

**THE ROLE OF EXTERNAL DEBT ON THE ECONOMIC GROWTH OF  
THE GAMBIA**

**By**

**Aliou Kassama**

**THESIS**

Submitted to

KDI School of Public Policy and Management

in partial fulfillment of the requirements

for the degree of

**MASTERS OF DEVELOPMENT POLICY**

2016

**THE ROLE OF EXTERNAL DEBT ON THE ECONOMIC GROWTH OF  
THE GAMBIA**

**By**

**Aliou Kassama**

**THESIS**

Submitted to

KDI School of Public Policy and Management

in partial fulfillment of the requirements

for the degree of

**MASTERS OF DEVELOPMENT POLICY**

2016

Professor Hun Joo PARK

**THE ROLE OF EXTERNAL DEBT ON THE ECONOMIC GROWTH OF  
THE GAMBIA**

**By**

**Aliou Kassama**

**THESIS**

Submitted to

KDI School of Public Policy and Management

in partial fulfillment of the requirements

for the degree of

**MASTERS OF DEVELOPMENT POLICY**

Committee in charge:

Professor Hun Joo PARK, Supervisor



Professor Jong-Il YOU



Professor Sang-Moon HAHM



Approved as of May, 2016

**ABSTRACT****THE ROLE OF EXTERNAL DEBT ON THE ECONOMIC GROWTH OF  
THE GAMBIA****By**

Aliou Kassama

Previous studies that have attempted to establish a relationship between external debt and economic growth yielded different conclusions. Nonetheless, there was no previous study in the case of The Gambia. However, this study examines the “the Role of External Debt on the Economic Growth of The Gambia” by using time series data for the period 1970 to 2012. We employed the Error Correction Mechanism (ECM) to regress economic growth on external debt and debt service plus other explanatory variables.

The regression results showed that economic growth is influenced negatively by both current flows of external debt and past accumulation of external debt. The negative impact of past accumulation of external debt conforms to the debt overhang literature. However, external debt service has a positive impact on economic growth both in the short run and long run in the case of The Gambia.

As a result, the government of The Gambia should endeavor to refocus its existing policies and institutional arrangements in contracting foreign loans. In addition, aggressive measures are required to curtail government expenditures in order to revise the increase in domestic interest rates. Furthermore, the government should built and strengthen the capacity of the Debt Management Office (DMO).

**Key words:** Economic growth, external debt, external debt service, ECM and The Gambia

**Dedicated to my late Mother, Aminata Ceesay (April 1962 - March 2012). May God forgive her shortcomings and accept her supplications, and grant her Paradise**

### ACKNOWLEDGEMENTS

First of all, I thank God, the beneficent, and the most merciful for seeing me through this accomplishment. To God be the Glory.

I extend my profound gratitude to my wonderful supervisors, Professor Hun Joo PARK and Professor Jong-Il You for their relentless support and guidance throughout this study. Similarly, I am deeply honored and privileged to have passed through all my amazing Professors at KDI School of Public Policy and Management. Your stewardship and wisdom is second to none. In addition, I am indebted to the Global Ambassadors Scholarship programme for sponsoring my studies. Thank you, the government of Korea for this laudable initiative, and for providing the conducive environment for teaching and learning. Furthermore, I am grateful to all the KDI School faculty staff and my colleague students for the warm environment and friendship throughout our time in the beautiful metropolitan city of Sejong-si.

I am humbly grateful to the government of The Gambia through the Ministry of Finance and Economic Affairs for sponsoring my air-ticket. Thank you, to the staff of MoFEA for throwing me a cocktail reception.

Finally, the role played by family cannot be overemphasized. I thank God for blessing me with an ambitious and amazing father. I pray to God that you continue to reign over us.

**TABLE OF CONTENTS**

LIST OF TABLES .....	8
LIST OF FIGURES .....	9
LIST OF ACRONYMS .....	10
<b>Chapter 1: Introduction .....</b>	<b>11</b>
1.1. Background .....	11
1.2. Statement of problem .....	12
1.3. Objectives of the study and Hypothesis testing .....	14
1.4. Research questions .....	15
1.5. Scope and structure of the study .....	15
<b>Chapter 2: Literature Review .....</b>	<b>17</b>
2.1. Theoretical .....	17
2.2. Empirical .....	20
<b>Chapter 3: External Debt and Economic Growth in The Gambia .....</b>	<b>23</b>
3.1. An overview .....	23
3.2. Trend and magnitude of external debt in The Gambia .....	27
3.3. HIPC and The Gambia .....	29
3.4. Type, structure and composition of external debt .....	31
<b>Chapter 4: Methodology .....</b>	<b>34</b>
4.1. Model specification .....	34
4.2. Regression techniques and data source .....	36
4.3. Error Correction Model (ECM) .....	37
4.4. Pre-estimation test .....	38
4.5. Post-estimation test .....	40
<b>Chapter 5: Data Analysis and Interpretation .....</b>	<b>42</b>
5.1. Descriptive statistics .....	42
5.2. Cointegration test .....	42
5.3. The empirical analysis of external debt and economic growth relationship .....	45
<b>Chapter 6: Conclusion .....</b>	<b>49</b>
6.1. Summary of the study .....	49
6.2. Policy recommendation .....	50
<b>References .....</b>	<b>52</b>
<b>Appendices .....</b>	<b>56</b>

**LIST OF TABLES**

Table 1: Evolution of external debt in The Gambia (million US\$).....	27
Table 2: External debt indicators for The Gambia (%).....	30
Table 3: Stationary test.....	39
Table 4: Descriptive statistics.....	42
Table 5: Optimal Lag selection.....	43
Table 6: ARDL (3,0,4,3,0,3) – Dependent variable $\Delta$ GDPGTH.....	43
Table 7: Short run coefficient estimates and speed of adjustment.....	45
Table 8: Long run coefficient estimates.....	45



**LIST OF FIGURES**

Figure 1: Economic growth rate and external debt to GDP ratio.....25

Figure 2: External debt structure and composition.....32

**LIST OF ACRONYMS**

ADF	Augmented Dickey Fuller test
AfDB	African Development Bank
AGR	Agriculture to GDP ratio
AIC	Akaike Information Criterion
ARDL	Autoregressive Distributed Lag
CPIA	Country Policy and Institutional Assessment
DF	Dickey Fuller test
DRLC	Debt Relief Laffer Curve
DSA	Debt Sustainability Analysis
DSX	Debt Service to Exports ratio
ECM	Error Correction Model
ECT	Error Correction Term
EDGDP	External Debt to GDP ratio
FDI	Foreign Direct Investment
FGLS	Feasible Generalised Least Square
GDP	Gross Domestic Product
GDPGH	GDP growth rate
GMD	Local Currency (Dalasis "D")
HIPCs	Highly Indebted Poor Countries
IDA	International Development Association
IMF	International Monetary Fund
INV	Gross Capital Formation to GDP ratio / Investment to GDP ratio
IsDB	Islamic Development Bank
LICs	Least Income Countries
MDRI	Multilateral Debt Relief Initiative
MoFEA	Ministry of Finance and Economic Affairs
MPC	Monetary Policy Committee
NPV	Net Present Value
OLS	Ordinary Least Squares Method
PPG	Public and Publicly Guaranteed Debt
PRGF	Poverty Reduction and Growth Facility
SIC	Schwarz Information Criterion
SOEs	State Owned Enterprises
TOT	Terms of Trade
US\$	United States Dollars

## The role of External Debt on the Economic Growth of

## The Gambia

**Chapter 1: Introduction****1.1. Background**

The fall in commodity prices during the 1970s culminating with the two oil crises have constrained developing countries to borrow from external sources<sup>1</sup> in order to correct the immediate balance of payment problems. Interest payments on these foreign borrowings shot up reaching US\$ 22 billion during 1978 - 1981 (IMF, n.a). By 1982, the government of Mexico, through its Finance Minister, Jesus Silva-Herzog, declared that Mexico was no longer able to repay its external creditors (Wikipedia, 2015). Subsequently, in 1985, The Gambia defaulted on its foreign obligations by suspending debt services repayments to the IMF, the African Development Bank (AfDB), the Saudi Fund, and the Islamic Development Bank (IsDB) (Touray, 2000). This period (1982 – 1989) is referred to as “the lost decade” and is widely acclaimed as the first debt crisis in history. According to Krugman (1988), the IMF and the U.S post-1983 debt strategies were based on financing heavily indebted countries by lending at an expected loss in the hope that these countries will eventually have the capacity to repay their debts.

Consequently, in order to restore price stability, ensure investor confidence and promote economic growth:

In 1996, the group of 8 major industrialized countries (the Group of Eight, or G8) launched the first initiative to address the problems of Heavily Indebted Poor Countries (HIPC) initiative. The HIPC initiative is a debt relief programme designated for those HIPC countries that demonstrated, to the satisfaction of the World Bank and the IMF, that they were both pursuing “sound policies” and were “committed” to reducing poverty (Todaro & Smith, 2014).

---

<sup>1</sup> Definition of external debt: “Gross external debt, at any given time, is the outstanding amount of those actual current, and not contingent, liabilities that require payment(s) of principal and/or interest by the debtor at some point(s) in the future and that are owed to nonresidents by residents of an economy” (IMF, 2014a)

As a result of the HIPC intervention, the IMF (2014c), highlighted that “The HIPC Initiative is nearly complete with 35 countries reaching the completion point... However, recent data indicates that debt service burden may increase in the near future” (pp. 1-8). “The Gambia’s external debt to GDP ratio was reduced from 133.1 percent as at the end of 2006, to 49.9 percent in December 2007 after reaching its HIPC initiative and Multilateral Debt Relief Initiative (MDRI) completion point” (Ministry of Finance and Economic Affairs [MoFEA], 2012, pp. 13). However, the IMF’s projection for 2015 on the country’s level of external debt to GDP ratio stands at 56.2 percent in nominal value terms and 35.7 percent in present value terms (IMF, 2015).

The IMF’s indicative thresholds for Public and Publicly Guaranteed (PPG) external debt as a percentage of GDP in Net Present Value (NPV) terms, varies. “The indicative thresholds depend on the quality of country policies and institutions<sup>2</sup> [Country Policy and Institutional Assessment (CPIA) index]” (IMF, 2014b, pp. 25). The index is categorized into four (4) groups of sixteen (16) indicators: economic management, structural policies, policies for social inclusion and equity, and public sector management and institutions. The Gambia’s current CPIA score is Medium.

## **1.2. Statement of the problem**

As a result of a saving-investment gap and a balance of payment problems, developing nations have resorted to borrowing heavily from external sources (Malik, Hayat & Hayat, 2010). On the other hand, Krugman (1988) argued that countries borrow because of a stock of “inherited” debt, which they cannot fully service without new borrowings. However, the cost of

---

<sup>2</sup> The indicative thresholds for Least Developed Countries (LICs) only: Weak 30%, Medium 40% and Strong 50%. (IMF, 2014)

these foreign debts is so huge at times that most governments default in honoring their debt service obligations. The Gambia's stock of nominal external public debt-to-GDP ratio was reduced from 133.1 percent as at end December 2006 to 49.9 percent in December 2007, after reaching its HIPC initiative and MDRI completion point in the same year (MoFEA, 2012).

Today, The Gambia is on trend to the pre-HIPC period, as indicated by The Economist (2015), “[f]rom 2009 to 2014 its [The Gambia] debt-to-GDP ratio increased by 18 percentage points, more than all other countries in sub-Saharan Africa except Cape Verde and Ghana”. Furthermore, “The Gambia’s total public debt currently stands at 100 percent of GDP in nominal terms and just above 80 percent of GDP in net present value terms, more than 25 percent above the indicative threshold for public debt distress” (IMF, 2015, pp. 5). “It [The Gambia’s debt-to-GDP ratio] is one of the highest in the region” (The Economist, 2015). In the same vein, the IMF’s projection for 2015 on the country’s level of external-debt-to-GDP ratio stands at 56.2 percent in nominal value<sup>3</sup> terms and 35.7 percent in present value<sup>4</sup> terms (IMF, 2015). However, the IMF (2015) predicted that the country’s external debt could spike to near 50 percent of GDP in 2015 and remain above the threshold until 2020, with a GDP depreciation of 30 percent. This is informed by external shocks, including the regional Ebola diseases outbreak (although the country remains Ebola free), crop failure and the risk of political instability:

“[T]he [Ebola] disease’s regional outbreak is expected to cut by more than half tourism receipts for the 2014/15 season [approximately 3½ percent of GDP]....the delayed summer rains have led to 15 percent of the year’s [2014] crop being lost...[and] an attempted coup at end-December [2014]” (IMF, 2015, pp. 5).

