reduces the level of investment and economic growth as a result of increased tax on firms. Similar result is obtained by Eberhardt and Presbitero (2015), Siddique et al. (2015), and Fosu (1999). This is possible especially in view of most African countries whose borrowings have only had the records of not being properly channeled into productive activities, and most of the times, mismanaged. The consequence of this is the loss of output arising from the fact that the existing productive capital is depleted in financing the debts obligations, thereby reducing the level of domestic investment and economic growth. Also, continuous debts may increase the menace of capital flight, whereby investors largely anticipate the likelihood of their being charged more in taxes in order to meet the debts obligations; hence, they may consider short-term capital repatriation until the economic condition improves and becomes favourable to them, all with the resultant effect of reducing the economy's output.

Similarly, the coefficient of DEBTIN shows that it is statistically significant at 5 percent level of significance, and explains a negative relationship between DEBTIN and GDP, such that a USD1 rise in interest (either by accumulation or higher cost of servicing) reduces the GDP by USD2.30. This is in line with the studies conducted by Abdullahi et al. (2016), and Mohd Dauda et al. (2013). This implies that, interest payment on such debts have similar effect on economic growth as external debt itself (in SSA). This is because, interest payment usually compounds the actual repayment made on maturity of the debts. These countries have a long term record of incurring

higher debts, and the servicing of these debts obligation have usually increased their recurrent expenditure on annual budgets, and leave very little for capital expenditure and investment in productive activities; hence, the reduction in productive capacity. Furthermore, the relationship between EXPRT and GDP shows a significant and positive coefficient, implying that GDP increases by USD1.39 if exports increase by USD1. This is line with *a priori* expectation (known economic theory); a rise in export implies higher demand for domestic products abroad, and therefore a rise in domestic output and income. Also, for GCF and GDP, the relationship is significant and positive. This explains that, the GDP rises by USD3.48 when GCF rises by USD1. Capital formation is increase in domestic stock of capital, and therefore the relationship is in line with existing theory.

Finally, the coefficient of CORR is found to be significant at 10 percent level of significance, and positively related to the GDP. In general, a high level of CORR has adverse effect on the GDP as a consequence of loss of output. The result obtained in this study, however, suggests that corruption enhances economic growth in the SSA countries under consideration; this is in line with the research conducted by Coupet Jr (2011), Huntington (1968), and Leff (1964), and justified in view of the alarming rate of corruption in most of the countries in SSA. Almost all forms of corruption, ranging from political to economic, have bedeviled both the governance and economic systems. In fact, even if the proceeds of corruption is not required immediately, both private and public sector players engage in any form that anticipates future rent-seeking activities. This is so to the extent that it has almost become the norms in both public (especially) and private sectors. For most of the services to be rendered, by both the civil and public servants, and for contracts to be awarded, some monetary (or other)

inducements are usually required against the standards. The positive relationship obtained in this result in an attestation to the fact that public services are most (well) rendered when some forms of inducements are made. Hence, this result explains that, corruption (in these countries) rather increase the level of production by about USD3.05 for any point increase in the level of corruption in the forms of bribery, nepotism, favouritism, among others.

4.7 Panel Granger Causality Analysis

The results of the granger causality test, employed to examine the direction of causality among the variables of interest, are presented in Table 4.6. The results explain that there is evidence of causality running from GDP through EXDBT, and from EXDBT through GDP. This shows that there exists a bi-directional causality between GDP and EXDBT since the probability value in each case is less 5 percent. Similarly, the evidence of bi-directional causality is also found between EXDBT and DEBTIN. While there is uni-directional (one-way) causality between GDP and DEBTIN, and between DEBTIN and CORR, there is no evidence of causality running from GDP through CORR. This implies that there is independence between GDP and CORR.

Table 4.6
Pairwise Granger Causality Test

Dependent variable: GDP

Excluded	Chi-sq	df	Prob.
EXDBT	32.351	2	0.000
DEBTIN	26.951	2	0.000
EXPRT	137.080	2	0.000
GCF	44.186	2	0.000
CORR	0.162	2	0.922
All	251.676	10	0.000

Dependent variable: EXDBT

Excluded	Chi-sq	df	Prob.
GDP	10.004	2	0.007
DEBTIN	7.896	2	0.019
EXPRT	15.867	2	0.000
GCF	27.182	2	0.000
CORR	4.224	2	0.121
All	76.020	10	0.000

Dependent variable: DEBTIN

Excluded	Chi-sq	df	Prob.
GDP	0.684	2	0.710
EXDBT	4.850	2	0.089
EXPRT	0.885	2	0.642
GCF	0.350	2	0.840
CORR	0.194	2	0.908
All	8.339	10	0.596

Dependent variable: CORR

Excluded	Chi-sq	df	Prob.
GDP	1.653	2	0.438
EXDBT	4.516	2	0.105
DEBTIN	5.352	2	0.069
EXPRT	0.876	2	0.646
GCF	5.242	2	0.073
All	11.638	10	0.310

4.8 Conclusion

The results of the analysis follow that the while many researchers have supported the existence of negative relationship between economic growth and corruption, the results of the panel analysis obtained supports the argument that corruption enhances growth by overcoming cumbersome regulations and conditionalities. Also, while the sign of the coefficients of external debt has been reported inconclusive in the literatures, as authors have found both positive and negative coefficients, this study supports a negative relationship of external debt with economic growth, which is in line with the debt overhang hypothesis. Similarly, the results of the granger causality show the evidence of bi-directional causality between GDP and EXDBT, with no evidence of causality between GDP and CORR.

