

# **Impact of External Debt Accumulation and Capital Flight on Economic Growth of West African Countries**

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# Abstract

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This paper investigates how indebtedness and capital flight have affected the growth of 14 West African countries directly, and via investment and fiscal balance mechanisms, using data from 1970 to 2008. This task was approached through a standard growth framework through which debt and capital flight indicators were incorporated. Two econometric specifications (linear and non-linear) were used, and evaluated with the fixed effects and GMM estimation techniques on the relationship between debt and growth. The hypothesis that external debt and capital flight affect growth is well-supported by the results. All debt variables and the capital flight variable have the expected signs and were statistically significant. The results reveal that debt appears to have a non-linear effect on growth. The debt overhang hypothesis is affirmed, given the existence of a threshold beyond which debt negatively contributed to growth. The average impact of debt on per capita growth becomes negative for debt levels above 60% to 74% of GDP. Thus, increasing debt beyond this threshold yields a negative marginal contribution to growth. There is a pressing need to take measures to not only stabilize external debts, but to place them on a downward trajectory in the future.

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# 1. Introduction

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Since the 1990s, high external debt and capital flight from developing countries have received increasing attention from academics, policy makers, and the general public worldwide, as two of the main factors responsible for the weak economic performance of poor countries. Some of these countries received huge sums in foreign credits, often at highly concessional interest rates, and have over the past decades experienced an upsurge in exports of capital by private individuals (see Ndikumana and Boyce, 2012). In some Sub-Saharan African (SSA) countries, the stock of external debt has piled up over recent decades to a level widely considered unsustainable. While it has been acknowledged that the obligation of repaying the accumulated value of these debts may not be feasible, a fear has been expressed that it is likely to be compounding the economic problem of poor countries. Capital flight has similarly been observed as a prime factor that deepens the mounting external debt problem, and that militates against economic growth efforts of Third World countries (Cuddington, 1986). During the 1980s and 1990s, many debtor countries experienced low (or even negative) growth and investment concomitant with negative net resource transfers (Dijkstra and Hermes, 2001).

Unrestrained capital flight from these countries will further constrain their economic performance as capital flight has been perceived as eroding the investment base of these countries. The consequence of a debt burden, which developing countries have to grapple with, and the flight of capital constitute a drain on the available resources for investment activities to generate economic growth. Despite the central importance of economic growth, and the constraints that a debt burden and capital flight impose on the development of an investment base for economic growth in SSA countries, few studies have addressed the following related questions: How and when does external debt and capital flight impact on economic growth? What transmission channels are these impacts likely to follow? What are the magnitudes of these impacts on economic growth?

While a number of empirical studies have established the negative effects of high external debt on growth (see Schclarek, 2004; Saint-Paul, 1992; Aizenman et al., 2007; Reinhart and Rogoff, 2010; Kumar and Woo, 2010), studies on the impact of capital flight on growth (e.g., Ajayi, 2003) are rather scanty. To effectively combat capital flight and external debt accumulation problems and their effects on the economic growth potential of West African (WA) countries, there is a need to investigate how both contribute to the growth problems. Thus, this study contributes to the understanding of the effect of external debt and capital flight on the economic growth of countries from the WA sub-region.

## Objectives of the study

The main objective of this study is to determine the impact of external debt and capital flight on the economic growth performance of countries from the WA sub-region. Specifically, the objectives are to:

- Measure capital flight from individual countries in WA using the residual method adjusted for trade misinvoicing,
- Determine the optimal growth-maximizing external debt for WA countries using a non-linear relationship,
- Test for the existence of debt overhang and crowding out effects on growth in WA, and
- Determine the magnitude of the impact of capital flight on the economic growth of WA countries.

## Justification for the study

Following the independence of WA countries in the 1950s and 1960s, growing their economies at an appreciable rate was accorded top priority. However, the available resources were grossly inadequate to achieve the desired economic growth objective. Thus, the need to acquire external resources to support the growth agenda was pursued vigorously by attracting foreign investment and through direct borrowing by governments to augment domestic resources for investment. This marked the beginning of external debt accumulation by these countries, and the consequent burden it has constituted over the years, which has attracted serious concern from the international community. The governments of most WA countries used the tool of foreign borrowing to generate an inflow of resources to support their economic growth aspirations; over the years, private citizens simultaneously acquired foreign assets through portfolio diversification abroad. The implication is that the scarcity of resources in the sub-region is being further compounded by the flight of capital.

Well over four decades after independence and the drafting of growth agendas, the performance of WA economies is generally judged to be poor. For example, the sub-region had the lowest GDP (PPP) — US\$1,361 — among the different economic blocs in Africa (compared with an average of US\$4,182) in 2005. A number of reasons have been put forward for the poor economic performance of SSA countries in general. Prevalent among these are the burden of repayment and servicing of accumulated foreign debts, and the capital flight activities of their citizens (see Ajayi, 2003). While the resources of these countries are grossly insufficient, a substantial proportion of the available resources is committed to meeting external debt servicing and repayment obligations, and for financing portfolio shifts abroad by private citizens of these countries.

The literature confirms the coexistence of external debt accumulation and capital flight in most developing economies. However, empirical studies have focused mainly on the effects of external debt on growth, with little attention on the effect of capital flight on growth. Although a number of studies have investigated the impact of external debt on growth, the contribution of this study lies in investigating the effect of capital

flight in addition to external debt on economic growth in WA countries. Furthermore, it represents a departure from pooling a dissimilar group of countries, including emerging markets and low-income countries, by existing studies in the literature. Specifically, this paper is motivated by the need to empirically investigate the implications of external debt and capital flight on economic growth of WA countries as a homogeneous group by providing answers to the following questions: What are the implications of external debt and capital flight on WA countries' economic growth experience? What are the magnitudes of the effects of both on economic growth among WA countries? What is the debt threshold in support of economic growth of WA countries?

## Scope and data sources

This study covers 14 WA countries<sup>1</sup> from 1970 to 2008. The data for our analysis were sourced from IMF International Financial Statistics, 2010; Direction of Trade Statistics, 2010; and Balance of Payment Statistics, 2010; World Bank World Debt Table, 2010; Global Development Finance, 2010 and World Penn Table 6.3.



## 2. Macroeconomic background of West African countries

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The WA sub-region is made up of 16 countries,<sup>2</sup> 15 of which are members of the Economic Community of West African States (ECOWAS), a regional organization formed in 1975. Mauritania opted out of ECOWAS in 2002. For European Union (EU) Economic Partnership Agreement (EPA) negotiations, Mauritania is usually grouped along with ECOWAS countries. Given their colonial history, most of these countries still maintain strong political, cultural, and economic ties, and in some cases military cooperation, with their former colonialists. Nine of the countries in WA are Francophone,<sup>3</sup> while the rest are Anglophone. The national currency in most of the Francophone countries is the West African CFA franc, managed by the West African Economic and Monetary Union (UEMOA). The economy of the WA countries in the ECOWAS bloc is one of the poorest performers among African blocs. For example, the region's GDP (PPP) per capita is US\$ 1,361 while others such as Southern African Customs Union (SACU), Arab Maghreb Union (UMA), the Greater Arab Free Trade Area, (Agadir), Southern African Development Community (SADC), Central African Economic and Monetary Community (CEMAC) and Common Market for Eastern and Southern Africa (COMESA), have per capita GDPs (PPP) of US\$10,605, US\$5,836, US\$4,075, US\$3,152, US\$2,435 and US\$1,811, respectively (CIA World Fact Book, 2005; IMF WEO Database, 2010). Of the 40 countries identified as at the end of the first quarter of 2007, under the Heavily Indebted Poor Countries (HIPC) Initiative, 30 countries (75%) were from SSA while more than one-third (14<sup>4</sup>) were from WA. These 14 countries are at different stages of the HIPC Initiative process. While eight of these countries are at completion,<sup>5</sup> three are at decision<sup>6</sup> and three others at pre-decision<sup>7</sup> points.

The macroeconomic performance of WA countries for the past four decades is shown in Table 1. Given the specific differences between the Francophone and non-Francophone countries within the region, we provide the macroeconomic performance indicators along this divide. In both areas, there was general positive growth in the gross domestic product (GDP), but the real gross domestic product (RGDP) per capita suffered a decline for about half of the past three decades. This is explained by the pervading high inflation rate in the region. The inflation rates in the Francophone countries were generally higher in the first two and a half decades.

The observed poor economic performance is not unexpected given the low investment/RGDP ratio. The ratio of investment to RGDP generally remained less than 10% in non-Francophone countries, and less than 16% in Francophone countries. While the ratio progressively declined in the Francophone countries, from 15.6%

between 1976 and 1980 to less than 9.8% between 1996 and 1999, the ratio in non-Francophone countries fluctuated between 10.5% and 6.2%. In addition, investment flow from abroad into WA countries was very low for most of the period. From 1970 to 2000, Foreign Direct Investment (FDI) as a percentage of GDP did not exceed 1.5% in the Francophone countries, while it was less than 3.0% in non-Francophone countries. However, a relative improvement was recorded from 2000 to 2008 as the flows rose to 3.6% and 5.0% in the Francophone and non-Francophone countries, respectively.