In addition, the local currency (Dalasis, GMD) continues to lose its value against all other major currencies (12 percent against the dollar in 2014 (The Economist, 2015)), causing a

---

<sup>3</sup> “Nominal Value of debt is what you borrow” (IMF, 2014a, pp. 16)

<sup>4</sup> “Present Value of debt is the sum of all future debt service payments discounted to the present” (IMF, 2014a, pp. 18) and the present value external debt to GDP indicative threshold for The Gambia is 40 percent

continuous increase in the need for debt servicing. According to The Economist (2015), the Central Bank of The Gambia's Monetary Policy Committee (MPC) rate was raised from 12 percent to 22 percent between 2013 and 2014. State Own Enterprises (SOEs) are defaulting on their debts guaranteed by the government (5¼ percent of GDP was repaid by the government on behalf of key SOEs (IMF, 2015)), which equally leads to a continuous increase in the external debt burden of The Gambian government.

Previous studies that have attempted to establish a relationship between external debt and economic growth yielded different conclusions. In Nigeria, for instance, Onaolapo (2015), found out a positive relationship between external debt management and economic growth for the period 2000 - 2009, whereas, Ogunmuyiwa (2011), found no causality between external debt and economic growth for the period 1970 – 2007. By contrast, Farrukh, Ahsan, Naveed, Zeeshan and Bushra (2014), established a significant negative impact of external debt on GDP growth for Pakistan between 1980 and 2013. There is, however, no previous research about the relationship between external debt and economic growth in the context of The Gambia. This study, therefore aims to identify the relationship between external debt and economic growth; as well as discuss the implications of external debt on the economic growth of The Gambia.

### **1.3. Objectives of the study and Hypothesis testing**

Owing to the fact that The Gambia has the highest Monetary Policy Committee (MPC) rate in the world at 22 percent<sup>5</sup>, coupled with a high level of indebtedness of over 100 percent of GDP (as at July 2015)<sup>6</sup>, therefore, The Gambia is threaten by a debt distress situation. In addition, The Gambia is a drought prone country with agriculture arguably the main contributor to

---

<sup>5</sup> IMF. Retrieved from: <http://data.imf.org/?sk=5dabaff2-c5ad-4d27-a1751253419c02d1&sId=1390030109571>

<sup>6</sup> IMF. Retrieved from: <https://agenda.weforum.org/2015/07/the-20-countries-with-the-greatest-public-debt/>

economic growth. Furthermore, low receipts in International Tourism equally affect the Gambian economy. The 2014 (fourth quarter) Ebola disease outbreak in West Africa, even though The Gambia continues to be an Ebola disease free country, has cost the country 3½ percent of GDP. This study attempts to investigate the role of external debt in determining economic growth in The Gambia with specific objectives as follows:

- 1) To establish a relationship between external debt and economic growth in the case of The Gambia (the debt laffer curve theory)
- 2) To relate the debt-overhang theory in the context of The Gambia
- 3) To examine the type, structure and composition of external debt in The Gambia
- 4) To suggest policy recommendations for effective and efficient management of foreign loans

This study will test the null hypothesis that, a high level of external debt will have a negative impact on economic growth.

#### **1.4. Research questions**

- 1) What is the relationship between external debt and economic growth in the case of The Gambia?
- 2) What is the impact of external debt on economic growth in the case of The Gambia?

#### **1.5. Scope and Structure of the study**

This study is intended to examine the role of external debt on economic growth in the case of The Gambia for the period 1970 to 2012. The focus of the study shall be limited on the growth performance of The Gambian economy in relationship to a growing external debt.

This paper shall cover four chapters. Chapter 1 is introducing the topic under discussion. In chapter 2, we will review the literature concerning external debt relationship with economic performance. The relationship between external debt and economic growth in The Gambia is discussed in chapter 3. In chapter 4, the methodology is presented. In chapter 5, we will analyze the data and discuss the results obtained. Chapter 6 will conclude this study and will recommend some policy directions for effective and efficient management of external borrowings.

## **Chapter 2: Literature Review**

### **2.1. Theoretical**

Most of the literature underlying the study about the relationship between external debt and economic growth undertakes the “debt Laffer curvy” theory. The intuition about this theory



is that a reasonable level of external debt relates to an increase in economic growth, up to a point, beyond which any further increase in the external debt level will have a negative impact on economic growth. Similarly, the debt-overhang effect is largely observed in the literature about external debt and economic growth relationship. “A country has a debt overhang problem where the expected present value of potential future resource transfers is less than its debt.” (Krugman, 1988, pp. 5).

Krugman (1988) described debt-overhang, as a situation where highly indebted countries are faced with a stock of “inherited” debt sufficiently large enough that creditors lose every confidence of being fully repaid and Cohen (1993) emphasized the collapse of private investment, as governments attempt to service these debts. According to Cohen (1993), the crowding-out effect on private investment depends on how efficiently; highly indebted countries reschedule their debt. However, Sachs (1989) demonstrated debt rescheduling as an inadequate response to increase economic efficiency of indebted countries. He suggested a partial debt forgiveness, which may induce economic growth and eventually increase the debtor country’s ability to pay back its debt. Whereby, both the debtor and the creditor benefits from partial debt forgiveness, as creditors priority is to maximize returns from lending.

In a period of no debt overhang, a country’s level of debt should be equal to the level of investment plus consumption minus income (i.e  $D1 = I1 + C1 - Q1$ ) (Sachs, 1989). However, as a country becomes insolvent along with a stagnant export, its rising debt-service<sup>7</sup> would mean accumulation of arrears by defaulting on debt service obligations. Otherwise, high indebted countries may deplete their scarce foreign exchange meant for imports needed for production and investment in order to service their debt obligations. Furthermore, as a country experiences debt

---

<sup>7</sup> Principal repayment plus interest payment

overhang problems, its debt burden behaves as a distortionary tax, since the debt repayment (debt service) is charged as a fraction on income at any given level of output. “It thus becomes profitable to invest more [only with a fall in indebtedness]” (Sachs, 1989, pp. 94). Therefore, high indebtedness discourages future investment. This negative correlation between debt and investment is also referred to as debt-overhang (Cohen, 1993). In addition, Cohen (1998) in analyzing growth and external debt for African and Latin American countries found the key factors behind slow growth in Africa to be low investment, policy distortions and terms of trade fluctuations. And, Koeda (2008) defined debt overhang as “the relationship between heavy debt and low growth” (pp. 654).

Sachs (1989) raised a number of debt overhang effects highly indebted Latin American countries experienced during the 1980’s debt crisis. Primarily, all debtor countries were constrained to service their debt based on conditions set by the creditors and the IMF. Among other reasons, these strategies (repayment conditions), failed to help the Latin American economies to recover from the crisis, which began in 1982. As a result, the per capita income level of these countries experienced a significant decline. In addition, policy mistakes also contributed to these countries poor economic performances as well as unfavorable terms of trade during that period. Furthermore, the debtor countries underwent a negative net transfer of resources<sup>8</sup>, simply because a good chunk of the incoming loan disbursements were repaid back almost immediately as debt service. On the other hand, domestic investments were very low as debtor countries were experiencing domestic capital flight, as well as a fall in foreign direct

---

<sup>8</sup> This is defined “as the receipt of new loans [to debtor countries], net of payments of principal and interest [to creditor countries]” (Sachs, 1989, pp. 85).

investment. Moreover, certain external creditors (like foreign banks) shifted from lending to the private sector towards lending to only government guaranteed entities. Thus, the overall investment level collapsed.

Elbadawi, Ndulu, and Ndung'u (1996), while presenting at the IMF on Debt Overhang and Economic Growth in Sub-Saharan Africa stressed out some key literature about the impact of debt overhang on economic growth and investment. Key among the negative impacts of debt overhang in sub-Saharan Africa is the accrual of debt service arrears which multiplies more often than not as a result of continuous depreciation of the local currencies. Similarly, the fiscal position of these debtor countries has worsened, leaving just little budget allocations for development and investment (capital expenditure). Most of the national expenditure is on recurrent budget (consumption expenditure) yet, "a rising proportion of improved revenue collection is being channeled to servicing debt" (pp. 51). Furthermore, it is observed that domestic capital owners are more likely to hold liquid assets such as treasury bills and/or foreign currency denominated deposits in domestic commercial banks rather than long-term, high-risk, irreversible investments in production (Serven, 1996), as cited in (Elbadawi, et al, 1996).

On the other hand, the Debt Laffer Curve is widely used to describe the effects of external debt on economic growth. Krugman (1988) in his working paper on "Market-Based Debt-Reduction Schemes", described Debt Relief Laffer Curve (DRLC) as a condition where creditors needed to forgive debtor countries a certain part of the borrowed loan so as to increase the ability of the debtor countries in repaying off the debt. This illustrates a situation where a debtor country surpasses a certain threshold level of indebtedness, and thereby causing efficiency losses (Bachvarova, 2008). According to Sachs and Huizinga (1987), efficiency losses describe a country situation where current stock of debt is in excess of the present value of future expected

debt service payments (Claessens, 1990). As a result, the DRLC describes the debtor country's inability to raise taxes and highlight the adverse effects of the debt burden on economic growth. In such situations, forgiving indebted countries debt is better recommended because reducing the nominal claims outstanding of the debt does not mean reducing the value of the anticipated repayments. In other words, reducing the nominal claims outstanding will benefit the debtor countries on one hand, and the creditors shall gain through an increase in the value of outstanding claims. The concept of Debt Laffer Curve has been used as an argument for debt forgiveness of developing countries (Claessens, 1990). Partisans for debt relief (including the Brady plan of 1989) believe that debt relief is in everybody's interest (both creditors and debtors) and that countries are on the wrong side of the DRLC (Krugman, 1988). Krugman (1988) concluded that market-based debt reduction such as debt buy-backs, securitization or debt-equity swaps does not give a win-win situation between debtors and creditors and that it cannot serve as an alternative to debt rescheduling.

## **2.2. Empirical**

The role of external debt on economic growth has been widely studied. Nonetheless, the findings and conclusions from various researchers remain different. Researchers have focused on different aspects, including, country specifics/socio-economic conditions (developed or developing country), cross-country comparisons, periods under review and use of different controlled variables. Consequently, the relationship between external debt and economic growth varies from country to country and in time horizon. There is, however, no previous research about the relationship between external debt and economic growth in the context of The Gambia. This paper focuses primarily on the applicability of this literature in the Gambian context.

According to Malik et al. (2010), the assumption behind external debt in many developing countries is that external loans boost economic development. Therefore, external debt is expected to have a positive correlation with economic growth. On the other hand, Genc and Tandogan (2015) suggested that external debts, which, are not used effectively, might negatively affect economic growth. However, “[t]here is some empirical evidence supporting the nonlinear effect of debt on growth but it is not robust, and limited in scope and methodology.” (Pattillo, Poirson, & Ricci, 2002, pp. 3).