CHAPTER FIVE

CONCLUSION AND POLICY IMPLICATION

5.1 Introduction

This chapter comprises the summary of research findings, conclusions, as well as policy implications. It equally stresses the areas of coverage and limitations of the study, which is expected to ease further research in this and similar areas in international economics.

5.2 Summary of Findings

This research work lends voice to an important economic relationship, involving external debt and economic growth on one hand, and corruption and economic growth on the other hand. It is particularly important in the contemporary debate on countries' external finances, considering the heavy reliance of SSA countries on external debt coupled with the pronounced level of resources mismanagement. This study therefore contributes to the body of knowledge by examining the effects of external debt and corruption on economic growth in selected five SSA countries, by employing the FMOLS estimation technique; as well as the examination of the direction of causality among the variables.

The findings of the study show that the relationship between external debt and economic growth is negative, thereby confirming the debt overhang theory of external debt. This theory upholds that a sustained increase in government borrowing has tendency to reduce investment and economic growth, in the event that investors are made to pay higher taxes in order to allow the servicing of government debt.

Similarly, the interest on external debt is also found to be negatively related to economic growth, thereby implying the existence of negative relationship between the stock of external debt and economic growth. In the same way, while most of the studies obtained that corruption reduces the level of economic productivity, the finding of this study supports few theoretical and empirical studies, who uphold that corruption enhances economic productivity and growth. This suggests that some forms of corruption are required to avoid bureaucracy especially in public service, where 'what belongs to all is seen to belong none'. Finally, the results of the panel granger causality show the evidence of bi-directional causality between economic growth and external debt, while no evidence of causality is found between corruption and economic growth.

5.3 Policy Implications

Going by the results of the panel analysis, the rising level of external indebtedness in the selected SSA countries is alarming, considering that only the five countries' estimated external debt is about 47 percent of the total external debt by the forty-six countries in SSA. This, therefore has the effect of crowding-out public investment as

a result of debt servicing, and as well results in capital flight since investors largely avoid the burdens of higher taxes.

In view of the negative consequences on the economy, the governments should address the menace of the rising debt through the adoption of other sources of capital for investment, such as more openness of the economy for more capital, by easing the restrictions on genuine imports and exports of valuable goods and services. This has the benefit of increasing investment in the domestic economies and creating wealth, as government would realise tax-revenues from imported capital, as against the payment of interest on external debt. In addition, enhanced economic growth through investment will lead to technology transfer into the domestic economies, with a maximum likelihood of creating employment for citizens.

Similarly, the rising level of corruption in the selected SSA countries should be addressed head-on. The level of corruption, being so rampant that public servants have seen inducements before the performance of statutory functions as a custom, has a severe impact beyond the supposed increased level of output. Appropriate policy in this regard requires making integrity and sincerity more attractive, while any act of corruption should be met with severe penalties. Also, the various anti-corruption agencies of governments should be made to perform independently and credibly. A situation where corruption attracts less penalty than the illegal reward obtained would only make corruption largely attractive. In doing this, proper orientation on the adverse effects of corruption should be extended to the younger generations, so that they may be free from seeing corrupt acts as a means to proper life.

5.4 Limitations and Recommendations for Further Studies

The first limitation of this study is in the area of the number of countries considered, which may not best represent the whole of SSA. Also, while there are various macroeconomic variables that affect economic growth and external debt, this study only considers the effects of corruption and external debt on economic growth.

In view of these limitations, the following recommendations are made for further studies;

i. The relationship between the size of government and external debt should be considered in order to examine how government size affects external debt

ii. This study should also be replicated in cases of many more countries that most represent the relationship in SSA; as well as in individual countries.

iii. The interaction effects of institutional quality variables should also be considered for further studies on SSA countries, in order to determine their effectiveness on economic growth.

5.5 Conclusion

The study examined the relationship between external debt, corruption and economic growth in selected five SSA countries, which are chosen based on the size of their economies and the proportion of their external debt to the entire SSA countries. The

study covers the period 1990 to 2015, using the corruption-adjusted augmented Solow and the Two-Gap theories; while employing the FMOLS estimation technique and panel granger causality in estimating the relationships.

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