The role of Development Finance Institutions (DFIs) in economic growth in Zambia

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by

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ABSTRACT

This study empirically investigates the role Development Finance Institutions (DFIs) play in the economic growth of Zambia from 1992: Q1 to 2015: Q4. The main aim of the study is to find out if DFIs enhance economic growth in Zambia and if the growth witnessed over the study period was in fact improved by these inflows. Additionally, a multiple regression is run against the exchange rate, inflation unemployment and interest rate to further analyse the interaction of these variables with DFI inflows and how they have impacted the growth levels experienced in Zambia.

The findings show that the impact DFIs on the GDP are ambiguous. In current period and DFI lagged to 2 periods prior, has a depressing effect whilst DFI lagged one period has an encouraging effect on GDP levels. Furthermore, from the cointegration tests, it is evident that there is a long run relationship that exists, signifying that the positive effects of DFIs can be felt in future periods especially if deployed to key sectors. The regression results of the other variables are in line with macro-economic theory which suggests that DFI inflows need to be supplemented with stable macro conditions to boost the degree of positive impact on GDP.

To ensure future benefit to Zambia from DFI inflows; recommendations preferred to authorities inferred from the findings include, directing of these funds to job and revenue generating sectors that can increase export revenue. These sectors may include agriculture and manufacturing. Furthermore, it is cardinal that institutional infrastructures are put in place that effect legal and monitoring framework to ensure efficient deployment of these funds within the economy.

Keywords: Development Finance Institutions (DFIs), Economic Growth, Gross Domestic Product (GDP)

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GLOSSARY OF TERMS

AfDB African Development Bank Group

AsDB Asian Development Bank

DBSA Development Bank of Southern Africa

DFI Development Finance Institution

ESG Environmental Social Governance

EIB European Investment Bank

FDI Foreign Direct Investment

FII Foreign Institutional Investor

GDP Gross Domestic Product

GIIN Global Impact Investing Network

GMM Generalized Method of Moments

GNI Gross National Income

IADB Inter-American Development Bank

IFC International Finance Corporation

IMF International Monetary Fund

MDG Millennium Development Goals

ODA Official Development Aid

SAP Structural Adjustment Programme

SDG Sustainable Development Goals

UNCTAD United Nations Conference on Trade and Development

UNEC United Nations Economic Commission

USD United States of America Dollar

WB World Bank

ZMW Zambian Kwacha

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CHAPTER 1: INTRODUCTION

1.1 Background

Development Finance Institutions (DFIs) play a critical role in financing and promoting private investment in Africa with the purpose of enhancing economic growth and sustainable development (Massa, 2011). Through their broad range of financial services in developing countries, DFIs invest in a variety of sectors ranging from finance, infrastructure, agribusiness, manufacturing and industry (Dickson, 2008). The aim of DFIs is to invest on a sustainable basis by providing the means for developing country governments to invest in projects that encourage socio-economic development and reduce the dependency on aid (Griffith and Evans, 2012). DFIs can either be in the form of bilateral and multilateral. Bilateral DFIs refer to national institutions with mandates linked to their government's international cooperation policies. Multilateral DFIs, which are the focus of this paper, are the private sector arms of the multilateral or regional development banks, such as the International Finance Corporation (IFC) of the World Bank Group (WBG) and the private sector activities of the European Investment Bank (EIB), and the Asian Development Bank (ADB), among other regional development banks (Romero, 2014).

Multilateral DFIs provide a wide variety of financial services, such as loans and guarantees for investors and entrepreneurs as well as equity participation in firms or investment funds. While they operate in a wide variety of countries, multilateral DFIs also invest in a wide variety of sectors ranging from the financial sector to infrastructure, agribusiness, manufacturing, industry and others (Massa, 2011). Overall, the mandates of today's DFIs are not homogeneous with some having an explicit mandate to promote development by fostering the private sector and economic growth, whereas others prioritise support to an efficient private sector. Although most DFIs have the mandate to promote development, they are organised like private corporations with commercial profitability considerations, often implying a trade-off between these goals (Romero, 2014).