By running a cross sectional regression for 99 developing countries spanning sub-Saharan Africa, Latin America, Asia, and the Middle East, Elbadawi, et al, (1996) attempted to explain the relationship between external debt and growth through three channels: “the effects of debt overhang on investment; liquidity constraints related to debt servicing; and an indirect channel via the effects on public sector expenditures and deficits” (pp. 52). The result shows that “current debt inflows stimulate growth, while past debt accumulation (debt overhang) impacts negatively on growth” (pp. 70). This confirms the debt Laffer curve effect. Similarly, through debt service payment obligations, export earnings are reduced, thereby adversely affecting economic growth. Finally, through an indirect channel, public sector expenditure negatively affects economic development. (Elbadawi, et al. 1996)

Using a large panel data set of 93 developing countries from 1969 to 1998, Pattillo et al. (2002), confirmed the non-linear relationship of external debt to growth. However, they found a debt Laffer curve effect on GDP per capita growth. Their findings suggest that on average, the impact of debt on per capita growth appears negative at about 160 – 170 percent of exports and/or 35 – 40 percent of GDP. Moreover, they emphasized that high debt lowers investment efficiency.

### **Chapter 3: External Debt and Economic Growth in The Gambia**

#### **3.1. An overview**

As a result of the 1970s oil shocks on one hand, and a fall in commodity prices on the other hand, developing countries were constrained to borrow from external sources in order to address the immediate balance of payment problems (IMF, n.a). In addition, when the debts were contracted in the 1970s, real interest rates were low (Sachs, 1989) leading to huge foreign debt accumulation. On average, during this period, the external debt stock of The Gambia grew by 31.3 percent, registering its highest growth rate in 1979 at 93.8 percent from the previous year (see Table 1). However, an increase in oil prices in 1979 constrained industrial countries to

increase interest rates in order to suppress inflationary pressures, which will lead to an international debt crisis (IMF, n.a) in the 1980s. By 1980, The Gambia registered its highest growth in debt ever at 104 percent from the previous year. Whereas, the economic growth rate averaged 5 percent during the 1970s decelerating to less than 1 percent in 1972, with negative economic growth rates of 0.1 and 1.3 percent in 1971 and 1979 respectively (see Table 1).

According to Touray (2000), by 1984, The Gambia's foreign debt stood at US\$ 230 million equivalent to 155.6 percent of GDP, and total debt service, increased by nearly 300 percent, between 1981 and 1984. Subsequently, in 1985, The Gambia defaulted on its foreign obligations by suspending debt service payments to the IMF, AfDB, the Saudi Fund, and the IsDB. Consequently, the government of The Gambia, in collaboration with the international creditors and the IMF agreed on a series of reform programmes in order to address the external debt crisis:

- An increase in taxes and import duties
- A decrease in subsidy of imported rice and petrol
- A lay-off of government employees with some 2,743 posts declared redundant in 1985
- An "Economic Recovery Programme" announced by the President in August 1985 aimed at promoting domestic agricultural output, discouraging imports of unnecessary goods, and increasing groundnut prices to avoid smuggling into Senegal
- A debt rescheduling and an increase in foreign aid
- A foreign exchange policy adjustment by devaluating the local currency (Dalasi) by 25% in March 1984, in order to stimulate exports and restrict black-market operations. This corresponds to a zero-external debt contract in 1984 (see Table 1). The Dalasi was further

devaluated and a floating exchange rate adopted in January 1986. The devaluation of the Dalasi has helped in reducing imports and promoting agricultural exports.

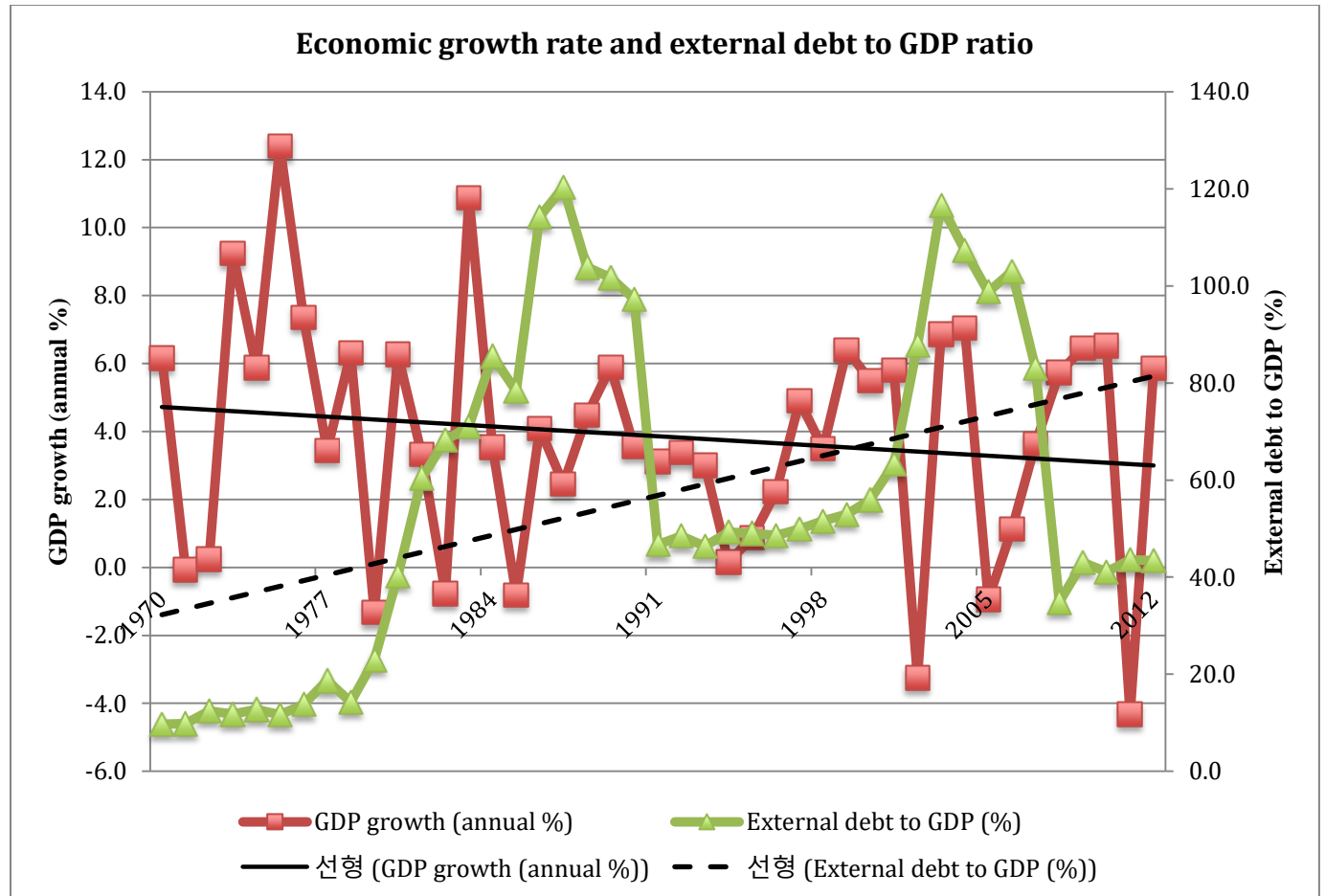
Similarly, just before the onset of the first international debt crisis in 1983, The Gambia registered a negative economic growth rate of 0.8 percent in 1982. However, despite the debt crisis of 1983, The Gambia registered its second highest economic growth rate at 10.9 percent during the period under review. By 1985, where The Gambia defaulted on its external debt obligations, real GDP growth rate was negative 0.8 percent with a staggering 16.5 percent growth in debt from the previous year. In 2002, a negative economic growth rate of 3.3 percent corresponded to a similar increase in debt at 16.5 percent from the previous year (see Table 1). In addition, in 2002 the IMF suspended its interim debt relief meant for budget identified poverty-reducing expenditures when the Poverty Reduction and Growth Facility (PRGF) supported programmes went off-track (IMF, 2008). Moreover, in 2005 both real GDP growth rate and growth in external debt registered negative growth rates of 0.9 percent and 0.8 percent respectively (see Table 1). The significant fall in real GDP growth rate to negative 0.9 percent in 2005 was partly due to “revenue shortfalls [where] fiscal targets for December 2005 were missed” (IMF, 2008 pp. 14). According to the IMF (2008), in March 2005, International Development Association (IDA) also suspended its interim debt relief meant for budget identified poverty-reducing expenditures. Furthermore, the country experienced a sharp fall in groundnut exports from US\$ 16.9 million in 2004 to US\$ 2 million in 2005. Similarly, in 2011, the country experienced a drought corresponding to a negative real GDP growth rate of 4.3 percent while growth in external debt was maintained at less than 1 percent from the previous year (see Table 1).



On the other hand, debt service payments continued to be below US\$ 17 million from 1970 to 1989. However, a substantial increase in debt service payments above US\$ 30 million in 1990 resulted to a negative net transfer for the first time during the period under review.

Negative net transfers were equally registered in 1994, 1998 and 2011 (see Table 1).

**Figure 1: Economic growth rate and external debt to GDP ratio**



Source: Author

Figure 1 shows the relationship between economic growth rate and external debt to GDP ratio over time, which depicts a declining trend for GDP growth rate but a growing trend for external debt to GDP ratio during the period under review. The level of external debt to GDP remained low from the beginning of the year under review until 1980. External debt to GDP ratio averaged 16.2 percent during the first decade of the period under review while GDP grew at an

average of 5.1 percent. Consequently, this period registered the lowest growth in external debt to GDP ratio with GDP reaching its highest growth rate in 1975 at 12 percent. The two peaks of external debt to GDP ratio in 1987 and 2003 coincided with the country's default on foreign debt and the HIPC debt relief periods respectively. The decelerating external debt to GDP ratio during the years that followed after 1987 and 2003 were as a result of debt rescheduling and debt forgiveness respectively.

### 3.2. Trend and magnitude of external debt in The Gambia

Table 1, shows the evolution of external debt stock, debt service payments and economic growth rates for the period 1970 - 2012. External debt stock rose from US\$ 5.08 million in 1970 to US\$ 674.42 million in 2006 (a year before The Gambia reached its HIPC completion point) while external debt service rose from US\$ 0.13 million in 1970 to reaching its climax in 1990 at US\$ 30.31 million corresponding to a period of debt default in The Gambia (1985 -1990). Debt service on external debt was US\$ 25.03 million in 2006 whereas GDP growth rate averaged 3.9 percent during the period under review (1970 – 2012). Consequently, after the HIPC initiative, the stock of external debt declined reasonably to US\$ 395.78 million in 2012 but only a little changed in the country's external debt service payments at US\$ 23.95 million in 2012. However real GDP growth rate was above period average (1970 - 2012) at 5.9 percent in 2012.