For the period under review, gross capital accumulation across the countries was less than one quarter of the GDP, whereas a progressive trend was observed on the average. For Francophone countries, it increased from 17.5% between 1970 and 1975 to over 20% between 2000 and 2008. The non-Francophone countries experienced a faster rate of increase in gross capital accumulation from less than 10% between 1970 and 1975 to almost 21% between 2000 and 2008. Relatively speaking, the governments in Francophone countries play a more significant role in their economic activities. While government share of GDP in Francophone countries was between 22% and 25%, it was generally less than 12% in non-Francophone countries, except for 2000 to 2008, when that share rose to an average of 13.6%.

**Table 1: Major macroeconomic variables for West African countries**

Macroeconomic indicators		1971-75	1976-80	1981-85	1986-90	1991-95	1996-00	2001-08	Sources (computed from)
GDP growth rate (%)	Francophone	3.0	3.4	1.6	2.5	2.5	4.0	3.6	Global Development Finance, 2010
	Non-Francophone	5.3	3.1	0.6	3.9	1.6	2.6	6.2	
GDP per capita growth rate (%)	Francophone	0.1	0.5	-1.2	-0.3	-0.4	1.1	0.8	Global Development Finance, 2010
	Non-Francophone	2.2	0.2	-2.2	0.9	-1.0	0.1	3.5	
CPI	Francophone	1.5	3.1	2.6	-0.5	4.7	3.2	3.4	Global Development Finance, 2010
	Non-Francophone	0.14	0.2	0.6	2.1	3.2	3.5	9.5	
Investment/real GDP per capita (%)	Francophone	15.0	15.6	12.8	12.4	10.7	9.7	11.0	Penn World Tables 6.3
	Non-Francophone	8.5	10.2	7.3	6.5	7.8	7.2	6.9	
FDI net inflow (% of GDP)	Francophone	0.1	1.4	0.5	0.5	0.9	1.5	3.6	Global Development Finance, 2010
	Non-Francophone	1.6	0.7	0.2	0.4	1.9	2.9	5.0	
Gross capital formation (% of GDP)	Francophone	17.5	22.2	19.9	18.6	17.2	16.0	20.2	Global Development Finance, 2010
	Non-Francophone	9.4	14.2	13.2	14.3	17.3	16.9	20.6	
Government share of real GDP per capita (%)	Francophone	23.5	24.5	23.8	23.8	23.0	21.9	22.8	Penn World Tables 6.3
	Non-Francophone	10.0	11.3	11.8	11.1	11.1	11.4	13.6	
Current account balance (% of GDP)	Francophone	-2.6	-9.3	-13.2	-9.7	-8.5	-5.6	-4.8	World Development Indicators, 2010
	Non-Francophone	0.6	-7.3	-5.9	0.8	-3.4	-5.6	-2.3	
Reserves in months of imports	Francophone	2.1	1.4	1.6	2.1	2.6	2.9	4.3	Global Development Finance, 2010
	Non-Francophone	1.9	2.1	1.9	2.7	2.5	3.1	4.2	
Reserves (% of total external debt)	Francophone	51.6	15.1	8.9	10.1	9.6	7.4	15.7	Global Development Finance, 2010
	Non-Francophone	92.9	60.2	10.1	7.1	9.6	12.8	68.5	
Openness (% of GDP)	Francophone	54.1	65.1	70.3	60.7	54.1	61.1	70.0	Global Development Finance, 2010
	Non-Francophone	50.9	52.8	50.6	62.6	72.5	71.8	77.1	
Growth rate of export of goods and services (% of GDP)	Francophone	4.5	5.5	4.7	-2.0	6.6	3.3	2.1	World Development Indicators, 2010
	Non-Francophone	5.3	-0.8	-0.3	13.9	-0.3	5.6	-0.4	
Growth rate of import of goods and services (% of GDP)	Francophone	10.5	3.8	2.4	-4.6	1.9	3.3	1.4	World Development Indicators, 2010
	Non-Francophone	5.5	-0.6	0.8	11.8	2.6	6.3	0.3	
Growth rate of EDT (%)	Francophone	27.4	45.3	10.3	10.4	3.3	-0.5	0.2	Global Development Finance, 2010
	Non-Francophone	18.9	30.9	11.0	11.1	3.8	0.5	-1.7	

*continued next page*

Table 1 continued

Growth rate of TDS (%)	Francophone	41.0	50.6	12.4	4.3	6.8	2.2	6.0	Global Development Finance, 2010
	Non-Francophone	32.6	49.2	10.1	28.3	18.1	5.1	9.2	
External debt stocks (% of GNI)	Francophone	20.4	50.5	99.1	125.3	144.6	144.3	96.8	Global Development Finance, 2010
	Non-Francophone	18.3	29.2	64.2	105.1	110.8	104.4	99.2	
TDS/ GNI (%)	Francophone	1.6	3.8	7.5	7.3	5.2	5.3	3.4	Global Development Finance, 2010
	Non-Francophone	1.5	2.2	5.5	7.1	6.3	5.0	3.9	
EDT/EXPT (%)	Francophone	98.5	168.6	376.7	627.9	649.5	582.3	345.8	Global Development Finance, 2010
	Non-Francophone	82.0	111.2	232.6	334.9	343.3	497.6	326.4	
TDS/EXPT (%)	Francophone	NA	12.6	21.1	25.0	19.1	14.5	15.2	Global Development Finance, 2010
	Non-Francophone	NA	9.7	17.4	22.1	19.0	20.2	17.5	
Real capital flight (million 1996 US\$)	Francophone <sup>1</sup>	250.5	657.9	157.6	472.6	346.6	152.8	256.6	Ndikumana & Boyce (2012)
	Non-Francophone <sup>2</sup>	635.1	2287.4	1767.5	1883.9	1184.1	29.1	5028.8	

A review of the external sectors of these countries revealed a dismal performance. The current account balance was generally in deficit, and grew even worse for most of the period. Except for 1970 to 1975 and 1986 to 1990, the current account balance as percentage of GDP in the non-Francophone countries was in deficit to the tune of an average of between 2.3% and 7.3%. The situation in the Francophone countries was even worse as the current account balance was in deficit throughout to the tune of an average of between 2.6% and 13.2%. Subsequently, the accumulation of external reserves has remained minimal. Generally, the magnitude of the countries' external reserves in months of import is barely enough to settle two months' imports.

In the first one and a half decades, the appreciable positive growth in the ratio of exports to GDP for the Francophone countries slowed to a negative growth from 1986 to 1990. However, it picked up in the following period, with growth sliding from 6.6% in the period 1990–1995 to 2.1% from 2001 to 2008. For the non-Francophone countries, the ratio of exports to GDP suffered a decline over more than half of the period. Apart from 1970 to 1975, 1980 to 1985, and 1996 to 2000, when the ratio of export to GDP grew, the period was characterized by a decline. On the contrary, the ratio of import to GDP of the WA countries consistently grew for most of the period. On average, this growth outweighed the growth in the export-GDP ratio, which explains the poor current account balance for most of the period. While the growth rate of imports as percentage of GDP was only negative from 1986 to 1990 and 1976 to 1980 in the Francophone and non-Francophone countries, respectively, the rest of the period experienced a positive growth of between 1.4% and 10.5% in Francophone countries, and between 0.3% and 11.8% in non-Francophone countries.

It is widely acknowledged that African and indeed WA countries are caught up in a high-debt, high-poverty trap. The classification of some countries, many of which are in SSA, as HIPCs signifies the simultaneous existence of poor economic states and heavy debt burdens in these countries. In the same vein, the World Bank defines a number of countries as severely indebted low-income countries (SILICs), indicating

the coexistence of high external debt and low income in these countries. The HIPC Initiative, the first coordinated effort by the international financial community to reduce the foreign debt of the world's poorest countries, was based on the theory that economic growth in these countries was being stifled by heavy debt burdens, making it virtually impossible for them to escape from poverty (Clement et al., 2005).

Since independence, the accumulation of external debt among WA countries has been driven by a number of common and differing factors. Prominent among these are the attraction of additional resources to bridge the resource gap required for development, resource demands to combat civil war, financing of balance of payments deficits, as well as corruption.

Like most developing countries, WA countries are characterized by inadequate internal capital formation due to the vicious cycle of low productivity, low income, and low savings. In order to bridge the resource gap, most WA countries relied substantially on external funding, usually in the form of external loans, to finance its development projects. For instance, Nigeria went into external borrowing for the purpose of financing iron and steel mills, roads, electricity-generation plants, and other development projects.