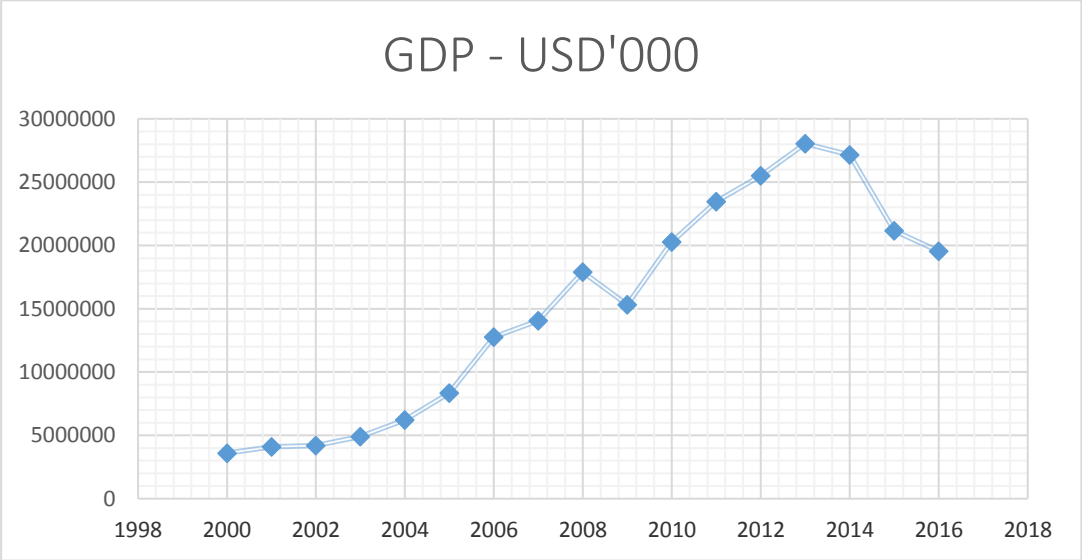
According to Dickson (2008), through their developmental mission and public funding, DFIs have a higher risk tolerance and a longer investment horizon. DFIs can call upon the guarantees of the state and are free from the short-term constraints of private investors. Therefore, DFIs

have the capacity to make long-term investments at attractive rates in markets to which the private sector find too risky to commit. Furthermore, DFIs pay no corporate tax or dividends. DFIs' involvement can serve to mitigate risk, serving as a public guarantee in countries and sectors where private sector actors would be unwilling to operate alone. Their public status allows DFIs to make longer maturity loans at good interest rates, advantageous guarantees and undertake high-risk equity investment. DFIs may also help lower the cost of capital for firms through partial credit risk guarantees.

1.2 Overview of Zambia and DFIs

Zambia being landlocked in Southern Africa has enjoyed peace and stability since gaining independence in 1964. Boasting relatively healthy pillar institutions, the country has experienced rapid economic growth over the last decade and has attracted some of the highest inflows of impact capital in the region. Zambia has a population of 14 million and GDP per capita of USD 1,400 and is a relatively stable African economy with a positive economic outlook for investment (FMO, 2014). The economy has continued to recover in 2017, following a drop in economic growth to 2.9% in 2015, its lowest rate since 1998 [**see figure 1.1**]. The economy was hit hard by lower global copper prices, as well as domestic pressures, including a low harvest, a power crisis, and political uncertainty due to 2016 presidential elections. Nonetheless, economic growth increased to 3.4% in 2016 and is expected to increase further to 4.1% in 2017 (WB, 2017).