**Table 1: Evolution of external debt in The Gambia (millions US\$)**

Year	External debt stocks	Debt service on external debt	Net transfers on external debt	External debt service arrears	Growth in external debt (%)	External debt to GDP	GDP growth (annual %)
1970	5.08	0.13	0.70	-		9.7	6.2
1971	5.48	0.19	0.07	-	7.9	9.8	-0.1
1972	7.36	0.28	2.34	-	34.4	12.4	0.2
1973	8.86	0.33	1.47	-	20.3	11.8	9.3
1974	12.23	0.42	3.23	-	38.0	12.8	5.9

1975	13.42	0.42	2.39	-	9.7	11.6	12.4
1976	15.43	0.37	3.32	-	15.0	13.8	7.4
1977	25.83	0.64	8.82	0.02	67.4	18.7	3.4
1978	24.53	0.41	14.55	0.04	-5.0	14.3	6.3
1979	47.54	0.50	22.35	-	93.8	23.0	-1.3
1980	97.33	0.77	50.46	0.28	104.7	40.4	6.3
1981	132.27	2.62	37.29	0.60	35.9	60.5	3.3
1982	147.41	10.52	18.92	1.44	11.4	68.2	-0.8
1983	151.73	6.67	7.06	4.90	2.9	71.1	10.9
1984	151.70	4.71	9.02	10.55	0.0	85.5	3.5
1985	176.70	0.89	12.84	19.48	16.5	78.3	-0.8
1986	212.13	8.23	27.02	14.48	20.1	114.3	4.1
1987	265.49	13.46	23.48	11.64	25.2	120.3	2.5
1988	276.98	14.02	7.93	9.77	4.3	103.9	4.5
1989	288.97	16.44	12.43	11.04	4.3	101.7	5.9
1990	308.45	30.31	-6.77	1.48	6.7	97.3	3.6
1991	322.45	23.32	6.10	2.15	4.5	46.7	3.1
1992	346.23	25.36	30.03	2.20	7.4	48.5	3.4
1993	350.16	24.43	1.03	4.51	1.1	46.4	3.0
1994	368.07	25.41	-2.71	6.35	5.1	49.3	0.2
1995	385.47	20.74	2.23	2.84	4.7	49.0	0.9
1996	411.86	19.33	38.76	2.05	6.8	48.6	2.2
1997	401.19	19.15	4.82	1.15	-2.6	49.9	4.9
1998	433.60	19.98	-3.76	0.87	8.1	51.6	3.5
1999	431.19	16.52	5.12	1.43	-0.6	52.9	6.4
2000	437.96	18.66	2.00	2.15	1.6	55.9	5.5
2001	435.38	13.08	10.60	4.10	-0.6	63.3	5.8
2002	507.40	14.20	38.97	8.44	16.5	87.7	-3.3
2003	568.09	19.92	20.00	17.68	12.0	116.6	6.9
2004	621.43	25.39	25.98	21.52	9.4	107.4	7.0
2005	616.54	25.42	28.89	20.69	-0.8	98.8	-0.9
2006	674.42	25.03	26.39	22.67	9.4	103.0	1.1
2007	664.04	28.86	11.00	15.62	-1.5	83.1	3.6
2008	336.81	16.12	21.17	15.82	-49.3	34.9	5.7
2009	387.61	18.37	15.14	22.40	15.1	43.0	6.4
2010	390.96	22.35	20.88	26.12	0.9	41.1	6.5
2011	394.37	24.79	-0.53	20.15	0.9	43.6	-4.3
2012	395.78	23.95	1.29	29.14	0.4	43.4	5.9

**Source:** World Bank (World Development Indicators) with author's calculation on few

Significant growth rates about external indebtedness, year on year corresponded to the periods 1972 – 1974, 1976 – 1980, and 1985 – 1987. Growth rates in external indebtedness in the

1970s coincided with the 1973 and 1979 global oil crises. The third period coincided with the country's default on foreign obligations with debt service arrears above US\$ 10 million from 1984 to 1989 except in 1988 at US\$ 9.77 million.

The tremendous decline in external debt growth rate in 2008 to negative 49.3 percent from the previous year was mainly due to the HIPC and MDRI debt relief initiatives in 2007. The Gambia became insolvent on its foreign obligations where external liabilities surpassed income levels from 1986 to 1989 and 2003 to 2006 with the exception of 2005 where external debt to GDP ratio was 98.8 percent. These two periods corresponded to the country's external debt rescheduling and external debt forgiveness respectively.

### **3.3. HIPC and The Gambia**

Following the decision point in 2000, The Gambia was granted waivers for two of its triggers out of eleven triggers<sup>9</sup> where the remaining nine triggers were fully achieved in order to reach its HIPC completion point in 2007 (IMF, 2008). In addition, The Gambia developed and implemented satisfactorily its first Poverty Reduction Strategy Paper (PRSP I) between 2002 and 2005. According to the IMF (2008), PRSP II (medium term, 2007 – 2011) was prepared and discussed by the Boards of the IDA and the IMF in July and August 2007 respectively. Furthermore, the country has maintained a macroeconomic stability since 2004.

As at the decision point, the HIPC assistance to The Gambia was estimated at US\$ 66.6 million in 1999 NPV terms which was required to lower the debt-to-exports ratio to the HIPC threshold of 150 percent (IMF, 2008). Moreover, according to the IMF (2008), The Gambia missed its HIPC completion point target for the NPV of debt-to-exports ratio at end-December 2006 projection of 139.8 percent, due to “substantially larger than projected new borrowings,

---

<sup>9</sup> The eleven triggers grouped under five main triggers: i) Poverty reduction ii) Macroeconomic stability iii) Governance iv) Social sector reforms v) Structural reforms

lower than projected export volumes, and changes in the discount rates and exchange rates”; consequently, the NPV of debt-to-exports ratio turnout to be 242.5 percent, at end-December 2006 (pp. 4). Thus, “The Gambia [did] not meet the requirement for additional debt relief, or exceptional “topping-up,” under the Enhanced HIPC Initiative” (pp. 4). However, “The Gambia will qualify for additional debt relief under the MDRI upon reaching the completion point under the Enhanced HIPC Initiative, where MDRI debt relief, net of HIPC assistance, would lead to nominal debt service savings on debt owed to IDA, the IMF and the AfDF of US\$ 373.5 million.” (pp. 5). As a result of the non-participation of some multilateral creditors in the MDRI and the non-Paris Club bilateral creditors whom lend The Gambia since the decision point, the country’s external debt stock remains large with a high risk of debt distress even after post-completion point.

**Table 2: External debt indicators for The Gambia (%)**

	Actual	Projections					
	2006	2007	2008	2009	2010	2011	2012
<b>After MDRI and bilateral debt relief beyond HIPC</b>							
NPV of debt-to-GDP ratio	84.2	25.5	24.7	27.1	28.7	29.2	29.2
NPV of debt-to-exports ratio after full delivery	111.9	112.5	123.3	139.8	150	154.9	156.4
NPV of debt-to-revenue ratio after full delivery	143.5	120.9	118.7	133.2	142.7	147.5	147.7
Debt service-to.exports ratio	...	19.7	6.8	6.7	6.7	6.8	7.5
Debt service-to-revenue ratio	...	22.3	6.8	6.8	6.8	6.9	7.6

**Source:** The Gambia, and Bank-Fund staff estimates and projections (excerpt)

Since The Gambia is classified under a Medium policy performance category (CPIA), its debt burden indicative thresholds in the external Debt Sustainability Analysis (DSA) for Low Income Countries (LICs) are:

- NPV of debt-to-GDP ratio – 40
- NPV of debt-to-exports ratio – 150
- NPV of debt-to-revenue ratio – 250

- Debt service-to-exports ratio – 20
- Debt service-to-revenue ratio – 20

The first three indicators are solvency indicators while the last two indicators are liquidity indicators.

### **3.4. Type, structure, and composition of external debt**

External debt in The Gambia like many other sub-Saharan African countries is either from multilateral sources or bilateral sources with little or no commercial borrowings. Since the 1980s, the external debt structure in The Gambia has been mainly composed of multilateral creditors with IDA being the leading creditor. During the 1980s international debt crises, multilateral creditors provided additional loans to developing nations to ease debt service payments of these countries and to help “avert an international banking crisis, a prospect that was widely feared in the early 1980s” (Sachs, 1989 pp. 80). The prospects of the international banking crises were as a result of government bond purchases in the 70s by foreign commercial banks. By end-December 1999, IDA accounted for 38 percent of the total external debt structure with the non-Paris Club<sup>10</sup> bilateral creditors contributing 9 percent more than the Paris Club<sup>11</sup> bilateral creditors. At end-December 2006, IDA’s claim in the external debt structure increased to 39 percent while the Paris Club bilateral creditors claim was reduced from 6 percent to 2 percent from end-December 1999. The significant reduction in external debt owed to the Paris Clubs between 1999 and 2006 happened as a result of the Paris Clubs participation in the HIPC debt relief initiative where The Gambia reached its decision point in 2000. The AfDB Group was

---

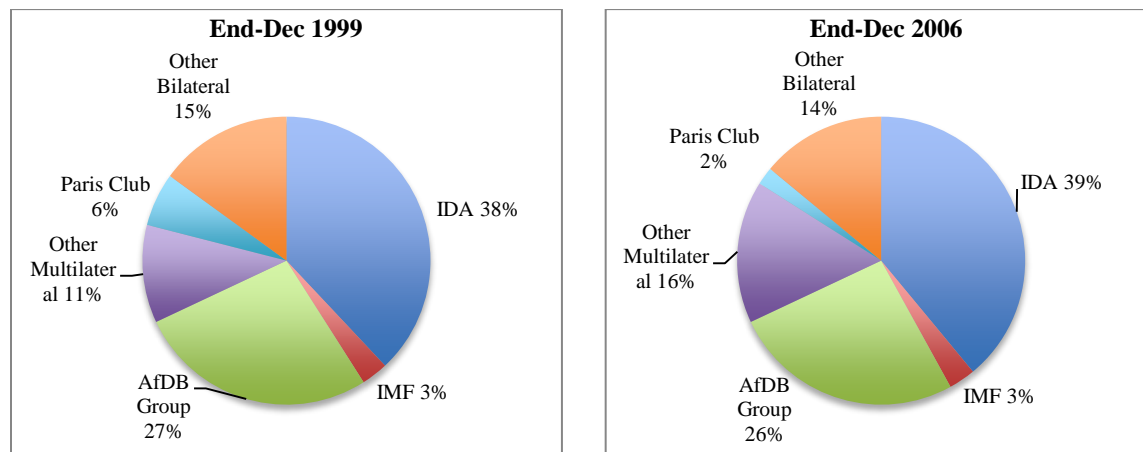
<sup>10</sup> non-Paris Club bilateral creditors include – Saudi Fund for Development, Kuwait Fund for Economic Development, Taiwan Province of China, Libya, China, India...

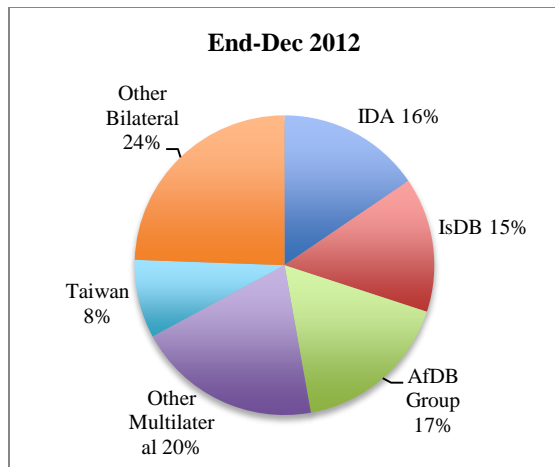
<sup>11</sup> Paris Club bilateral creditors include – Austria, France, Norway, EU-IDA...

the second largest creditor to The Gambia during this period, contributing 27 percent and 26 percent of the total external debt portfolio in 1999 and 2006 respectively.

On the other hand, the external debt stock started to grow steadily after the HIPC debt relief (2007) from 2009 (see Table 1) due to an increased borrowing from the IsDB (MoFEA, 2012). Until 2011, IDA continued to be the leading multilateral creditor in The Gambia. By end-December 2012, the AfDB Group became the leading multilateral creditor with a 17 percent claim on the total external debt stock of the country. However, the Paris club contribution to the total external debt portfolio became significantly small with Austria claiming only 1 percent of the total bilateral external debt stock. The Republic of China (Taiwan) was the leading bilateral creditor since 2010 and accounted for 25 percent of total bilateral external debt portfolio equivalent to 8 percent of the total external debt stock in 2012 (see Figure 2).

**Figure 2: External debt structure and composition**





**Source:** HIPC (The Gambia), External debt bulletin 2012 and Author



### **Chapter 4: Methodology**

This chapter gives a detail view of the methodology to be applied in studying the “Role of external debt on the economic growth of The Gambia”. We will start by specifying the econometric model, regression techniques and data sources, a detailed explanation of the Error Correction Mechanism, and some pre and post estimation tests.

#### **4.1. Model specification**

This study attempts to regress economic growth on external debt and debt service plus other explanatory variables by using the Error Correction Mechanism. We will adopt with few modifications, the model developed by Elbadawi et al. (1996) while presenting at the IMF on “Debt Overhang and Economic Growth in sub-Saharan Africa” where The Gambia is a member country. They constructed a cross sectional regression for 99 developing countries spanning sub-Saharan Africa, Latin America, Asia, and the Middle East.