Also, the shortage of foreign exchange that characterized these countries at different times became one of the bottlenecks for national economic development; external borrowing became imperative for them. Initially, after political independence, the loans sourced from bilateral and multilateral sources were small with concessionary rates of interest and long-term maturity. About two decades into independence, these countries started to borrow huge sums in the form of short-term maturity loans with floating interest rates from private sources. Thus, by the 1980s/1990s the external debts of these countries had built up to a significant proportion of GDP, often exceeding 100%. For example, by 1982 Nigeria's external debt amounted to more than 160% of GDP.

Most WA countries experienced some form of civil conflict from their independence until now, lasting for varying numbers of years and some spanning over a decade. Apart from the disruption of productive activities and government revenue by the war, it often imposed additional resource demands to combat civil war, which could only be met through external borrowing. Sierra Leone was enveloped in a gruesome 11-year civil war (23 March 1991 to 18 January 2002) that claimed over 50,000 lives. Liberia experienced two periods of civil conflict, between 1989 and 1996 and between 1999 and 2003.

Between September 2002 and November 2010, Côte d'Ivoire was characterized by a series of civil conflicts that significantly disrupted the administration of the state. Shortly before independence, Nigeria also experienced three and a half years of civil conflict, from 2 July 1967 to 15 January 1970. Other countries, such as Togo and Guinea-Bissau, experienced relatively short civil conflicts, between 1991 and 1992, and between 1989 and 1999, respectively. This led to enormous loss of human and material resources, which left the affected countries at the mercy of external financing to sustain the state. Thus, a number of the countries in the region were forced by circumstance to accumulate more external debt.

The unfavourable skewedness of world trade against developing countries also compounded the debt situation of most WA countries. Since the trade balance of payment of countries must always be balanced, the frequency of balance of payments

deficits of these countries consistently forced them to accumulate external debt, which was required to regulate their trade position. However, the accumulation of external debt could perhaps also be responsible for the unfavourable trade position of these countries. Another external debt driver in WA countries is corruption. The consistent attitude of WA leaders and public office holders to utilize public resources for private use further compounded the resource gap that characterized these countries, thus stimulating external borrowings to finance government development expenditure.

WA countries accumulated huge external debt during the 1970s. From 1970 to 1975, Francophone and non-Francophone countries' external debt grew by an annual average of 27.4% and 18.8%, respectively. In the second half of the decade, the tempo increased as the external debt accumulation increased by higher annual average rates of 45.7% and 30.9%, respectively. However, the rate of accumulation of external debt slowed in the 1980s and 1990s to slightly over 10% and 5% annual averages, respectively. Reflecting the debt relief initiatives of the past one and a half decades, the region witnessed a relatively slight increase in the annual average growth of external debt, with a decline in some periods.

The external debt burden measured by the external debt stock to GNI ratio, which was around 20% for Francophone countries and even less for the non-Francophone countries in the first half of the 1970s, worsened over time. By the second half of the 1980s it averaged over 100%, a situation which further deteriorated in the 1990s and beyond. Considering the ability of the countries to pay with their export earnings, more than six years' export earnings is required to offset the magnitude of the average external debt stock of the Francophone countries in the second half of the 1980s/1990s. In non-Francophone countries, the situation appeared to be less harsh: between three and five years' exports earnings would be required to offset the average stock of their external debt over the same period.

Similarly, with respect to external debt service obligations, the Francophone countries experienced higher rates of annual average growth of between 12.4% and 50.6%, while for non-Francophone countries it was between 10.1% and 49.2% between 1971 and 1985. The average annual rate of growth of the external debt service paid by the Francophone countries dropped to less than 7% between 1986 and 2000, whereas for non-Francophone countries it ranged from 5.1% to 28.3% over the same period. Between 2001 and 2008, the external debt service paid by Francophone countries grew by an annual average of 6%, while in non-Francophone countries it grew by 9.2%. The debt problem of these countries is better appreciated when the growth of external debt service paid is compared to the rate of growth of the countries' exports. For Francophone countries the debt service-export ratio increased from a 12.6% annual average between 1976 and 1980, to a peak of 25% between 1986 and 1990 before dropping to 14.5% between 1996 and 2000. Similarly, this ratio for non-Francophone countries fluctuated between an annual average of 9.7% between 1971 and 1975, and 22.1% between 1986 and 1990.

Recent estimates indicate that compared to other regions, Africa has a larger proportion of private wealth held abroad (Collier et al., 2001). The World Bank (1993) reports that in 1990, capital flight as a share of GDP was 80.3% in SSA. Insight into the magnitude of capital flight from WA countries between 1970 and 1996 can be drawn

from Ndikumana and Boyce (2012). Capital seepage experienced by WA countries over the past decades has been driven largely by high political risk and institutional instability. The region was characterized by political conflicts arising from regime supremacy and a tussle for power. Of the 15 member states of WA, more than 10 experienced political conflicts. Notably, all the states were characterized by frequent change of regimes. According to Collier et al. (2001), this propelled capital flight from the region, as they find that more durable regimes experience significantly less capital flight, while countries prone to civil wars experience higher capital flight.

In the past three decades, at least one country was engaged in civil war at any given time. This has not only discouraged domestic investment, but has also induced capital flight. One essential reflection of the domestic investment climate that is largely accepted in the literature is the quality of institutions in a country. Similar to many developing countries, WA countries are largely characterized by a lack of or weak property rights and other investment-promoting institutions. Thus, the potential for low rates of return within the domestic economy by increasing transaction costs have been indirectly influenced by underdeveloped institutions in the region. Similarly, institutional development improves the domestic investment climate by reducing the likelihood of distortionary macroeconomic policies (Acemoglu et al., 2003). Empirical evidence from studies, such as Lensink et al. (2000); Collier et al. (2001); Le and Zak (2006); and Cerra et al. (2008), has confirmed that healthy institutional development is associated with low capital flight.

The incidence of capital flight appears to be less severe in Francophone countries. The average annual real capital flight from Francophone countries was on the average below US\$327.8 million over the period under discussion (1970–2010). It increased from an initial US\$250.5 million in the first half of the 1970s to US\$657.9 million in the second half, but dropped to US\$157.6 million in the first half of the 1980s. It subsequently rocketed to around US\$472.6 million in the second half of the 1980s, and then slightly dropped to US\$346.6 million in the first half of the 1990s, and decreased further to US\$152.8 million in the second half. The first decade of the 21<sup>st</sup> century saw capital flight from these countries soar to an average of US\$256.6 million. On the other hand, a relatively large amount of capital was estimated to have been transferred abroad by private citizens in non-Francophone countries, running to billions of US Dollars. Capital flight of about US\$635.1 million and US\$2.3 billion occurred in the first and second half of the 1970s, respectively. For the 1980s, Ndikumana and Boyce (2012) estimate annual average real capital flight of around US\$1.8 billion from these countries. This slowed in the first half of the 1990s and significantly further to just US\$29.1 million in the second half of the 1990s. The first decade of the 21<sup>st</sup> century saw a record breaking average real capital flight of more than US\$5 billion.

# 3. Literature review

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## Concepts of external debt and capital flight

External debt is defined as external liabilities, with a contractual obligation to repay principal and/or interest (Bove, 1992). IWGEDS,<sup>8</sup> (1988) defines “gross external debt as the amount at any given time, of disbursed and outstanding contractual liabilities (excluding non-contractual financial instrument) of residents of a country to non-residents to repay principal, with or without interest, or to pay interest with or without principal”. External debt inflows constitute a charge on the country’s future resources in foreign exchange through debt service and principal repayment. Debt servicing of external debt are contractual obligations to be met. Ajayi (1997) identifies internal and external factors as being responsible for the heavy external debt situation of SSA countries. The internal factors, often termed macroeconomic policy errors, were identified and include mismanagement, high budget deficit, wrong exchange rate policies and corruption. Factors such as stagnation in industrial countries, high foreign interest rates, declining terms of trade, war or civil strife, and drought in some countries, were identified as external factors.

Conceptually, there are divergent views on the definition of capital flight in the literature, and this has generated a number of definitions with different meanings. This controversy is partly due to the lack of a precise and universally accepted definition of capital flight in economic theory, and partly because of the way the term is used when referring to developed and developing countries (Ajayi, 1997). Capital outflows from developed countries are referred to as foreign investment, such outflows from developing countries are termed capital flight. Thus, different definitions of capital flight have been proposed. Loosely defined, it is the unreported private accumulation of foreign assets (Eggerstedt et al, 1995).

Considering the motive perspective, Deppler and Williamson (1987) define capital flight as the acquisition or retention of a claim on non-residents motivated by the owner’s concern that the value of his/her assets would be subject to discrete losses or impairment if his/her claims continued to be held domestically. Khan and UI Haque (1987) define capital flight as the difference between total private outflows and the part for which interest income is identified and reported, or as the part of the increase in external claims that yield no recorded investment income.

In spite of the importance of capital flight, its measurement has also remained controversial, resulting in significant differences in estimates. Some of the differences in capital flight estimates can be traced to discrepancies in definitions. A number of measures of capital flight are found in the literature. Murinde et al. (1996) identify four



major methods: residual; Dooley; hot money; and asset or “mirror stock statistics”. Boyce and Ndikumana (2001) and Ajayi (1997) identify accounting for “trade-faking” activities as an additional approach to measuring capital flight. Given the discrepancies among the different proposed methods of measuring capital flight, choosing the appropriate measure remains controversial. This study settles for the definition by Boyce and Ndikumana (2001).