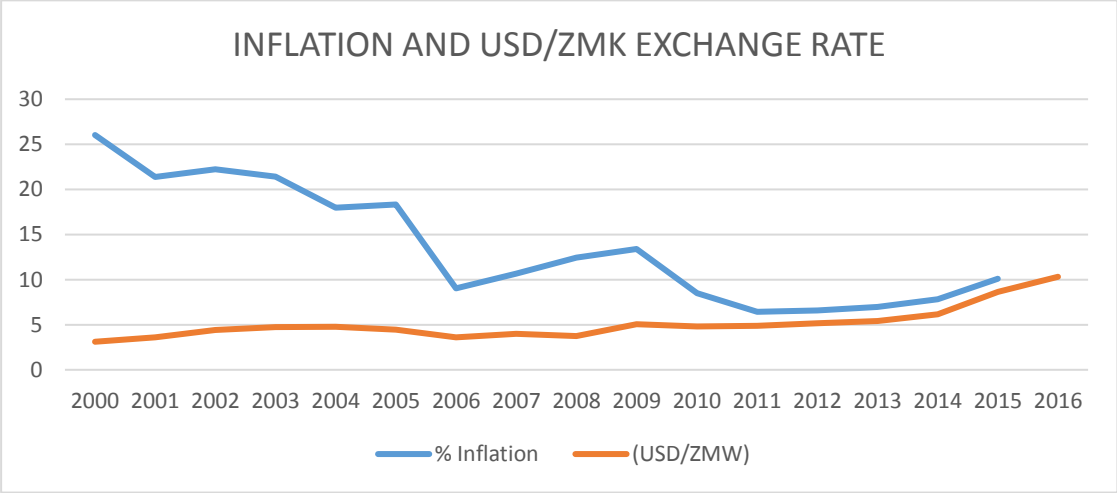
Figure 1. 1: GDP Growth Trend of Zambia from 2000 – 2016



Source: World Bank – World Development Indicators - Country Database; Zambia 2000-2016

According to the World Bank report (2017) inflation in Zambia declined to 6.5% in May 2017 and together with a more stable local currency (kwacha, ZMW), led the central bank to ease monetary policy, reversing the pressure on credit growth [**see figure 1.2**]. Between 2009 and 2013, the ZMW maintained relative stability against the USD but the currency has depreciated sharply since 2013. Driven in part by reductions in global copper prices, the ZMW experienced a steep drop in the second half of 2015, reflecting both a strengthening US Dollar and a weakening ZMW. According to the GIIN (2016) this depreciation has complicated efforts to disburse debt in local currency, as shifts in foreign exchange can significantly alter the ultimate cost of the instrument, and cause fluctuations in the returns available to investors.

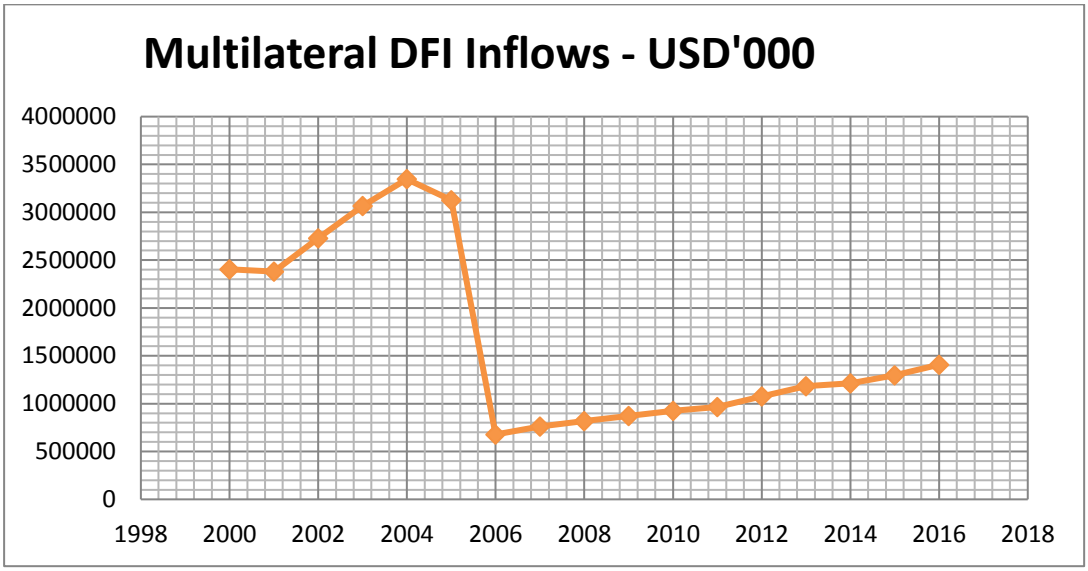
Figure 1. 2: Inflation and USD/ZMW Exchange rate of Zambia from 2000 – 2016



Source: World Bank – World Development Indicators - Country Database; Zambia 2000-2016

In 2016 DFI deployed capital investment of USD 16.7 billion in a total of 654 deals in the southern region of Africa. Of that book balance, Zambia received USD 1.7 billion in 105 deals invested into large-scale projects in energy, financial services, and extractive industries. In comparison, South Africa received majority of international DFI capital disbursed in the region. This amounted to about USD 10 billion (approximately 60%) in the largest number of deals totalling to 187 (GIIN, 2016). Multilateral DFI inflows in Zambia were high in 2000 – 2005 amounting to approximately USD 17 billion [**see figure 1.3**] within this period Zambia witnessed positive economic growth and dwindling government debt levels. In 2006 the inflows reduced by 78% and an average growth of USD 1.07 billion onwards until 2016.