The model developed by Elbadawi et al. (1996) is considerable for the context of The Gambia since the country is in a debt overhang situation. This condition suggests that we could estimate a time-series regression for the period 1970 to 2012 in the form:

$$gdp_{gth} = f[edgdp, dsx, inv, tot, agr] \dots\dots\dots(I)$$

The variables in equation (1) are defined as follows:

- **Gross Domestic Product (GDP) annual growth rate (*gdp<sub>gth</sub>*).** GDP is the market value of all final goods and services produced within a country in a given period (IMF definition). In this study, the annual growth rate of GDP represents a year on year increase in the country's domestic income realized. The GDP annual growth rate is the proxy to measure the country's state of progress. It is the dependent variable. An increase in GDP annual growth rate is a positive development and vice versa.
- **External debt stock to GDP ratio (*edgdp*).** External debt stock is the total amount of claims on the home country from the rest of the world. In The Gambia, external debts (foreign debts) are reported in US dollars (\$). External debt stock to GDP ratio shows the country's level of foreign debt in relation to its ability to repay the borrowed money. With an unsustainable debt trajectory, this ratio is expected to be negative in the long run, to confirm the debt laffer curve theory as well as the debt overhang concept.
- **Debt service to exports ratio (*dsx*).** In this study, debt service refers to the principal (borrowed amount) repayment plus interest charges (cost of borrowing) from the home country to the rest of the world. Exports are the home country's selling of goods and services to the rest of the world in return for foreign currency. External debt as a ratio of export earnings is intended to show the country's ability in earning the needed foreign exchange from exports in order to service its foreign debt. An increase in debt service may result to the crowding out of investment (both public and private) in committing the limited foreign exchange earned from exports to repay foreign obligations, thereby not stimulating growth. Furthermore, debt service to exports

could as well explain a liquidity constraint, where the government depletes its foreign reserves in order to service its foreign obligations. The is coefficient is expected to be negative.

- **Gross capital formation to GDP ratio (*inv*).** *Inv* refers to both private and public investments as a ratio of GDP. “In economics, investment is the purchase of things that are not consumed today but are used in the future to create wealth; or in finance, an investment is a monetary asset purchased with the idea that the asset will provide income in the future or appreciate and be sold at a higher price.” (Investopedia definition). *Inv* should have a positive behavioral relationship with the dependent variable, GDP growth rate.
- **Terms of Trade (*tot*).** “TOT, the value of a country’s exports relative to that of its imports. It is calculated by dividing the value of exports by the value of imports, then multiplying the results by 100.” (Investopedia definition). Where TOT is less than 100 percent will mean that the country imports more than it exports. The variability in TOT, reflects external shocks.
- **Agriculture as a ratio of GDP (*agr*).** This is a country specific variable, to reflect the adverse effects of drought on the dependent variable, GDP growth rate. The volatility in agricultural output year on year is significantly reflected in the GDP of The Gambia. Agriculture is relatively the main contributor to GDP in The Gambia. The 2011 drought in The Gambia led to a negative growth rate of about 24 percent in Agriculture and as a result, GDP growth rate contracted to a negative 4.3 percent (Nshimyumuremyi, 2014).

#### 4.2. Regression techniques and Data source

We will rewrite equation I in Autoregressive Distributed Lag (ARDL) (p;qk) framework, in order to examine both the short-run and long run dynamics, by estimating the conditional error correction model for GDP of The Gambia:

$$\Delta gdp_{gth}_t = \alpha_0 + \sum_{k=1}^p \eta_1 \Delta gdp_{gth}_{t-k} + \sum_{k=1}^q \eta_2 \Delta edgdp_{t-k} + \sum_{k=1}^q \eta_3 \Delta dsx_{t-k} + \sum_{k=1}^q \eta_4 \Delta inv_{t-k} + \sum_{k=1}^q \eta_5 \Delta tot_{t-k} + \sum_{k=1}^q \eta_6 \Delta agr_{t-k} + \partial_1 gdp_{gth}_{t-1} + \partial_2 edgdp_{t-1} + \partial_3 dsx_{t-1} + \partial_4 inv_{t-1} + \partial_5 tot_{t-1} + \partial_6 agr_{t-1} + \varepsilon_t \dots \dots \dots (II)$$

Where  $\alpha_0$  is a constant,  $p$  represents the lag order,  $\varepsilon_t$  is assumed serially uncorrelated,  $\eta_i$  on the coefficients of the different operators  $\Delta$  represents the short run dynamics,  $\partial_s$  indicates the estimates of the long run cointegration relationship.

This paper will take the format of a quantitative study with emphasis on secondary data from the period 1970 to 2012. The main sources of data are the World Development Indicators (World Bank) and IMF country reports/publications, as well as data sources from relevant local authorities and, other established and reputable sources, which shall be used where necessary. Few variables were calculated and others were interpolated to fill the missing gaps. The sample size was based on the available data.

#### 4.3. Error Correction Model (ECM)

Since time-series data is often affected by unit root problems and the presence of these factors make the Ordinary Least Squares method (OLS) inappropriate for time series regressions, we instead used ARDL procedure by estimating ECM to explain the dynamic relationship among nonstationary variables. ECM works best for nonstationary series, which are cointegrated. In ECM, all variables are endogenous, and all variables are dependent variables. Therefore, in accordance with relevant literature, we wish to represent the ECM of equation II as follows:

$$\Delta gdp_{gth}_t = \alpha_0 + \sum_{k=1}^p \eta_{1j} \Delta gdp_{gth}_{t-k} + \sum_{k=1}^q \eta_{2j} \Delta Z_{t-k} + ECT_{t-1} + \varepsilon_t \dots \dots \dots (III)$$

Where  $ECT_{t-1} = (\partial_1 gdp_{gth}_{t-1} + \partial_i Z_{t-1})$  and  $j = (1, 2, \dots, 6)$ ;  $Z_i$  is the vector of the regressors (edgdp, dsx, inv, tot, and agr), the linear combination of the long run coefficient in a standard error correction model in equation II is replaced with the lagged error correction term

( $ECT_{t-1}$ ). This parameter tells how quickly the equilibrium is restored in the model, in other words, how quickly short-run values are reconciled to the long run equilibrium in the model.

Thus, the speed at which equilibrium is restored depends on the magnitude of the coefficient and is expected to be significantly negative. The long run coefficient estimate, which is contained in  $\partial_i$ , is specified as follows:

$$\begin{aligned} edgdp &= -\frac{\partial_2}{\partial_1} \\ dsx &= -\frac{\partial_3}{\partial_1} \\ inv &= -\frac{\partial_4}{\partial_1} \\ tot &= -\frac{\partial_5}{\partial_1} \\ agr &= -\frac{\partial_6}{\partial_1} \end{aligned}$$

#### 4.4. Pre-estimation test

**Unit root test.** The unit root test is conducted in order to understand whether the variables exhibit constant means and variances. If either the mean or variance of any given variable is non-constant, then the variable is said to exhibit a unit root, which implies non-stationarity. This test allows generalization of findings to the time period under study. The test for unit root is called the Dickey Fuller test. It tests for the null hypothesis that the model has unit root (non-stationary) against the alternative hypothesis that the model has no unit root (stationary). When a variable is stationary at its level, it is said to be integrated of order zero  $I(0)$ . On the other hand, when a variable is stationary at its first difference, it is said to be integrated of order one  $I(1)$  etc. In this study, we will use the Augmented Dickey Fuller test (ADF). ADF is

different from Dickey Fuller test (DF) because the ADF adds enough lags of a variable to ensure that the errors are serially uncorrelated.

The Augmented Dickey-Fuller (ADF) test was conducted in order to test the level of stationarity of the time series data. Table 2 summarizes the test variables.

**Table 3: Stationary test**

Variable	Test Statistics			
	Levels	Difference		
gdp <sub>gth</sub>	-5.146		I(0)	Stationary at 1%
edgdp	-2.139	-3.925	I(1)	Stationary at 1%
dsx	-2.065	-4.967	I(1)	Stationary at 1%
inv	-2.116	-4.546	I(1)	Stationary at 1%
tot	-2.454	-3.337	I(1)	Stationary at 5%
agr	-2.068	-4.761	I(1)	Stationary at 1%

The results obtained show that only *gdp<sub>gth</sub>* variable is stationary at levels and at 1 percent significance level (integrated at order zero I(0)). The rest of the variables except *tot* are found to be stationary at 1 percent, after differencing them once. *tot* is found to be stationary at 5 percent after differencing it once. These variables were integrated at order one (I(1)).

**Cointegration test.** Another critical pre-estimation test in time-series data is the cointegration test. It tests for whether the variables in the model exhibit long-run equilibrium relationship. The absence of a long-run equilibrium may lead to spurious regressions in the model. A spurious regression occurs when there is high correlation between variables that have

no causality or relationship. Thus, we will test for the presence of any long run cointegrating relationship among the variables.

The Johansen Fisher-type of cointegration test requires that each and every variable used in the test be integrated of order one I(1). However, an alternative test procedure called ARDL bounds procedure was developed by Pesaran et al. (2001) to test exclusively for I(0), I(1) and for mutually cointegrated regressors. In addition, this test requires that none of the variables used be integrated of any order above one I(1). Thus, we will employ ARDL bounds testing procedure to test for the presence of cointegrating relationship among the country's rate of economic growth and our regressors.

Furthermore, we will estimate the conditional error correction model of equation II and we will find the F-statistic in Wald test, which test for long run relationship. The null hypothesis of no-cointegration is given as  $H_0: \partial_1 = \partial_2 = \partial_3 = \partial_4 = 0$ , against the alternative hypothesis  $H_1: \partial_1 \neq \dots \neq \partial_4 \neq 0$  (Pesaran et al., 2001).

According to Pesaran et al. (2001), the F-statistic distribution is non-standard. It depends whether the used model variables are integrated of order zero I(0) or order one I(1); whether the model has any intercept and/or a trend with the number of regressors. From the two sets of asymptotic critical value bounds, where the first set I(0) series is called the lower bound critical values and the second set I(1) series is called the upper bound critical values. In addition, the Wald test F-statistics with level of significance 1 percent, 5 percent, and 10 percent are examined against the upper and lower bounds critical values. The null hypothesis of no-cointegration is rejected where the level of significance is above the upper bound critical value, regardless of the order of integration. Similarly, where the level of significance is less than the lower bound

critical value, we do not reject the null hypothesis. Finally, the test results are inconclusive, where the level of significance lies between the upper and lower bounds critical value.

#### **4.5. Post-estimation test**

**Autocorrelation, Stability and Normality test.** Autocorrelation occurs when the disturbance terms between two or more time periods are correlated, thus affecting the efficiency of test statistics in the model. In order to control for this, Durbin-Watson Statistics will be employed to detect the presence of autocorrelation. Another crucial post-estimation test in time series is the stability test. In our model, we will test for whether the dependent and the independent variables are stable in the time period under study.

In addition, we will test for normality of the disturbance term using the Jarque-Bera test for normality. It test for the hypothesis that the disturbance term is not normally distributed against the alternative of a normally distributed disturbance term. A test for normality is crucial in validating whether or not a model suffers from omitted variables, the presence of which leads to biased estimation.



### Chapter 5: Data Analysis and Interpretation

This chapter reports the results of the descriptive statistics, cointegration test, and the empirical analysis of external debt and economic growth relationship by using E-views statistical package.

#### 5.1. Descriptive statistics

Our sample size was based on the available data. Table 4 shows the descriptive statistics of the data, as a measure of central tendency. We use the mean and the median to tell the symmetric nature of the data. Thus, the distribution is positively skewed where the mean is greater than the median and vice versa. From Table 4, all the variables except GDPGTH and EDGDP show a negatively skewed distribution.