## External debt-capital flight link to economic growth

Arguably, external debt and capital flight affect the economic performance of a country (Ajayi, 2003). Debt and capital flight affect growth mainly through investment. Both debt repayment and capital flight constitute diversions of domestic resources that would have contributed to investment. Given the principle of acceleration, the rate of growth of any economy depends on the country’s investment profile. The broader the investment base, the more the economic growth that will be experienced. Most existing studies examine the effects of external debt and capital flight on growth separately. While a vast number of studies have examined the effect of external debt on growth extensively, only a few have attempted, albeit indirectly, to trace the impact of capital flight on growth (e.g., Ajayi, 2003).

The academic debate on the effects that debt relief instruments may have on the economic growth of debtor countries was stimulated by the various initiatives for providing debt relief for commercial and official debt. The apparently negative impact of high external debt on economic growth constitutes one of the main issues in the debt debate. In the literature, theoretical discussions of the effects of debt on growth can be categorized into three different groups. Pattillo et al. (2011) identify these three theoretical groups as: first group, which relates low, appropriate levels of debt to positive effects on growth. The second group associates high accumulated debt stocks to a negative impact on growth, while the third group relates to the non-linear effect of debt on growth a combination of the first two groups.

The neoclassical theory of growth presupposes that transitional growth is engendered by capital mobility or the ability of a country to borrow and invest. However, the assumption of perfect international capital mobility may be unrealistic. In the second group, instances of high debt accumulation leading to low growth are often tied to debt overhang theories in the literature. According to the debt overhang hypothesis, beyond a certain threshold value the outstanding external debt starts to become a disincentive for the government to carry out economic reforms and to invest in productive activities (Krugman, 1988; Sachs, 1989).

Debt overhang is the presence of an existing “inherited” debt sufficiently large that creditors do not expect with confidence to be repaid (Krugman, 1998). According to Claessens et al. (1996), the debt overhang theory is “based on the premise 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, while investments by domestic and new foreign investors are discouraged”. Models based on these theories foresee debt servicing as an increasing

function of a country's output level, given the probability that future debt will be larger than a country's repayment ability. In this case, new domestic and foreign investments are discouraged as a regime of high marginal tax on returns from investment in the country arises to meet the repayment obligations of the external creditors (Krugman, 1988; Sachs, 1989).

With lower investment occasioned by large debt stocks, the consequence is lower growth. Apart from the effect of debt overhang on growth working through investment channels, another channel may also be through a poorer macroeconomic policy environment. This is likely to affect the efficiency of investment, as governments have less incentive to undertake difficult reforms such as trade liberalization or fiscal adjustment (Pattillo et al, 2011).

The general expectation is that debt servicing of large accumulated debt stocks will be financed with distortionary types of taxation, such as seigniorage and a reduction in productive public investment (Agenor and Montiel, 1996), which may transmit into lower growth through declining efficiency and lower investment volumes (Pattillo et al, 2011). Lower investment volumes and the resulting implication for growth would mainly arise out of private wealth holders' response to engaging in capital flight to safeguard the possible erosion of their assets.

The third strand of theoretical models in the literature, derived from a combination of the preceding two, argues that the nature of the effect of debt on growth is non-linear. The non-linear approach allows for determination of growth maximization debt thresholds. At the early stages, when a country borrows and invests, high growth is generated. Subsequently, at later stage when the debt is being repaid, growth tends to fall. The growth consequence of this latter stage can be sub-divided into two: when debt repayment does not crowd out investment; and when debt overhang sets in. In the former, the fall in growth remains higher relative to a growth scenario under financial autarky (absence of international borrowing and lending), while in the latter, investment and growth will fall more than under financial autarky (Cohen, 1991). In the crowding out effect, a reduction in the current debt service should lead to an increase in current investment for any given level of future indebtedness (Cohen, 1993).

According to Rodrik (1989), capital flight is often associated with low domestic investment and low growth. It is commonly argued that a negative aspect of opening the capital account in a poor country is the capital flight that will occur and the consequent reduction in growth (Tornell and Velasco, 1992). Affirming the negative consequences of capital flight on growth, Ajayi (2003) identifies capital flight as a diversion of domestic savings away from domestic real investment, since any amount of money sent away to foreign countries cannot contribute to domestic investment. He reiterates that monies kept away are also not available for the importation of essential equipment and materials needed for the growth of the domestic industry and economy. Apart from investment denial, the multiplier effects of investment activities are lost, thus slowing down the rate of economic growth. Similarly, capital flight erodes the tax base of the economy, with a negative effect on government revenue. The implication of the tax revenue reduction is a slow pace of infrastructural development, which hampers growth.

## Empirical evidence

The negative effects of high debt on growth are well-supported in the literature. Most of these studies find one or more debt variable to be significantly and negatively correlated with growth. Although the debt overhang hypothesis may seem attractive as an explanation for the observed combination of reduced growth and investment, together with increased negative net resources transfers, empirical evidence on the existence of a debt overhang has been disputable.

Using both private and total debts as a measure of debt overhang, Borenzstein (1990) finds an adverse effect of private investment on the Philippines, and by implication slow growth. In a related study on Cameroon, Mbanga and Sikod (2001) establish a debt overhang effect on private investment and a crowding out effect on public investments. Similarly for SSA countries, Iyoha (1999) concludes that a heavy debt burden acts to reduce investment through debt overhang and the “crowding out” effect. Degefe (1992) also finds a negative effect of external debt on growth. Sachs (1990) affirms that debt servicing is extremely inimical to economic growth in HIPC, and is responsible for the repeated failure of structural adjustment to restore growth. While Cohen (1993) also contends that the actual debt servicing “crowds out” investment, he concludes that for LDCs in the 1980s, the actual flows of net transfers rather than the level of stock of debt appears to explain the slowdown of investment, and by extension growth.

Only a few studies have attempted to distinguish between the debt overhang effect (burden of future debt servicing) and the crowding out effect (current consequence on investment).<sup>9</sup> Using a cross-section regression for 99 developing countries across SSA, Latin America, Asia and the Middle East, Elbadawi et al (1997) affirm a debt overhang effect on economic growth. For indebtedness in SSA, they identify three direct channels through which it negatively affects growth: current debt inflows to GDP ratio (meant to promote growth), accumulated debt stock (to capture debt overhang), and debt service to GDP ratio (to capture crowding out). Debt accumulation was found to prevent growth, and debt stock to stimulate growth. Ajayi (2003) finds the existence of debt overhang and crowding-out’s effects on growth. He identifies two channels through which external debt works against growth: accumulated debt stock measured by the debt-export ratio (debt overhang effect), and the debt-service to GDP ratio (to capture the crowding out effect).

Notably, only a few studies have examined the theoretical model of the non-linear effect of debt on growth (Oleksandr, 2003; Maghyereh et al, 2002; Pattillo et al, 2011; Cohen, 1997; and Elbadawi et al, 1997). Theoretical models expect reasonable levels of current debt inflow to have a positive effect on growth. Cohen (1991) shows that lower debt levels are associated with high growth in models with repudiation risk rather than financial risk. Extending Uzawa-Lucas’ model, Eaton (1993) shows that low long-run growth is generated by an increase in the cost of foreign capital that reduces external borrowing.

The practical experience of the HIPC appears to be consistent with the theoretical propositions that low and tolerable levels of debt positively affect growth, while growth is hindered by large accumulated debt stock (Pattillo et al, 2011). Various studies have found different growth maximum debt thresholds for different groups of countries,

ranging from between 30% and 115% of exports, to 5% and 97% of GDP (Pattillo et al, 2011; Elbadawi et al, 1997; Cohen, 1997; Oleksandr, 2003; Maghyereh et al, 2002; and Clement et al., 2005). Edsel (2006) argues that capital flight resulted in the hollowing out (depression) of the Philippine economy, a process underpinned by the neoliberal policies. Ajayi (2003) also concludes that capital flight negatively affects investment. The contribution of this study is therefore from the perspective that no study has combined external debt and capital flight in investigating the variation in economic growth of the WA region.

# 4. Methodology

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## Theoretical Framework

The theoretical framework for this study is premised on the Solow (neoclassical) Growth Model. Using a Cobb-Douglas production function of the form:

$$Q = A K^\alpha L^{1-\alpha} \dots\dots\dots(1)$$

where Q is output, K is capital, L is labour, and A is a parameter meant to capture the technological state or total factor productivity (TFP), and  $0 < \alpha < 1$ . The function is assumed to exhibit constant return to scale and smooth substitutability, varying continuously with K and L.