Figure 1. 3: Multilateral DFI Inflows in Zambia from 2000 – 2016



Source: World Bank – World Development Indicators - Country Database; Zambia 2000-2016

Therefore, this study seeks to understand the contribution of DFIs to economic growth in Zambia. It will also seek to explain the challenges and impact DFIs have in investing in Zambia as per reference above, further elaborating the investments made and their significance to areas of the economy such as interest rates, exchange rates, inflation and unemployment.

1.3 Problem Statement

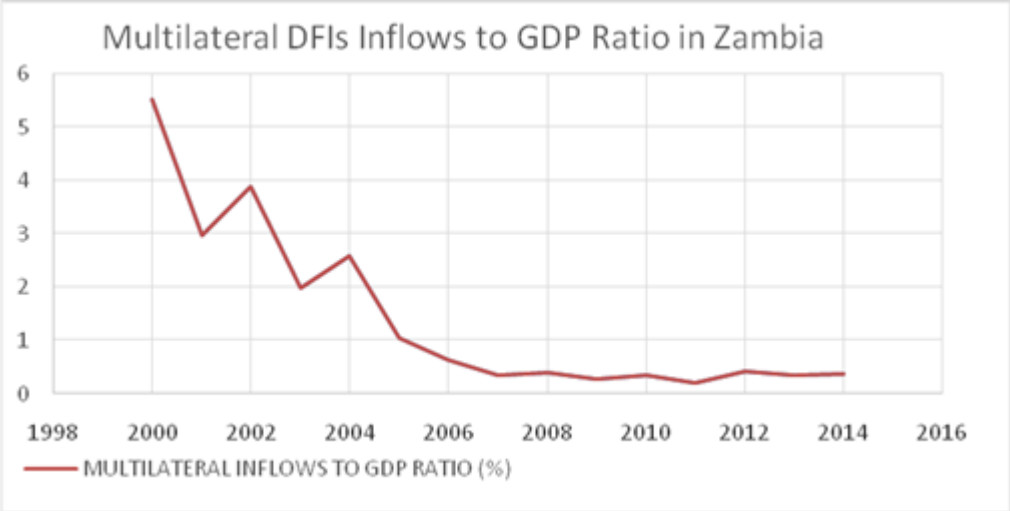
DFIs fill the gap in the financial market of an economy, thus by occupying the space between public aid and private investment. They provide finance to the private sector for investments that promote development (Griffith and Evans, 2012). The contribution of DFIs has been under the spotlight since the recent global financial crisis, which led to stunted economic growth, heavy job losses and factory closures. In many economically robust and socially equitable states, DFIs have acted as catalysts for accelerated industrialisation, economic growth and human resource development. Examples include Western European democratic welfare states, such as Germany and Sweden, and the first-generation East Asian developmental states, such as Japan, Singapore and South Korea. According to a report by the Development Bank of Southern Africa, new-generation developmental states, such as China and Turkey, and democratic developmental states, such as India and Brazil, have shown that DFIs can play a crucial role in transforming the economy.

Therefore, the idea is that DFIs mobilise financial resources for developmental purposes through investment in markets deemed too risky for the private sector to enter alone, but are essential to the growth of the broader economy. DFIs thus seek to address financial market failures, and therefore complement both government resources and market financing. As a result, DFIs are now generally expected to address broader development policy objectives, these include addressing market failures, such as private sector development, employment creation, income redistribution, import substitution, the development of poor groups or regions, as well as developing new industrial sectors or boosting weak ones (UN, 2005). Therefore, it can be established that DFIs investments indirectly contribute to economic growth of a country.