**Table 4: Descriptive statistics**

	<b>GDPGTH</b>	<b>EDGDP</b>	<b>DSX</b>	<b>INV</b>	<b>TOT</b>	<b>AGR</b>
Mean	3.863	56.839	8.566	16.255	55.560	26.081
Median	3.631	49.306	9.032	16.599	59.575	26.693
Maximum	12.393	120.336	33.161	33.060	76.955	35.449
Minimum	-4.329	9.706	0.118	4.563	29.047	17.206
Std. Dev.	3.519	33.565	7.662	9.045	13.961	4.808
Skewness	-0.119	0.292	1.098	0.155	-0.374	-0.204
Kurtosis	3.056	2.006	4.527	1.623	1.955	2.136
Jarque-Bera	0.107	2.381	12.813	3.570	2.958	1.636

Probability	0.948	0.304	0.002	0.168	0.228	0.441
Sum	166.125	2444.064	368.350	698.980	2389.058	1121.466
Sum Sq. Dev.	520.102	47318.450	2465.866	3435.910	8186.432	971.100
Observations	43	43	43	43	43	43

## 5.2. Cointegration Test

From Table 3, the results of ADF unit root tests confirmed non-stationarity in all the variables at levels except for GDP growth. Therefore our time series has a mixture of I(0) and I(1) variables. As a result, running the Ordinary Least Squares (OLS) regression will lead to spurious results. Consequently, we first determined the optimal lag order, and then proceeded with ARDL bounds cointegration test. Considering our sample size, we chose  $p_{\max} = 4$  and used Akaike Information Criterion (AIC) and Schwarz Information Criterion (SIC) in order to determine the optimal lag order using ARDL (p;q) model.

**Table 5: Optimal Lag selection**

<i>ADRL</i>	<i>Criterion</i>	
	<i>AIC</i>	<i>SIC</i>
(4,4,4,4)	4.1148	5.6662
(3,3,3,3)	4.7420	6.0217
(2,2,2,2)	5.3845	6.3978

In other to estimate our model ARDL (4,4,4,4,4,4), we adopted Campbell and Perron (1991), general to specific testing method. This process eliminates the highest insignificant lagged difference term of the regressor until the last lagged difference terms are all significant (Abd-El-Kader, 2013). As a result, we obtained ARDL (3,0,4,3,0,3) as our optimal lag order for our model. Table 6 shows the estimated long run coefficient for bound testing.

**Table 6: ARDL (3,0,4,3,0,3) - Dependent variable  $\Delta$ GDPGTH**

<b>ARDL (3,0,4,3,0,3)</b>		
<i>Regressors</i>	<i>Coefficient</i>	<i>t-Statistic</i>
C	-37.433***	-5.031
$\Delta$ (GDPGTH(-1))	2.403***	6.354
$\Delta$ (GDPGTH(-2))	1.224***	4.963
$\Delta$ (GDPGTH(-3))	0.505***	4.301
$\Delta$ (EDGDP)	-0.03	-0.674
$\Delta$ (DSX)	0.123	0.898
$\Delta$ (DSX(-1))	0.182	0.913
$\Delta$ (DSX(-2))	-0.220*	-1.99
$\Delta$ (DSX(-3))	0.440***	3.001
$\Delta$ (INV)	0.263*	2.079
$\Delta$ (INV(-1))	0.305***	3.64
$\Delta$ (INV(-2))	0.494***	5.63
$\Delta$ (INV(-3))	0.247**	2.608
$\Delta$ (INV(-4))	0.290***	3.181
$\Delta$ (TOT)	0.209***	3.066
$\Delta$ (AGR)	0.347	1.769
$\Delta$ (AGR(-1))	-0.489**	-2.399
$\Delta$ (AGR(-2))	-0.353*	-2.153
$\Delta$ (AGR(-3))	-0.564***	-3.312
$\partial_1$ GDPGTH(-1)	-4.287***	-9.282
$\partial_2$ EDGDP(-1)	-0.227***	-5.501
$\partial_3$ DSX(-1)	0.619***	4.376
$\partial_4$ INV(-1)	-0.169	-1.603
$\partial_5$ TOT(-1)	0.454***	5.224
$\partial_6$ AGR(-1)	1.513***	6.145
<b>Wald Test</b>		
$H_0: \partial_1 = \partial_2 = \partial_3 = \partial_4 = \partial_5 = \partial_6 = 0$	F-statistic (6, 13) = 14.98272 Pr = 0.0000 Chi-Squared (6) = 89.89632 Pr = 0.0000	
Pesaran upper bound critical value	F(6)=4.54	
Pesaran lower bound critical value	F(6)=3.26	

*Note:* a) The Standard errors are reported in parentheses

b) \*\*\*Significant at 1%, \*\*Significant at 5%, \*Significant at 10%

We conducted the Wald test of joint significance of the long run coefficient in order to check for the presence of any cointegrating relationship among the variables.  $H_0: \partial_1 = \partial_2 = \partial_3 =$

$\partial_4 = 0$  is the null hypothesis of no cointegration. The F-statistics of 14.98 is above the Pesaran upper bound critical value of 4.54 at 1 percent significant level. Thus, we reject the null hypothesis of no cointegration and we conclude that, there existence a long-run relationship among our variables (see Table 6).

### 5.3. The Empirical Analysis of External Debt and Economic Growth relationship

We used the Error Correction Mechanism of ARDL (3,0,4,3,0,3) in order to show the short run and long run coefficient estimates (see Table 7 and Table 8)

**Table 7: Short run coefficient estimates and speed of adjustment**

<i>Dependent Variable: <math>\Delta GDPGTH</math></i>			
<i>Variable</i>	<i>Coefficient</i>	<i>Standard Error</i>	<i>t-Statistic</i>
C	-0.274512	0.548638	-0.500352
$\Delta(GDPGTH(-1))$	-0.912413***	0.154712	-5.897478
$\Delta(GDPGTH(-2))$	-0.794547***	0.203411	-3.906118
$\Delta(GDPGTH(-3))$	-0.042255	0.160661	-0.263006
$\Delta(EDGDP)$	-0.125683***	0.059832	-2.100596
$\Delta(INV)$	0.129862	0.137242	0.946224
$\Delta(INV(-1))$	-0.000991	0.109314	-0.009070
$\Delta(INV(-2))$	0.030649	0.101163	0.302963
$\Delta(INV(-3))$	-0.141956	0.113389	-1.251939
$\Delta(INV(-4))$	-0.123575	0.121685	-1.015535
$\Delta(DSX)$	0.045842	0.206345	0.222161
$\Delta(DSX(-1))$	0.015696	0.179055	0.087660
$\Delta(DSX(-2))$	0.079694	0.145959	0.546000
$\Delta(DSX(-3))$	0.320764*	0.171427	1.871144
$\Delta(TOT)$	0.142141***	0.091450	1.554296
$\Delta(AGR)$	0.666419	0.271392	2.455562
$\Delta(AGR(-1))$	0.240730	0.214481	1.122384
$\Delta(AGR(-2))$	0.152455	0.246769	0.617805
$\Delta(AGR(-3))$	0.003075	0.242691	0.012669
ECT(-1)	-1.511307***	0.513707	-2.941960
<b>Diagnostic</b>			
R-squared		0.835056	
Adjusted R-squared		0.650708	
Durbin-Watson Stat		2.113871	

F-statistic	4.529764
Prob(F-statistic)	0.001448

*Note:* a) The Standard errors are reported in parentheses  
 b) \*\*\*Significant at 1%, \*\*Significant at 5%, \*Significant at 10%

**Table 8: Long run coefficient estimates**

<i>Dependent Variable: <math>\Delta</math>GDPGTH</i>		
<i>Variable</i>	<i>Coefficient</i>	<i>t-Statistic</i>
EDGDP	-0.053009*** (0.007240)	-7.321432
DSX	0.144355*** (0.027292)	5.289347
INV	-0.039502 (0.024598)	-1.605916
TOT	0.105935*** (0.016300)	6.498959
AGR	0.352807*** (0.042739)	8.254927
<i>Diagnostic</i>		
R-Square	0.959584	
Adjusted R-squared	0.884971	
Durbin-Watson Stat	2.393162	
F-statistic	12.86076	
Prob(F-statistic)	0.000012	

*Note:* a) The Standard errors are reported in parentheses  
 b) \*\*\*Significant at 1%, \*\*Significant at 5%, \*Significant at 10%

### 5.3.1. Model Diagnostics

Here, we will start by running the following diagnostics in order to assess whether our model has been correctly specified: the Durbin–Watson statistics, test for Heteroscedasticity, Jarque-Bera test for normality, Correlation Matrix for Multicollinearity test and; reading R-square and F-statistic. The F statistic shows the level of significance for the model. The R-square demonstrates how much of the dependent variable (GDPGH) is explained by the independent variables (EDGDP, DSX, INV, TOT, AGR) in our model. Breusch-Pagan-Godfrey

Heteroscedasticity test for constant variance of the error term, Jarque-Bera test for normality, while Durbin–Watson statistic reports any autocorrelation in the model.

By using Parks FGLS, the Correlation Matrix for Multicollinearity test, the Jarque-Bera test for normality and the Breusch-Pagan-Godfrey test for Heteroscedasticity, shows our estimated ARLD (3,0,4,3,0,3) as precise (see Appendices). The model observation falls within  $\pm 2$  standard error of regression or 95% prediction interval. Table 7 and Table 8 for short and long run estimates show fair measure of goodness of fit with 84 percent and 96 percent respectively of total variation of the dependent variable being explained by the independent variables. The F-statistics probability is statistically significant at 1 percent. The short run estimate of 2.11 and the long run estimate of 2.39 for the Durbin-Watson statistics indicate no evidence of first order serial correlation, as the values are closer to 2.

### **5.3.2. Estimation Results of the Economic Growth model**

In determining the “Role of External Debt to the Economic Growth of The Gambia”, we regress economic growth on external debt to GDP and debt service to exports plus other explanatory variables. Each independent variable has its hypothesised signed (see Chapter 4, Methodology). The short run coefficient of external debt to GDP (EDGDP) was expected to be positive, while the long run coefficient of EDGDP was expected to be negative. This is defined as the theory of the Debt Laffer Curve, where foreign borrowings will impact positively on economic growth in the beginning but as the home country continues to accumulate more foreign debt, the reverse relationship is observed. However, from our estimation results, both short run and long run coefficients of EDGDP are negative and significant at 1 percent (see Table 7 and Table 8). This implies that a rise in both current debt flows and past debt accumulation, negatively affects economic growth in The Gambia. The long run relationship between EDGDP

and economic growth conforms with the findings of Elbadawi et al. (1996) and shows the existence of a debt overhang problem in The Gambia.

The coefficient of external debt service to exports (DSX) was expected to be negative so as to exhibit the effects of the crowding out of investment (both public and private) and the problem of liquidity constraint. Therefore, the positive relationship between DSX and economic growth was unexpected. Both the short run and long run DSX coefficients are positive and significant at 10 percent and 1 percent respectively (see Table 7 and Table 8). However, Fosu (1999) as cited in Were (2001), argued that external debt service by itself is an inadequate debt burden indicator. Nevertheless, The Gambia unlike other developing countries contracts its foreign debt with a high degree of concessionality<sup>12</sup>. Thus, it is not entirely surprising that we obtained a positive correlation between DSX and economic growth.

The impact of the rest of the variables on economic growth is as follows (see Table 7 and Table 8): Terms of Trade (TOT) is positive in both the short run and long run relationship, and at 1 percent level of significance. This is expected and it shows that as the country increases its exports vis-a-vis its imports, economic growth improves. Similarly, agriculture as a ratio of GDP (AGR) is positive in the long run and at 1 percent level of significance. This is observed in the case of The Gambia where agriculture is relatively the biggest contributor to economic growth. Nonetheless, according to our estimation results, gross capital formation as a ratio of GDP (INV) in relation to economic growth is not significant. As a result INV has no relationship with economic growth according to our model.

The lagged error correction term ECT(-1) in table 7 is correctly signed (negative) and significant at 1 percent. The coefficient indicates long run causality between the independent

---

<sup>12</sup> Concessionality of debt could mean: lower interest rates, grace period, longer maturity.

variables and the dependent variable of our model. This equally measures the speed of adjustment towards the long run equilibrium.