Considering the capital-labour ratio expression of the function, the marginal product of capital-labour ratio is given as:

$$\frac{dQ}{dK} = \alpha A (k)^{-(1-\alpha)} \dots\dots\dots(2)$$

where  $k = K/L$ . This expression describes the rate of return on capital, negatively related to the capital-labour ratio but positively related to the TFP variable. The latter is a production shift factor representing a collection of measures of the state of technology, the adequacy or otherwise of institutions, conduciveness of the economic environment for productive activities, and others. Many studies in the literature, such as those by Hall and Jones (1999), Klenow and Rodriguez-Clare (1997), and Gournichas and Jeanne (2006), emphasize the importance of TFP on growth.

Given that output is negatively related to the marginal product of capital-labour ratio, the growth rate of output is dependent on the growth rate of capital per unit of labour, endogenously determined within the model. Notably, the perception of investors who are at the heart of capital formation about the conduciveness or effectiveness of institutions and the implication for productive economic activity as well as the state of the technology, influence their investment portfolio decisions.

This leads to the capital accumulation process, which describes how capital stock evolves over time. The capital accumulation equations can therefore be expressed as dependent on the proportion of output saved and the rate of depreciation of capital. Given that a proportion of output saved is invested in the economy, the macroeconomic equilibrium condition for capital accumulation can be written as:

$$K^* = sY - \delta K \dots\dots\dots(3)$$

In this equation “s” is the savings rate: a fraction of every unit of output is saved and  $\delta$  is the depreciation rate: a fraction of every unit of capital that is depreciated. Both “s” and “ $\delta$ ” are exogenous to the model. The intuition for this equation lies in the national income accounting identity for a closed economy, such that the sum of private and government savings is equal to the gross investment in the economy.

Discounting the next period capital stock in the current period for depreciation in addition to current investment, the aggregate capital growth is as stated in Equation 4:

$$K_{t+1} = (1 - \delta)K_t + I_t \dots\dots\dots(4)$$

With savings expressed as a function of output, and savings = investment, this equation becomes

$$K_{t+1} = (1 - \delta)K_t + sAL_t^\alpha L_t^{1-\alpha} \dots\dots\dots(5)$$

Assuming labour growth rate to be “n”, the capital-labour growth ratio becomes:

$$k_{t+1} = \left(\frac{1 - \delta}{1 + n}\right)k_t + \frac{sA}{1 + n}k_t^\alpha \dots\dots\dots(6)$$

The long-run steady state growth of the capital output ratio can be derived as:

$$k_{t+1}^* = A\left(\frac{sA}{n + \delta}\right)^{1/(1-\alpha)} \dots\dots\dots(7)$$

The steady state level of real income and investment can be deduced respectively as:

$$y^* = A(k^*)^\alpha = A\left(\frac{sA}{n + \delta}\right)^{\alpha/(1-\alpha)} \dots\dots\dots(8)$$

and

$$i^* = sf(k) = sA(k^*)^\alpha = sA\left(\frac{sA}{n + \delta}\right)^{\alpha/(1-\alpha)} \dots\dots\dots(9)$$

The steady state capital growth allows capital (K) to grow to accompany the effective unit of labour and to cover the depreciation of old capital. Thus, the required investment rate becomes:

$$i^r = (n + \delta)k^* \dots\dots\dots(10)$$

Therefore, the fundamental Solowian differential equation is given as:

$$dk / dt = sA(k^*)^\alpha - (n + \delta)k \dots\dots\dots(11)$$

Given that the mechanism through which capital flight and external debt affects growth is investment, a slight modification is inserted in the model to account for capital flight, external debt flows and external debt servicing. This is consistent with Fosu’s (1996) argument that debt can additionally influence economic growth via its effect on the productivity of investment, and by leading to severely compressed budgets and the fiscal balance (i.e., fiscal deficit, where a positive sign indicates a deficit and a negative sign indicates a surplus). Equation 11 is therefore modified to become:

$$\dot{k} / d = s (k^*)^\alpha - (n + \delta)k - (c + v - d) \dots\dots\dots 12$$

where c is capital flight growth rate, v is external debt servicing rate, and d is external debt flow rate. While both capital flight and debt servicing adversely affect the rate of capital formation, the inflow of external debt tends to increase resources available for capital formation. Equation 12 represents the investment equation incorporating the debt and capital flight variables as determinants of variations in investment.

Theoretically, economic growth is a function of investment growth, as suggested in the steady state Equation 8. Our theoretical proposition supports the direct link of capital flight and external debt to economic growth, as well as via the investment and fiscal balance variables as the mechanism through which they influence the growth pattern.

## Empirical specification

Given the linear and non-linear effect of the debt variable, the linear and non-linear specifications of the growth equation, as well as the investment and fiscal balance equations were investigated as the plausible transmission channels through which capital flight and external debt affect growth. In order to facilitate the determination of the external debt threshold, the direct implication of external debt on economic growth was investigated by directly including the debt and capital flight variables in the growth equation. This is done separately for the linear and non-linear specifications, in which the square of external debt is included in the non-linear specification. The estimable equations for linear specifications for investment, fiscal balance and growth are represented by Equations 13a, 13b, and 13c, respectively, while the estimable equations for non-linear specifications for investment, fiscal balance and growth are represented by Equations 14a, 14b, and 14c, respectively.

Drawing from the exposition in the literature review, it is well-established that capital flight and external debt affect investment as well as the fiscal balance of

government. The burden of debt service can lead to increased tax efforts on the part of the government, as well as possible crowding out of public investment. The literature adequately establishes the possible ambiguity of the impact of debt on growth, given certain conditions. It is theoretically supported that debt initially enhances growth up to a particular threshold, beyond which further accumulation of debt starts to impact negatively on growth. Tracing this impact on the investment, fiscal balance and growth equations the linear and non-linear relationship with respect to external debt is investigated. For the growth model, the econometric growth model in Pattillo et al. (2011) is adapted. While the impact of capital flight on growth was not included in Pattillo et al. (2011), both the crowding out and debt overhang hypotheses were investigated. It is argued that the consequence of capital flight on growth is similar to that of the crowding out concept in debt-growth studies. The linear and non-linear growth equations are therefore specified as in Equations 13c and 14c, respectively.

### Linear specification

$$Invt_{it} = \pi_0 + \pi_1 CAF_{it} + \pi_2 DTS_{it} + \pi_3 EDT_{it} + \pi_4 IR_{it} + \pi_5 y_{it} + \varepsilon_{it} \dots (13a)$$

$$FIB_{it} = \tau_0 + \tau_1 CAF_{it} + \tau_2 DTS_{it} + \tau_3 EDT_{it} + \tau_4 y_{it} + \varepsilon_{it} \dots (13b)$$

$$y_{it} = \lambda_0 + \lambda_1 INVT_{it} + \lambda_2 FIB_{it} + \lambda_3 CAF_{it} + \lambda_4 DTS_{it} + \lambda_5 EDT_{it} + \lambda_6 X_{it} + \mu_{it} \dots (13c)$$

where  $Invt_{it}$  stands for aggregate investment/GDP, while  $FIB_{it}$  is primary fiscal balance to GDP. An increase in fiscal balance implies a worsening of the deficit. CAF represents capital flight to GDP, while EDT and DTS are debt stock/GDP and debt servicing/GDP, respectively. IR is interest rate, while  $y$  represents per capita growth, and  $X_{it}$  is the set of control variables. The set of control variables includes: initial income per capita, population growth rate, external shocks measured by terms of trade growth. Other variables are macroeconomic stability (proxy by inflation rate), and transferred knowledge and efficiency gains from interaction with the rest of the world measured by degree of openness (export plus imports over GDP). To capture the shift effect of the state of institutions in the region, and the general conduciveness of the economic environment, a polity variable measuring the political stability in the countries of the region is included. Schneider (2003) emphasizes the fact that the structure of political institutions can be a source of distortion and instability. The influence of weak political institutions on economic institutions and their outcomes are further sources of instability. Below, the non-linear functions for investment, fiscal balance, and economic growth are specified:

### Non-linear specification

$$Invt_{it} = \pi_0 + \pi_1 CAF_{it} + \pi_2 DTS_{it} + \pi_3 EDT_{it} + \pi_4 EDT_{it}^2 + \pi_5 IR_{it} + \pi_6 y_{it} + \varepsilon_{it} \dots (14a)$$

$$FIB_{it} = \tau_0 + \tau_1 CAF_{it} + \tau_2 DTS_{it} + \tau_3 EDT_{it} + \tau_4 EDT_{it}^2 + \tau_5 y_{it} + \varepsilon_{it} \dots (14b)$$

$$y_{it} = \lambda_0 + \lambda_1 INVT_{it} + \lambda_2 FIB_{it} + \lambda_3 CAF_{it} + \lambda_4 DTS_{it} + \lambda_5 EDT_{it} + \lambda_6 EDT_{it}^2 + \lambda_7 X_{it} + \mu_{it} \dots (14c)$$

where the variables are as earlier defined, and the square of the debt variable ( $EDT^2$ ) is included.