The Zambian economy in 2015 faced economic headwinds initially due to fast rising expenditures and a fiscal deficit that more than doubled in 2013. Real economic growth fell to its lowest in 15 years; with gross domestic product (GDP) growth falling to 3.7% from 5.0% in 2014.This was a result of the declining of maize output by 22% due to poor rains. Copper prices declined by 28% while mining output remained roughly the same as in 2014. Furthermore, electricity-supply deficits, which began in June 2015, have affected manufacturing and other businesses, thus increasing operating costs to firms. In addition, the Zambia kwacha (ZMW) depreciated by 42% against the United States dollar (USD), raising end-of-year inflation to 21%. The slowdown in the economy led to more than 9 000 job losses in the formal private sector (AfDB, 2017).

The multilateral DFI inflows have been diminishing in comparison to the GDP growth in Zambia in the past 14 years [see figure 4]. The multinational DFIs inflows to the GDP significantly dropped by 5% from 2000 to 2005 and have been constant at 0.5% from 2006 to 2014.This could imply that the multinational DFIs inflows did not or do not contribute significantly to the GDP growth of Zambia or either the reduction of multinational DFIs inflow could be attributed by other outlying reasons such as political, social and corruption.

Figure 1. 4: Multinational DFIs Inflows to GDP Ratio % of Zambia from 2000 – 2014



Source: World Bank – World Development Indicators - Country Database; Zambia 2000-2014

Therefore, according to Massa (2011), while there is a rapidly growing literature assessing the effects of DFIs at the micro level, there are gaps in the evidence on the macro impact of DFIs' investments. For example, a number of DFIs have carried out specific evaluations to assess the results of their investment operations in terms of contributions to employment creation, technology transfers, market organisation, capacity building, and many more, and a few independent studies have tried to measure and assess the performance of DFIs. Therefore, as far as we know, there is no study investigating the impact of DFIs on macroeconomic variables such as economic growth in Zambia, hence the need of this study in order to appreciate their role in the economy.

1.4 Purpose and Significance of the Research

There is need to understand the role of DFIs in contributing to economic growth of an economy. The results will enlighten policy conception to effectively utilize DFI inflows for the enhancement of economic growth. Additionally, the direction of this relationship will help inform policy makers on possible response tools on how to sustain and maintain DFI inflows as they are crucial to the Zambian economy. The results of this study could be used to inform government and private authorities on the significance and effectiveness of DFI funding and alternative sources of funding that enhance economic growth. Although many studies, that determine the relationship between economic growth and multilateral DFI flows, a quantitative study on this relationship has not been conducted in Zambia. This study aims to further explain

the relationship of the two variables by unpacking previous hypotheses and findings on middle or lower income countries.

1.5 Research Objective and Scope

The aim of this study is to investigate the relationship between DFIs and economic growth into Zambia. This study will use a number of economic variables such as multilateral DFI inflows, inflation rates, exchange rates, interest rates and unemployment to determine whether economic growth (GDP) has occurred.

Therefore, the objectives of this study are the following:

1. To investigate the relationship between the role of DFIs and economic growth in Zambia.
2. To empirically establish the dynamic relationship that can be observed between DFIs and economic growth.

The key research questions the study seeks to answer are following questions:

1. What is the relationship between DFIs and economic growth?
2. Is the level of DFI inflow a significant determinant of economic growth in Zambia?
3. To what extent do the independent variables (multilateral DFI inflows, inflation rates, exchange rates, interest rates and unemployment) affect economic growth in Zambia?

1.6 Outline of the Study

This study is divided into five chapters. Chapter one consists of the introduction and background, problem statement, study objectives and study significance. Chapter two reviews the empirical and theoretical literature on the relationship between the role of DFIs and economic growth. Chapter three provides the research methodology and describes how the study is to be carried out. Chapter four is devoted to data analysis, presentation and interpretation of the econometric results. Finally, chapter five will draw conclusions, and provide policy recommendations and suggestions for further research

CHAPTER 2: LITERATURE REVIEW

2.1 Introduction

The role of DFI's eliciting growth in recipient nation has been an area of debate in studies, especially in the case of developing nations. DFIs provide generally long-term finance to financial institutions that provide long-term capital and know-how to local small and medium size businesses, to private sector intermediaries involved in development projects and directly to underlying private enterprises. This inflow of funds is on the premise of boosting sustainable economic development and supplement budget deficit in most developing nations.