## **Chapter 6: Conclusion**

### **6.1. Summary of the Study**

First of all our concern to this study was the growing level of public debt of The Gambia and its implications on economic growth. According to one IMF data source, as at July 2015, The Gambia was among the 20 most indebted countries in the world with a public debt level of over 100 percent. In addition, the country's Monetary Policy Committee (MPC) rate (already the highest in the world) continues to grow and it is currently 23 percent as at the last MPC meeting held on 3rd February 2016<sup>13</sup>. However, our focus area was to investigate the role of external debt in determining economic growth in The Gambia. Key among our specific objectives was to establish a relationship between external debt and economic growth in the case of The Gambia where our hypothesis was that a high level of external debt will have a negative impact on economic growth. Similarly, we looked at a time series data from 1970 to 2012 in order to estimate and analyse the data by using the Error Correction Mechanism with E-views statistical software.

The study met its overall objective by investigating the relationship between external debt and economic growth. We introduced  $gdp_{gth} = f[edgdp, dsx, inv, tot, agr]$  as our model. We found a negative and significant relationship both in the short run and long run between

---

<sup>13</sup> <http://thepoint.gm/africa/gambia/article/central-bank-presents-state-of-gambias-economy>



external debt and economic growth. However, there was a positive and significant relationship both in the short run and long run between external debt service and economic growth in The Gambia.

Given our results, we assert that where external debt is expected to impact positively on economic growth in the short run is not the case for The Gambia. This implies that even with the current flow of external debt, economic growth in The Gambia does not perform. On the other hand, past accumulation of external debt has conformed to established literature. For instance Cohen (1993), Elbadawi et al. (1996), Krugman (1988) and Sachs (1989) all established the impact of debt overhang in development countries as a result of the continuous accumulation of external debt. However, external debt service in The Gambia is relatively less problematic considering our sample size. In addition, almost all of the foreign borrowings in The Gambia were contracted with highly concessional terms. Nevertheless, this might not be the case in the near future.

Future studies on external debt and economic growth relationship for The Gambia could look into establishing a threshold level beyond which external debt becomes unsustainable. In addition, more controlled variables could be explored in the model: exchange rates, interest rates, Foreign Direct Investment (FDI) and tourism.

## **6.2. Policy recommendations**

From the summary of results, we can deduce that foreign borrowing does not add to economic growth in the case of The Gambia. Therefore, if aggressive measures are not undertaken, the simultaneous attainment of sustainable economic growth and an optimal external debt level may continue to remain elusive. For this reason, the government of The Gambia should endeavor to refocus its existing policies and institutional arrangements in contracting

foreign loans. In addition, there is urgent need for the government to exercise some fiscal discipline, which is reflected in the hiking of interest rates in The Gambia.

Among recommended policy reforms, it is the need for The Gambia to start focusing only on projects that are self-financing. In other words, The Gambia should invest in projects where revenue flows after project completion will be sufficient enough to repay the contracted loan. It is evident that this is not the case for The Gambia, as investment in our model is insignificant both in the short run and long run. Therefore, the limited resources should be better channeled to productive investment ventures. A relative option to foreign borrowings that is a non-debt creating flow and at the same time add to economic growth is the need to develop FDI marketing and promotion.

More often than not, in developing countries, policy makers are different from the technicians who are involved in assessing the cost-risk trade off of these foreign borrowings. As a result, uninformed decisions are made where the debt technicians, staff who are involved in managing these foreign debts are not involved. This should change. In addition, the capacity of the debt management staff should be strengthen and improved on regular basis. Similarly, in The Gambia, State Owned Enterprises (SOEs) constitute the majority of the government's contingent liabilities. It's about time that SOEs take full responsibility of their own foreign borrowings. The time has come when the government should cease servicing any SOEs foreign obligations, for simply being the guarantor. There is need for urgent SOEs reforms to ensure efficiency.

Finally, there is need for the government of The Gambia to curtail government expenditures. Excessive public expenditure has led to interest rate hikes in The Gambia. This increases the repayment cost thereby increasing the cost of borrowing. The government's Programme Based Budgeting (PBB) should be strengthened and that standards are put in place.

One thing is to implement PBB and another thing is to ensure efficient monitoring and evaluation. Hence unwarranted public expenditures are minimized.

### References

- Abd-El-Kader, E. S. (2013). Is the J-Curve Effect Observable for Egypt Economy? *Journal of Economic Cooperation and Development* , 34 (1), 91-118.
- Akram, N. (2015). Is public debt hindering economic growth of the Philippines? *International Journal of Social Economics* , 42 (3), 202-221.
- Bachvarova, E. S. (2008). The Debt Laffer Curve: Estimates for 1990-2005. Durham, North Carolina, United States of America (USA).
- Brouwer, M., & Blokhuis, S. (2012). Economic Governance through Private and Public Sector. In R. S. Society, N. Pouw, & I. Baud (Eds.), *Local Governance and Poverty in Developing Nations* (p. 243). New York: Routledge.
- Claessens, S. (1990). The Debt Laffer Curve: Some Estimates. *World Development* , 18 (12), 1671-1677.
- Cohen, D. (1998). *GROWTH AND EXTERNAL DEBT: A NEW PERSPECTIVE ON THE AFRICAN AND LATIN AMERICAN TRAGEDIES*. Ecole normale superieure, Cepremap and Cepr. Paris: World Bank.
- Cohen, D. (1993). Low Investment and Large LDC Debt in the 1980's. *American Economic Review* (83), 437-449.

- Economist, T. (2015, January 31). *Public debt in Africa: Not contagious*. Retrieved from Economist: <http://www.economist.com/news/finance-and-economics/21641261-gambias-financial-woes-do-not-portend-african-public-debt-crisis-not>
- Elbadawi, I. A., Ndulu, B. J., & Ndung'u, N. (1996). Debt Overhang and Economic Growth in Sub-Saharan Africa. In IMF, *External Finance for Low-Income Countries* (pp. 49-76). Washington: IMP and World Bank.
- Frimpong, J. M., & Oteng-Abayie, E. F. (2006). THE IMPACT OF EXTERNAL DEBT ON ECONOMIC GROWTH IN GHANA: A COINTEGRATION ANALYSIS. *Journal of Science and Technology* , 26 (3), 122-131.
- Genç, M. C., & Tandogan, D. (2015). THE IMPACT OF EXTERNAL DEBT ON ECONOMIC GROWTH IN TURKEY: AN ARDL BOUNDS TESTING APPROACH. *PARADOKS Economics, Sociology and Policy Journal* , 11 (1), 65-87.
- IMF. (n.d.). *Debt and painful reforms (1982-89)*. Retrieved from International Monetary Fund: <https://www.imf.org/external/about/histdebt.htm>
- IMF. (2008). *The Gambia: Enhanced Heavily Indebted Poor Countries Initiative - Completion Point Document and Multilateral Debt Relief Initiative*. Washington, D.C.: IMF.
- IMF. (2014a). *External debt statistics: Guide for compilers and users*. IMF. Washington DC: IMF.
- IMF. (2014b). *Debt Sustainability Framework for Low-Income Countries (LICs)*. IMF. Washington DC: IMF.
- IMF. (2014c). *Heavily Indebted Poor Countries (HIPC) initiative and Multilateral Debt Relief Initiative (MDRI) - Statistical update*. IMF. Washington DC: IMF

- IMF. (2015). *Request for Disbursement under the Rapid Credit Facility, cancellation of the Extended Credit Facility arrangement, and proposal for a Staff Monitored Program - Debt Sustainability Analysis*. IMF. Washington DC: IMF.
- Koeda, J. (2008). *A Debt Overhang Model for Low-Income Countries*. IMF, Middle East and Central Asia Department. Washington DC: IMF.
- Krugman, P. (1988). *FINANCING VS. FORGIVING A DEBT OVERHANG*. 1050 Massachusetts Avenue: National Bureau of Economic Research.
- Krugman, P. (1989). Market-based Debt-reduction Schemes. *NBER Working Paper* , 2589.
- Malik, S., Hayat, M. K., & Hayat, M. U. (2010). External Debt and Economic Growth: Empirical Evidence from Pakistan. *International Research Journal of Finance and Economics* (44), 89-97.
- MoFEA. (2012). *Public Debt Bulletin for The Gambia*. MoFEA, Directorate of Loans and Debt Management. Banjul : MoFEA.
- Mohd Daud, S. N., Halim Ahmad, A., & Azman-Saini, W. (2013). Does External Debt Contribute to Malaysia Economic Growth? *Ekonomika istrazivanja - Economic Research* , 26 (2), 346-363.
- Nshimyumuremyi, A. (2014). *Gambia 2014*. Abidjan: African Development Bank (AfDB).
- Ogunmuyiwa, M. (2011). Does External Debt Promote Economic Growth in Nigeria? *Current Research Journal of Economic Theory* , 3 (1), 29-35.
- Onaolapo, A. A., & Oladejo, K. S. (2015). Impact of External Debt Management in Economic Growth: A Lesson from Nigeria. *Research Journal of Finance and Accounting* , 6 (5), 74-79.

- Pattillo, C., Poirson, H., & Ricci, L. (2002). *External Debt and Growth*. IMF, Research Department. Washington DC: IMF.
- Pesaran, H., Shin, Y., & Smith, R. (2001). Bounds Testing Approaches to the Analysis of Level Relationships. *Journal of Applied Econometrics* , 16, 289-326.
- Sachs, J. (1989). The Debt Overhang of Developing Countries. *Oxford: Blackwell* , 80-102.
- Todaro, M. P., & Smith, S. C. (2014). Economic Development. In M. P. Todaro, & S. C. Smith, *Economic Development* (12th Edition ed., pp. 705-706). Boston Columbus Indianapolis New York San Francisco Upper Saddle River Amsterdam Cape Town Dubai London Madrid Milan Munich Paris Montreal Toronto Delhi Mexico City Sao Paulo Sidney Hong Kong Seoul Singapore Taipei Tokyo: Pearson.
- Touray, O. A. (2000). *The Gambia and the World: A History of the Foreign Policy of Africa's Smallest State, 1965 - 1995*. Hamburg: Institut fur Afrika-Kunde.
- Were, M. (2001). The Impact of External Debt on Economic Growth in Kenya: An Empirical Assessment. *World Institute for Development Economics Research (WIDER) discussion papers. 2001/116*. United Nations University (UNU), WIDER.
- Wikipedia. (2015, July 4). *Latin American debt crisis*. Retrieved from Wikipedia:  
[https://en.wikipedia.org/wiki/Latin\\_American\\_debt\\_crisis](https://en.wikipedia.org/wiki/Latin_American_debt_crisis)

## Appendix A

Table A1: Data used in the Study

Year	gdp <sub>gth</sub>	edgdp	dsx	inv	tot	agr
1970	6.15	9.71	0.12	6.89	45.77	30.24
1971	-0.07	9.83	0.19	5.59	48.71	30.35
1972	0.24	12.45	0.34	7.23	42.21	32.26
1973	9.25	11.78	0.39	8.12	39.74	32.23
1974	5.88	12.76	0.44	5.96	43.30	32.21
1975	12.39	11.65	0.42	8.55	48.83	32.05
1976	7.35	13.75	0.31	11.75	57.66	32.64
1977	3.44	18.70	0.48	13.28	51.00	31.00
1978	6.32	14.28	0.31	23.13	42.51	27.94
1979	-1.33	22.95	0.43	29.09	29.70	26.69
1980	6.27	40.37	0.66	26.70	29.48	27.02
1981	3.32	60.46	1.83	25.33	38.42	30.63
1982	-0.76	68.23	6.04	22.46	46.10	35.45
1983	10.88	71.09	3.31	18.88	61.85	32.29
1984	3.54	85.54	2.32	18.31	75.96	28.01
1985	-0.81	78.28	0.55	15.09	75.77	26.38
1986	4.09	114.27	6.12	16.60	67.11	28.81
1987	2.45	120.34	9.85	17.13	66.42	30.56
1988	4.48	103.87	9.64	16.36	68.66	27.40
1989	5.90	101.71	9.76	20.37	67.21	25.92
1990	3.56	97.28	15.98	22.34	66.68	24.34
1991	3.11	46.71	11.22	20.34	67.67	18.16
1992	3.38	48.47	11.94	24.79	66.15	17.33
1993	3.01	46.38	12.11	5.28	61.65	17.21
1994	0.15	49.31	16.69	4.69	59.02	19.23
1995	0.88	49.04	12.07	6.90	53.36	21.36
1996	2.22	48.55	11.40	6.78	59.57	17.95