## Expected results

For the set of identified control variables, theory proposes that they have the following signs with respect to the growth variable: initial income is expected to have a negative sign. Also, the population growth rate and inflation rate variables are expected to have a negative coefficient, while the coefficients of other variables – investment, terms of trade, and fiscal balance – are expected to be positive. Both capital flight and debt service are a priori expected to retard growth. The coefficient of capital flight variable is expected to be negative on investment and on growth, while the crowding out effect is expected for the debt servicing variable. As for the debt variable, the coefficient can either be positive or negative, depending on the level of debt accumulated. This suggests the inadequacy of the linear specification, and the likely existence of a non-linear relationship between debt and growth as specified in Equation 14c. Both investment and fiscal balance are expected to be positively related to growth, whereas the interest rate will, a priori, negatively affect investment.

## 5. Estimation techniques and results

For estimation efficiency, both fixed effect (FE) and GMM estimates were applied to show how results differ when econometric issues such as endogeneity and dynamic panel biases are taken into account. GMM has been recognized as the most adequate in accounting for endogeneity problems. Both FE and GMM results are presented in Tables 2 and 3, for linear and non-linear estimates, respectively. Panel GMM does not report the R-square, however, the Wald test is reported with the null hypothesis that the explanatory variables are not jointly significant. All estimations reported the Wald test to be statistically significant, hence we conclude that the explanatory variables are jointly significant. We made use of the VEC (robust standard error) in estimating the panel GMM equations. The Sagan test is not computed when the robust standard error is used. Specifying the VCE (robust) produces an estimated VCE that is robust to heteroskedasticity (Drukker, 2008). As indicated in the proposed estimation technique, both linear and non-linear specifications of investment,<sup>10</sup> fiscal balance and growth equations with respect to the external debt variable were estimated. A summary of the data used in this study is presented in Tables A1 and A2 in the Appendix.

**Table 2: Linear specification estimates of investment, fiscal balance and growth**

Variables	Investment		Fiscal balance		Economic growth	
	Fixed effect	GMM	Fixed effect	GMM	Fixed effect	GMM
<b>Constant</b>	0.015* (1.72)	0.025*** (4.34)	0.014*** (4.64)	0.010*** (3.14)	0.021*** (6.44)	0.020*** (7.27)
<b>RGDPG</b>	0.464*** (2.71)					
<b>RGDPG<sub>t-1</sub></b>	0.066 (1.14)	0.065*** (4.43)	-1.215 (0.99)	-1.220** (2.15)	-0.068** (2.13)	-0.074*** (4.33)
<b>INVT<sub>t-1</sub></b>	0.134*** (14.14)	0.216*** (4.96)			0.105* (1.70)	0.104* (1.84)
<b>FIB</b>					-0.041* (1.89)	-0.043* (1.86)
<b>FIB<sub>t-1</sub></b>			0.318*** (3.50)	0.325* (1.85)		
<b>EDT<sub>t-1</sub></b>	-0.022*** (3.49)	-0.018*** (5.06)	-0.032* (1.81)	-0.029* (1.72)	-0.012* (1.93)	-0.019* (2.02)
<b>CAF</b>	-0.094** (2.19)	-0.096** (2.11)	0.009** (2.28)	0.010*** (3.15)	-0.012* (1.98)	-0.009** (2.17)

*continued next page*

Table 2 continued

<b>TDS</b>	-0.031** (2.22)	-0.033 (2.11)	0.114** (2.01)	0.112* (1.80)	-0.091 (0.81)	-0.112* (1.84)
<b>IR</b>	-0.144 (0.86)	-0.136 (0.66)				
<b>EXR</b>					0.016** (2.26)	0.018*** (2.56)
<b>INF</b>					-0.067* (1.95)	-0.071* (1.73)
<b>OPN</b>					0.073** (2.06)	0.072* (1.66)
<b>TOT</b>					0.002*** (3.80)	0.002*** (4.88)
<b>POG</b>					-7.181** (1.97)	-7.401 (0.85)
<b>POLITY<sub>t-1</sub></b>					0.002** (2.24)	0.003*** (3.27)
<b>Arellano-Bond AR(2) test p-value</b>		0.19		0.22		0.37
<b>Hansen J-statistics (p-value)</b>		0.23		0.25		0.31
<b>R<sup>2</sup></b>	0.50		0.54		0.53	

Note: \*\*\* 1%; \*\* 5%; \* 10%

**Table 3: Non-linear specification estimates of investment, fiscal balance and growth**

Variables	Investment		Fiscal balance		Economic growth	
	Fixed effect	GMM	Fixed effect	GMM	Fixed effect	GMM
<b>Constant</b>	0.053*** (4.96)	0.060*** (4.44)	0.021*** (4.70)	0.027** (1.98)	0.126*** (10.10)	0.137*** (6.10)
<b>RGDPG<sub>t-1</sub></b>	0.057** (2.09)	0.048** (1.95)	-0.018 (0.56)	-0.021* (1.76)	0.027* (1.78)	0.034* (1.81)
<b>INVT<sub>t-1</sub></b>	0.544*** (4.69)	0.555*** (5.27)			0.123*** (8.71)	0.195** (2.06)
<b>FIB</b>					-0.017** (2.21)	-0.083*** (5.65)
<b>FIB<sub>t-1</sub></b>			0.335* (1.76)	0.341* (1.81)		
<b>EDT<sub>t-1</sub></b>	0.044** (2.16)	0.032** (2.38)	0.012 (1.08)	-0.022*** (3.53)	-0.021 (0.98)	0.038** (2.53)
<b>EDTSQ</b>	-0.012** (2.06)	-0.009*** (3.43)	-0.011* (1.79)	-0.012** (2.06)	-0.011* (2.17)	-0.020** (2.46)
<b>CAF</b>	-0.151* (1.55)	-0.091* (1.73)	-0.021 (0.68)	-0.014*** (2.94)	-0.088* (1.81)	-0.049*** (2.34)
<b>TDS</b>	-0.028** (1.91)	-0.021** (2.01)	0.027 (1.17)	0.025* (1.75)	-0.067* (1.82)	-0.085** (2.26)
<b>IR</b>	-0.182 (0.54)	-0.168 (0.12)				

continued next page

Table 3 continued

EXR					0.028* (1.94)	0.036*** (2.56)
INF					-0.185* (1.79)	-0.101* (1.73)
OPN					0.044 (1.00)	0.034 (1.04)
TOT					0.001** (2.19)	0.002*** (4.88)
POG					<u>-7.425*</u> <u>(1.70)</u>	<u>-7.150</u> <u>(0.27)</u>
POLITY <sub>t-1</sub>					0.205 (1.55)	<u>0.001</u> <u>(1.21)</u>
Arellano-Bond AR(2) test p-value		0.20		0.18		0.33
Hansen J-statistics (p-value)		0.22		0.21		0.29
R <sup>2</sup>	0.49		0.51		0.53	

Note: \*\*\* 1%; \*\* 5%; \* 10%

## Investment and fiscal balance estimates results

In the second to fifth columns of tables 2 and 3 are the estimated results from the investment and fiscal balance equations for the linear and non-linear specifications, respectively. The investment equation is stated as having its roots in neoclassical optimization theory. We allow for the potential existence of both a “debt overhang” and a “crowding out” effect of external debt on growth through the effect on investment, in addition to the possible existence of an “investment accelerator” effect. In the specification, the investment-real GDP ratio is hypothesized to depend negatively on interest rate, positively on real GDP growth and on the external debt stock-GDP ratio, and negatively on the ratio of external debt service to GDP, and capital flight to GDP.

With respect to the coefficients, the hypothesized signs apply to most variables. Generally, the debt and capital flight variables are independently significant at mostly 1% and 10% levels. To allow for the identification of the distinct effects of debt stocks and flows, we included a lagged debt variable in the linear specification, while the square is added in the non-linear specification. As would be expected, one-year lag debt stock to RGDP ( $EDT_{t-1}$ ) significantly stimulates investment. For the linear specification, a percentage increase in the lagged external debt stock results in a 0.18–0.22% point increase in investment, while for the non-linear specification a lagged effect of about a 0.32–0.41% point increase in investment is associated with a percentage increase in debt stock. The positive effect of the change in external debt stock is suggestive of the fact that a fresh inflow of debt stimulates growth through an increase in investment volume.

While foreign borrowing can help ameliorate a shortage of resources, its ability

to stimulate investment and therefore promote growth is dependent on it being used to finance productive investment activities. Although changes in debt stock stimulate investment, over-reliance on external debt deters investment as more resources have to be used to repay and service the debt. The square of the debt variable turned out to be significant in the non-linear specification, and with a negative coefficient, suggesting the existence of debt overhang, which retards the growth process through a declining effect on investment.

The debt services variable has the expected sign of being negative and statistically significant at 10%. This is suggestive of a “crowding out” effect on domestic investment, given that resources that would have been devoted to productive investment are diverted to pay interest on relatively large amounts of external debt. With the negative sign as postulated, the effect is to depress the level of investment. The magnitude effects of debt service on investment remain relatively the same across the different specification and estimation techniques.