This chapter reviews the theories and empirical literature pertaining to the topic under study and helps develop an understanding of the variables under consideration, the relationship between DFIs inflow and economic growth as well articulate conceptual foundations of the research. The chapter is structured as follows: section 2.2; unpacks the theoretical literature from previous research with section 2.2.1 to 2.2.3: discussing the discrete views expressed by various authors on the Neo-Classical Theory, Dependency Theory and Crowding out effect theory, in an effort to thread together how economic growth can be affected and explained in these contrasting theories. Section 2.3.1; empirically links factors that that influence GDP growth beyond reliance on DFIs. Section 2.3.2 unveils the main thrust of this research and reviews multidimensional aspects of the role DFIs play in eliciting growth in host country. Section 2.4 concludes and summarises the chapter.

2.2 Theoretical Literature

The section will review the neo-classical, dependency and crowding out-effect theory in relation to the study topic.

2.2.1 Neo-Classical Theory

There has been a plethora of research and theories on determinants of economic growth and the neoclassical theory, first suggested by Robert Solow in the 1950s, contributes to the economic growth nexus. The key argument of the neoclassical growth model is that increasing capital is subject to diminishing returns, in that, increasing capita only has a temporary and limited impact

on the economic growth. For any given fixed stock of labour, output of the last unit of capital accumulated will always be less than the one before. The model posits, increase in output is due to increase in capital and labour and/or change in technology, which was assumed to be labour augmenting. Technological change was assumed to be exogenously determined. In today's world economists use Solow's sources-of-growth accounting to estimate the separate effects on economic growth from technological change, capital, and labour. Zambia lags in technological advancements and is not able to fully capitalize on its amplifying effects on economic growth. The technology gap is one that DFI's are set to bridge so it is essential that policies are implemented that attract these funds. Furthermore, Solow was also the first to develop a growth model with different "vintages of capital". The idea behind Solow's vintage capital growth model is that new capital is more valuable than old (vintage) capital because capital is produced based on known technology and because technology is improving. Therefore, if Zambia is to propel its growth prospect it should be abreast with technological advancements.

As capital increases the economy maintains its steady state rate of economic growth. Principally, to increase the growth it is necessary there is concordance in labour supply, productivity of labour, capital and technological improvement. (Weintraub, 1985).

In relation to the study, DFIs can play a role in the increase of capital through their investment inflows between public aid and private investment in Zambia can enhance economic growth. In a comparative global analysis of the roles played by DFI's, Stefanik (2016) argues that the absence of a DFI in Canada has led to an absence of finance to the private sector and diminished Canadian expertise and investment capital to commercial projects that would be beneficial to social impact enterprises and promote positive developmental effects. Furthermore, this lack of finance limits the expansion capabilities of Canadian companies and industry compared to markets abroad.

In a desk-based literature review, a research by Lemma (2015) unbundles the different developmental impact indicators of DFI's in an effort to evaluate outcomes before and after they have committed to an investments and asses their possible contrasting consequences. The fields assessed stretch across different sectors from agriculture, education, energy, financial intermediation, investment funds and health, just to name a few. The *core raison d'etre* of DFIs has been to have a positive impact by harnessing the private sector to promote employment and

subsequent growth that can hopefully translate to permanent sustainable structural changes in nations (Lemma, 2015). The index benchmarks, the long-term profitability of the project; measuring financial sustainability within investment country, determine the degree of the catalytic outcomes of the investments as well as asses the return on equity of project to reach adequate returns for long-term sustainability. Qualitative assessments on gender effects and environmental and social standards are also measured. The results presented showed a lack of congruence as each DFI used varying instruments of measurement making it difficult to accurately pinpoint the extent of the impact to each field. This made impact comparisons between DFIs difficult to assess, although efforts are being made to harmonise development impact indicators used within the different instruments. This was attributed to DFIs only reporting a limited number of sector outcomes and generally include employment effects, government revenue impacts, consumer reach and in some cases, environmental, social and governance (ESG) outcomes and private sector growth and do not delve into the different facets of the hosts economy. Lastly, the research finds DFIs and their investments do make a positive contribution to employment and productivity, both directly and indirectly. There also seem to be positive links between DFI investments and economic growth.