1997	4.90	49.92	11.62	5.18	62.67	20.58
1998	3.50	51.60	9.91	4.88	60.55	19.20
1999	6.40	52.93	8.33	4.76	64.97	24.01
2000	5.50	55.94	8.47	4.56	71.26	24.53
2001	5.80	63.34	7.19	11.17	71.18	25.43
2002	-3.25	87.75	7.67	7.28	66.11	24.12
2003	6.87	116.64	10.98	10.04	76.96	26.75
2004	7.05	107.37	20.39	33.06	40.53	26.85
2005	-0.94	98.78	19.63	29.46	41.86	27.07
2006	1.12	102.95	28.92	30.70	29.05	21.82
2007	3.63	83.12	33.16	29.41	31.63	20.46
2008	5.73	34.87	15.02	26.70	38.91	25.20
2009	6.45	43.04	11.42	26.76	52.38	26.22
2010	6.52	41.07	11.26	18.39	61.97	28.95
2011	-4.33	43.61	10.40	25.36	69.25	22.30
2012	5.86	43.38	9.03	23.37	69.29	22.32

**Table A2: ARDL (3,0,4,3,0,3)**

Dependent Variable: D(GDPGTH)

Method: Least Squares

Date: 02/16/16 Time: 13:48

Sample (adjusted): 1975 2012

Included observations: 38 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-37.43285	7.441119	-5.030541	0.0002
D(GDPGTH(-1))	2.402538	0.378107	6.354129	0.0000
D(GDPGTH(-2))	1.224130	0.246643	4.963159	0.0003
D(GDPGTH(-3))	0.504924	0.117400	4.300895	0.0009
D(EDGDP)	-0.029625	0.043961	-0.673892	0.5122
D(INV)	0.262859	0.126418	2.079285	0.0579
D(INV(-1))	0.305320	0.083888	3.639601	0.0030
D(INV(-2))	0.493946	0.087735	5.630001	0.0001
D(INV(-3))	0.246987	0.094711	2.607802	0.0217
D(INV(-4))	0.290045	0.091176	3.181177	0.0072
D(DSX)	0.123471	0.137465	0.898197	0.3854
D(DSX(-1))	0.181528	0.198857	0.912856	0.3779
D(DSX(-2))	-0.220419	0.110788	-1.989557	0.0681
D(DSX(-3))	0.440052	0.146636	3.000989	0.0102
D(TOT)	0.208570	0.068029	3.065903	0.0090
D(AGR)	0.347218	0.196255	1.769221	0.1003



D(AGR(-1))	-0.489389	0.203967	-2.399356	0.0321
D(AGR(-2))	-0.352583	0.163729	-2.153449	0.0506
D(AGR(-3))	-0.564387	0.170402	-3.312090	0.0056
GDPGTH(-1)	-4.287376	0.461896	-9.282123	0.0000
EDGDP(-1)	-0.227272	0.041312	-5.501349	0.0001
INV(-1)	-0.169360	0.105632	-1.603294	0.1329
DSX(-1)	0.618905	0.141429	4.376083	0.0008
TOT(-1)	0.454185	0.086943	5.223912	0.0002
AGR(-1)	1.512615	0.246136	6.145450	0.0000
<hr/>				
R-squared	0.959584	Mean dependent var	-0.000436	
Adjusted R-squared	0.884971	S.D. dependent var	5.184586	
S.E. of regression	1.758400	Akaike info criterion	4.209838	
Sum squared resid	40.19561	Schwarz criterion	5.287198	
Log likelihood	-54.98693	Hannan-Quinn criter.	4.593154	
F-statistic	12.86076	Durbin-Watson stat	2.393162	
Prob(F-statistic)	0.000012			

**Table A3: Short run Coefficient Estimates and Speed of Adjustment**

Dependent Variable: D(GDPGTH)

Method: Least Squares

Date: 02/16/16 Time: 13:55

Sample (adjusted): 1976 2012

Included observations: 37 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.274512	0.548638	-0.500352	0.6232
D(GDPGTH(-1))	-0.912413	0.154712	-5.897478	0.0000
D(GDPGTH(-2))	-0.794547	0.203411	-3.906118	0.0011
D(GDPGTH(-3))	-0.042255	0.160661	-0.263006	0.7957
D(EDGDP)	-0.125683	0.059832	-2.100596	0.0509
D(INV)	0.129862	0.137242	0.946224	0.3573
D(INV(-1))	-0.000991	0.109314	-0.009070	0.9929
D(INV(-2))	0.030649	0.101163	0.302963	0.7656
D(INV(-3))	-0.141956	0.113389	-1.251939	0.2275
D(INV(-4))	-0.123575	0.121685	-1.015535	0.3241
D(DSX)	0.045842	0.206345	0.222161	0.8268

D(DSX(-1))	0.015696	0.179055	0.087660	0.9312
D(DSX(-2))	0.079694	0.145959	0.546000	0.5922
D(DSX(-3))	0.320764	0.171427	1.871144	0.0786
D(TOT)	0.142141	0.091450	1.554296	0.1385
D(AGR)	0.666419	0.271392	2.455562	0.0251
D(AGR(-1))	0.240730	0.214481	1.122384	0.2773
D(AGR(-2))	0.152455	0.246769	0.617805	0.5449
D(AGR(-3))	0.003075	0.242691	0.012669	0.9900
ECT(-1)	-1.511307	0.513707	-2.941960	0.0091

---

R-squared	0.835056	Mean dependent var	-0.176518
Adjusted R-squared	0.650708	S.D. dependent var	5.139619
S.E. of regression	3.037564	Akaike info criterion	5.363366
Sum squared resid	156.8555	Schwarz criterion	6.234132
Log likelihood	-79.22226	Hannan-Quinn criter.	5.670351
F-statistic	4.529764	Durbin-Watson stat	2.113871
Prob(F-statistic)	0.001448		

**Table A4: ARDL Bounds Testing**

*Equation:  $H_0: \partial_1 = \partial_2 = \partial_3 = \partial_4 = \partial_5 = \partial_6 = 0$*

Test Statistic	Value	df	Probability
F-statistic	14.98272	(6, 13)	0.0000
Chi-square	89.89632	6	0.0000

Null Hypothesis:

$C(20)=C(21)=C(22)=C(23)=C(24)=C(25)=0$

Null Hypothesis Summary:

Normalized Restriction (= 0)	Value	Std. Err.
C(20)	-4.287376	0.461896
C(21)	-0.227272	0.041312
C(22)	-0.169360	0.105632
C(23)	0.618905	0.141429
C(24)	0.454185	0.086943
C(25)	1.512615	0.246136

Restrictions are linear in coefficients.

**Table A5: Long Run Coefficient Estimates**

**External Debt to GDP**

Test Statistic	Value	df	Probability
t-statistic	-7.321432	13	0.0000
F-statistic	53.60337	(1, 13)	0.0000
Chi-square	53.60337	1	0.0000

Null Hypothesis:  $-C(21)/C(20)=0$

Null Hypothesis Summary:

Normalized Restriction (= 0)	Value	Std. Err.
$-C(21) / C(20)$	-0.053009	0.007240

Delta method computed using analytic derivatives.

**Debt Service to Export**

Test Statistic	Value	df	Probability
t-statistic	5.289347	13	0.0001
F-statistic	27.97720	(1, 13)	0.0001
Chi-square	27.97720	1	0.0000

Null Hypothesis:  $-C(22)/C(20)=0$

Null Hypothesis Summary:

Normalized Restriction (= 0)	Value	Std. Err.
$-C(22) / C(20)$	0.144355	0.027292

Delta method computed using analytic derivatives.

**Investment**

Test Statistic	Value	df	Probability
t-statistic	-1.605916	13	0.1323
F-statistic	2.578965	(1, 13)	0.1323
Chi-square	2.578965	1	0.1083

Null Hypothesis:  $-C(23)/C(20)=0$

Null Hypothesis Summary:

Normalized Restriction (= 0)	Value	Std. Err.
$-C(23) / C(20)$	-0.039502	0.024598

Delta method computed using analytic derivatives.

**Terms of Trade**

Test Statistic	Value	df	Probability
t-statistic	6.498959	13	0.0000
F-statistic	42.23647	(1, 13)	0.0000
Chi-square	42.23647	1	0.0000

Null Hypothesis:  $-C(24)/C(20)=0$ 

Null Hypothesis Summary:

Normalized Restriction (= 0)	Value	Std. Err.
$-C(24) / C(20)$	0.105935	0.016300

Delta method computed using analytic derivatives.

**Agriculture**

Test Statistic	Value	df	Probability
t-statistic	8.254927	13	0.0000
F-statistic	68.14383	(1, 13)	0.0000
Chi-square	68.14383	1	0.0000

Null Hypothesis:  $-C(25)/C(20)=0$ 

Null Hypothesis Summary:

Normalized Restriction (= 0)	Value	Std. Err.
$-C(25) / C(20)$	0.352807	0.042739

Delta method computed using analytic derivatives.

**Table A6: Correlation Matrix**

	<b>GDPGTH</b>	<b>EDGDP</b>	<b>DSX</b>	<b>INV</b>	<b>TOT</b>	<b>AGR</b>
<b>GDPGTH</b>	1.000					
<b>EDGDP</b>	-0.158	1.000				
<b>DSX</b>	-0.173	0.538	1.000			
<b>INV</b>	-0.085	0.325	0.384	1.000		
<b>TOT</b>	-0.011	0.344	-0.082	-0.371	1.000	
<b>AGR</b>	0.277	-0.163	-0.592	0.009	-0.254	1.000

**Table A7: Diagnostic Tests****Heteroscedasticity Test: Breusch-Pagan-Godfrey**

F-statistic	0.796156	Prob. F(24,13)	0.6967
-------------	----------	----------------	--------

Obs*R-squared	22.61430	Prob. Chi-Square(24)	0.5427
Scaled explained SS	2.814791	Prob. Chi-Square(24)	1.0000

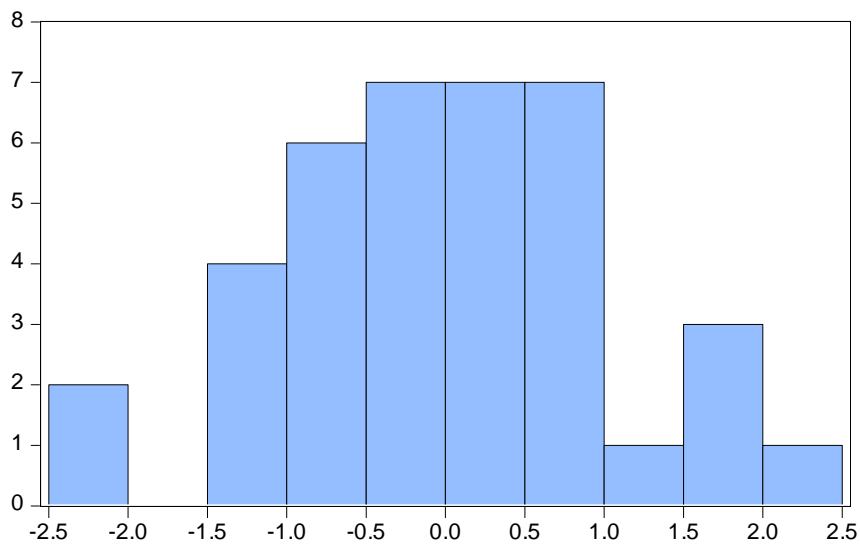
---

---

### Appendix B:

#### Diagnostic Test

#### Jarque-Bera Test of Normality



Series: Residuals	
Sample 1975 2012	
Observations 38	
Mean	-8.52e-15
Median	0.020667
Maximum	2.473132
Minimum	-2.461956
Std. Dev.	1.042290
Skewness	-0.067951
Kurtosis	3.127030
Jarque-Bera	0.054793
Probability	0.972975