A percentage increase in the debt service burden yields between a 0.21% and 0.31% point decline in the investment-GDP level. The debt stock and debt service variables have the correct sign and are highly significant. These results demonstrate clear evidence of the existence of “debt overhang” and “crowding out” effects. This result is consistent with Elbadawi, et al. (1997), Ajayi (1997), Iyoha (1999), Mbanga and Sikod (2001), and Were (2001).

The contemporaneous values of the capital flight-GDP ratio (CAF) have the expected signs and exert a significant impact on investment. This suggests that preference for portfolio choice abroad is an important determinant of investment. Capital flight tends to send a signal of a risk-laden economy to foreign private investors, thereby leading to a decline in private capital flows. As can be seen from the results, the coefficients for CAF suggest that a percentage increase in capital flight generates a decline in investment of around 0.9%. This is consistent with the conclusion by Schneider (2003). As expected, the interest rate variable has a negative sign implying that high interest rates discourage investment. However, the coefficient of the variable is statistically insignificant. The accelerator effect is captured by the coefficient of the RGDPG term and, as expected, it has the correct sign and is significant for the various estimated regressions. The lag values of the growth rate of real GDP ( $RGDPG_{t-1}$ ) passed the two-tailed test significance at the conventional 5% level, except for the FE non-linear estimate. Thus, there is strong evidence of an “investment accelerator” effect, whose sign and statistical significance suggest that growth stimulates investment.

Our fiscal balance variable is based on primary balance, which excludes the debt effect on government’s fiscal position. The linear and non-linear estimates of fiscal balance with respect to the external debt variable were estimated. The debt variables are significant with the expected signs. Changes in external debt stimulate fiscal balance in the government’s financial position. One period lag of the external debt variable has a negative influence on the fiscal balance. The reported coefficients for external debt suggest that a percentage increase in external debt-GDP yields a worsening fiscal balance of between 0.2 and 0.3%. This is consistent with Sachs’s (1990) conclusion that high debt tends to undermine macroeconomic stability by increasing budget deficits. This is further affirmed by the positive coefficients of debt service, as expected, which

is indicative of the incremental effect on government expenditure that creates a further gap between government revenue and expenditure. A percentage increase in the debt service obligation results in around a 0.14–0.27% worsening of the fiscal deficit position of governments.

The capital flight variable is generally statistically significant between 1% and 10% and has the expected sign of having a positive influence on the fiscal balance. The sign of the capital flight variable indicates that fiscal deficit is induced by capital flight. The results suggest that a percentage increase in the capital flight magnitude prompts an increase of between 0.01 and 0.2 points in the fiscal balance. The domestic tax base is eroded by the loss of capital through capital flight, which has adverse implications for government's financial position. As expected, the estimates show that economic growth reduces fiscal balance. However, the variable is not significant in the fixed effect regressions.

## Economic growth estimation results

The real GDP growth equations estimates are shown, where the debt and capital flight variables are directly included for the corresponding linear and non-linear specifications in the last two columns of Tables 2 and 3, respectively. Other growth control variables, such as macroeconomic stability: exchange rate and inflation rate; openness of the economy, population growth, terms of trade, and a measure of political stability were included. The effect of investment is statistically stronger than the effect of fiscal balance on growth. This is not surprising, as the fiscal deficit may either positively or negatively affect economic growth.

The statistical significance of the debt and capital flight variables supports the hypothesis that these variables do influence the economic growth process. In the linear growth specification, the external debt variable is negative and statistically significant, which is suggestive of the fact that debt accumulation tends to retard economic growth. On average, a percentage point increase in the initial debt-to-GDP ratio is associated with a slowdown in annual real per capita GDP growth of between 0.12% and 0.19% per year. There is evidence of nonlinearity, with high levels of debt having a significant negative effect on growth. In the non-linear estimation, the signs of the coefficient of external debt, which are statistically significant, turn out to be positive, while the debt square variable is negative. This confirms the initial positive influence of debt accumulation on growth, and the existence of the debt overhang phenomenon in the economic growth experience of the sample countries.

A rise in the investment variable (one-year lag) has a positive effect on growth, as would be expected, and is highly significant. In line with the accelerator principle, growth in investment facilitates faster economic growth. The one-year lag values of the investment variable positively affected growth, suggesting that investment stimulates growth. A percentage rise in previous period investment ( $INVT_{t-1}$ ) leads to an increase of between 0.11% and 0.21% in the rate of economic growth.

The stimulating effect of fiscal balance on growth is not supported by the results, as indicated by the negative and statistically significant sign of the coefficient of contemporaneous values of the fiscal balance (FIB). This is contrary to the a priori

expectation of the stimulus effect of extra government spending on economic growth. This reaffirms the often non-productive or non-growth-contributing spending of governments in less developed countries. Also, the tendency towards corrupt practices by government officials through which public funds are continuously siphoned abroad (capital flight) lead to a recurring fiscal balance with marginal or no effect on infrastructural development that is expected to promote growth in the economy. The absence of such necessary infrastructure required for productive activities in the economy tends to reduce the growth rate.

The other control variables have the expected a priori signs and are mostly significant. The sign of the exchange rate variable is reported as being positive and significant, which implies that the strength of the local currency has implications for growth. The devaluation of a domestic currency tends to stimulate foreign demand for domestic goods and generates a growth response from the economy. In the literature, it is shown that inflation may stimulate growth at low and containable levels, but that it can also impact negatively on growth at high levels. The results show that the inflation rate (INF) slows economic growth, but remains statistically insignificant. This implies that the expectation of a persistently high inflation rate by economic agents in the current period tends to slow down output.

Terms of trade and openness of the economy (current and lagged) values have positive effects on economic growth. This implies that economic growth is promoted by favourable terms of trade and more economic interaction with the rest of the world. Population growth that is used as a measure of the labour force is generally reported with negative coefficients, but is not significant in GMM estimates. The regression results indicate that political stability enhances economic growth. The lag values of the political stability variable are positive and significantly different from zero. The past state of the political atmosphere has implications for the depth of economic activities that can take place in a year. The more stable politically, the more growth a country is likely to experience.

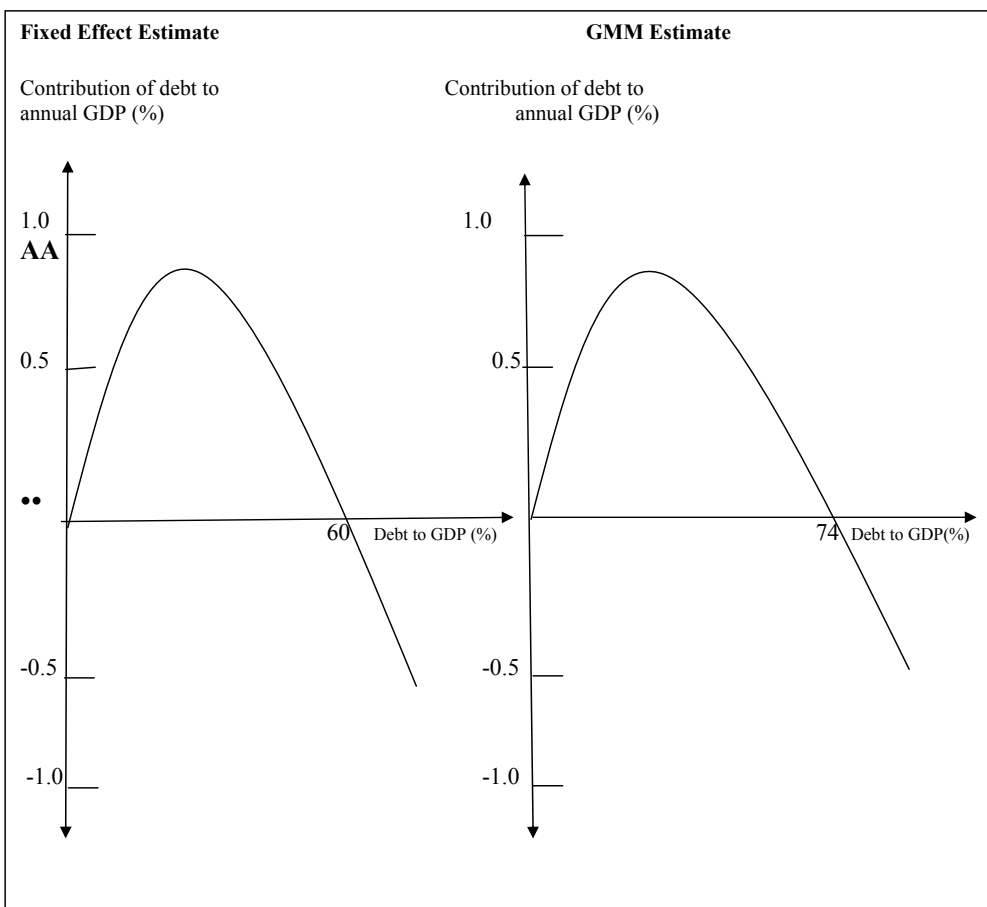
## Debt threshold

Based on the coefficients of the debt and debt square variables, the debt threshold for economic growth was calculated. Drawing from the turning point calculation of Pattillo et al (2011), the debt turning point was also calculated. The level at which the marginal impact of external debt on growth becomes negative is calculated for the FE and GMM estimates of the quadratic specification. The turning points of growth with respect to external debt seem to be between 60% and 74% of GDP. This implies that, on average, the marginal impact of debt on growth becomes negative for any ratio of debt stock to GDP exceeding 74%. These threshold results are not entirely out of sync with the literature. While Pattillo et al (2002, 2011) obtained a threshold of between 35% and 40%, Checherita and Rother (2010) obtained a threshold of government debt to GDP of 90%–100%. Greenidge et al. (2012) concluded that as debt rises beyond 30% of GDP, the effects on economic growth diminish rapidly, and with debt levels reaching 55%–56% of GDP, the growth impact switches from positive to negative. Also, Clement (2005) shows that external debt slows growth only after its face value

reaches a threshold level estimated to be about 50% of GDP. These variations may not be unconnected to the differences in sample of countries used in these studies.

The considerable variation implies that the precision of the turning point is not a straightforward matter. The negative impact of debt on growth beyond the threshold in the GMM is much greater than the impact estimated from the FE regressions. This study’s results suggest that imposing a linear specification could be misleading. Below is a graphical representation of the turning points derived from the fixed effect estimates. This indicates the threshold for the marginal impact of debt is regarded as the growth-maximizing level of external debt.

**Figure 1: Stylized graphical shape of the non-linear relation between debt and growth**





## 6. Conclusion

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This study investigated how indebtedness and capital flight have affected growth in West African countries directly and via investment and fiscal balance mechanisms. This was approached using a standard growth framework which included debt and capital flight indicators. Two econometric specifications (linear and non-linear) were used to investigate the random and fixed effects estimates on the relationship between debt and growth. The study employed two different estimation techniques (fixed effects and GMM) to take advantage of estimation efficiency in the presence of endogeneity problems. A separate estimate was done for the growth equations as influenced by debt and capital flight variables through the investment and fiscal balance mechanisms, and as directly influencing growth. Data from 14 WA countries from 1970 to 2008 were used.

The hypothesis that the effect of external debt and capital flight on growth is transmitted through changes in the investment and fiscal balance variables was tested and found to be well-supported by the results. The results from different estimation techniques (fixed effects and GMM) affirmed that external debt and capital flight directly affect growth, and that investment and fiscal balance are veritable mechanisms through which they have an impact on growth. All the debt variables and the capital flight variable had the expected signs and were statistically significant in the investment and fiscal balance estimates, as well as in growth estimates. The existence of the debt overhang and crowding out hypotheses were confirmed in the study.

The results revealed that debt appears to have a non-linear effect on growth. The debt overhang hypothesis, as affirmed by the study's results, established the existence of a threshold beyond which debt negatively contributes to growth. The average impact of debt on per capita growth seemed to become negative for debt levels above 60% to 74% of GDP. Thus, an increase in debt beyond this threshold yields a negative marginal contribution to investment and growth. This result implied that imposing a linear specification could be misleading. In conclusion, there is a pressing need to take measures to not only stabilize external debts but to place them on a downward trajectory in the future.

Other control variables such as openness, terms of trade, inflation, and the exchange rate have mixed effect on growth. The interest rate variable turned out to be correctly signed in the investment estimates, but was found to be insignificant.

# Notes

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1. Cape Verde and Liberia were excluded from the analysis due to lack of data.
2. They are: Benin, Burkina Faso, Cape Verde, Côte d'Ivoire, Gambia, Ghana, Guinea, Guinea-Bissau, Liberia, Mali, Mauritania, Niger, Nigeria, Senegal, Sierra Leone and Togo.
3. Benin, Burkina Faso, Côte d'Ivoire, Guinea Bissau, Mali, Mauritania, Niger, Senegal, and Togo.
4. Of the 15 member countries of ECOWAS, only Nigeria and Cape Verde are not included, even though Nigeria has also benefited from the debt relief initiatives. Mauritania is in West Africa but not a member of the ECOWAS.
5. These countries are Benin, Burkina Faso, Ghana, Mali, Mauritania, Niger, Senegal and Sierra Leone.
6. The countries are The Gambia, Guinea and Guinea-Bissau.
7. The countries at present are Côte d'Ivoire, Liberia and Togo.
8. International World Group on External Debt Statistics.
9. Pattillo et al (2002); Elbadawi et al (1997); and Ajayi (2003).
10. Due to the non-availability of data, it was not possible to consider private investment and public investment separately.

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# Appendix

**Table A1: Country means of regression variables**

	Invt (% of RGDP)	RGDP (% growth)	CAF (% of GDP)	FIB (% of GDP)	EDT (% of GDP)	TDS (% of GDP)	IR (%)	EXR (Curr/\$)	OPN (% of GDP)	TOT
Benin	11.6	3.5	3.3	-4.4	53.7	1.6	7.4	392.1	46.1	-1.5
Burkina Faso	12.1	3.8	3.5	-2.1	30.8	1.2	7.8	392.1	34.8	-46.9
Cote D'Ivoire	7.5	2.6	1.3	-3.9	103.8	9.5	7.8	392.1	72.3	-857.3
Gambia	8.8	4.1	-1.8	-3.8	93.0	5.5	12.4	8.7	102.4	49.8
Ghana	9.5	3.0	1.6	-4.1	60.2	4.3	20.9	1890.7	51.9	-27.5
Guinea	4.2	3.8	0.5	-3.8	74.2	3.7	14.7	757.4	54.3	-7.6
Guinea Bissau	23.1	2.3	91.6	-14.8	213.1	4.5	28.8	392.1	121.4	-15.5
Mali	8.4	3.6	0.8	-4.4	84.9	2.3	7.7	392.1	51.0	-48.0
Mauritania	17.0	2.7	7.5	-1.2	147.4	7.9	7.4	114.8	100.4	-66.7
Niger	10.0	1.7	-13.9	-3.7	56.0	3.5	7.8	392.1	43.7	-180.7
Nigeria	10.1	4.1	6.4	-7.1	176.7	77.3	11.1	30.9	58.9	15063.5
Senegal	5.1	3.2	2.1	-1.2	61.8	5.0	7.8	392.1	68.3	-97.1
Sierra Leone	5.9	2.0	3.5	-7.7	109.5	4.4	10.0	685.9	48.5	-3234.4
Togo	17.5	2.7	<b>7.6</b>	<b>-4.8</b>	<b>85.0</b>	<b>4.5</b>	<b>7.8</b>	<b>392.1</b>	<b>87.4</b>	<b>-42.3</b>

**Table A2: Country means of currency composition of West African Countries' long-term external debt (1970–2008)**

	Benin	Burkina Faso	Côte D'Ivoire	Gambia	Ghana	Guinea	Guinea Bissau	Mali	Mauritania	Niger	Nigeria	Senegal	Sierra Leone	Togo
Deutsche Mark (%)	1.2	4.5	4.2	1.3	8.0	2.5	0.2	2.0	1.4	3.4	9.8	5.8	5.9	12.7
Euro (%)	1.5	0.6	7.1	0.8	0.8	1.4	1.9	2.7	1.0	2.7	3.4	2.7	2.3	2.9
French Franc (%)	20.1	22.0	26.7	2.2	1.7	7.4	2.8	20.0	12.3	39.7	4.5	22.7	3.5	12.9
Japanese Yen (%)	0.7	0.0	0.7	0.0	5.0	1.4	0.0	0.9	1.4	1.0	6.5	1.6	4.4	2.2
Multiple currencies (%)	7.7	11.7	13.0	13.5	7.8	7.4	17.3	10.8	3.3	0.4	18.7	7.9	6.4	4.7
Pound Sterling (%)	0.6	2.4	0.7	25.7	7.7	2.1	0.0	9.3	0.3	0.7	10.5	0.2	5.6	3.5
SDR (%)	1.5	2.1	0.3	0.3	1.2	0.7	0.0	0.3	1.7	2.0	0.2	1.0	4.8	0.6
Swiss Franc (%)	0.2	0.0	2.3	0.5	0.1	0.4	6.0	3.8	0.1	0.1	0.7	0.4	4.3	7.3
US Dollars (%)	36.1	36.8	33.3	33.1	51.9	37.1	29.5	19.4	39.7	28.2	38.3	33.3	42.9	34.4
All other currencies (%)	30.5	19.9	11.9	24.6	15.7	39.7	18.6	30.7	39.0	21.9	7.4	24.5	20.1	18.8

1 The figures include estimates from eight Francophone countries: Benin, Burkina Faso, Côte d'Ivoire, Mali, Mauritania, Niger, Senegal and Togo.

2 The figures include estimates from four non-Francophone countries: Ghana, Guinea, Nigeria and Sierra Leone.



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