Chorn and Siek (2017) study examines the impact of foreign capital inflows which mainly consists of FDI and ODA on economic growth of developing countries. The research study's aim was to explore to what extent the host nations are differently impacted by the inflow foreign direct investment and foreign aid, and determine which contributes more to economic growth. The researchers set out empirically find which of the two forms of foreign capital inflows that has an effective and more robust influence on the growth through the combination of the two inflows into the same regression models. The study sample covers 77 developing countries from all regions classified by the World Bank from year 1997 to 2012. Ordinary Last Square (OLS) with time and entity fixed effects was employed in running the regression with the robust function used to control for the possible heteroscedasticity that often exists in panel data analysis. The paper finds that both FDI and ODA have positive and significant impact on economic growth and FDI is seen to be more robust and statistically significant. Furthermore, the marginal impacts of both FDI and ODA on economic growth decrease given the rising level of initial income per head, treating other factors constant. Moreover, if the share of gross domestic saving increases the impact of ODA and FDI on growth would keep decreasing. This coincides with the fact that, the role of FDI and ODA should diminish as the host nation manages to steer its way into a sustainable development path.

In comparison, Udoidem and Udofot (2014), paper uses econometric tools to assesses and investigate the correlation between capital inflows on entrepreneurship, economic growth and development in Nigeria. The main objective was to evaluate qualitatively and quantitatively the contribution of foreign capital to growth in output of entrepreneurs in Nigeria and this should eventually stimulate the Gross Domestic Product (GDP) of Nigeria, *ceteris paribus*. The study examined the structure and distribution of capital inflow into Nigeria and Gross Domestic Product (GDP) was used as measurement of output of entrepreneurs. The study finds that capital inflows enhance activities of entrepreneurs thereby impacting positively on economic growth and development. The prime recommendation in the study is that more effort should be geared towards attracting more inflows and directed to entrepreneurial stimulating effort. Combes *et al* (2017), paper assesses the impact of capital inflows and their composition on the real exchange rate and economic growth in developing countries. The objective of the paper was to revisit the relation between economic growth and external financial resources and its by-impact on exchange rate by focusing on recent literature and proposing empirical analysis on 77 low- and middle-income countries over the period 1980-2012. Using the Generalized Method of Moments (GMM) for dynamic panel data to deal with the endogeneity bias a large sample of, the results clearly show that capital inflows affect directly and indirectly economic growth. This however comes at a cost of weakened growth as exchange rate appreciation dampens countries competitiveness. Overall, capital inflows are associated with higher economic growth after netting out the negative impact of real exchange rate appreciation. Ng'ambi (2014) finds that in the case of South Africa, exchange rate volatility subdues all forms of capital inflows and this further supports Combes *et al (2017)* of there being a bi-directional effect from capital inflows to a host nations exchange rate.

A study by Tsaurai (2015) empirically investigates using the Vector Error Correction Model (VECM) to asses as to whether there is causality between FDI net inflows, exports and GDP growth in Zambia. The study finds that the impact of FDI in Zambia is not significant in the long run. The author reasons that this could be due to certain detrimental locational characteristics as well as institutional polices that can ensure that Zambia can benefit from FDI inflows are not in place. This highlights that even though FDI should characteristically promote growth in host nation, there should be sound institutional infrastructure that maintains sustainability of inflows to relevant sectors. Zambia like most African countries, is resource dependant. With over 80% of FDI concentrated in the mining sector, Ndaba (2015) looks at the

impact of foreign direct investment on economic growth in Zambia as a natural resource dependent country. This time series analysis stretches from 1990 to 2013. The paper tries to discern if there is long term correlation to economic growth in host nation if FDI is concentrated in one sector. And the paper concludes that FDI has not significantly contributed to the dynamism of Zambia's economic growth. Therefore, FDI needs to be cast across all sectors if there should be significant boost to the GDP. If FDI needs to significantly impact the economy it has to be injected into more than one sector or growth is not dynamic and long lasting (Ndaba, 2015).

2.2.2 The Dependency Theory

The dependence theory was popularised in the 1950s under the guidance of the director of the UNEC for Latin America, Raul Prebisch. Prebisch studies suggested that economic activity in the richer countries often led to serious economic problems in the poorer countries (Ferraro, 1996). Such a possibility was not predicted by neoclassical theory, which had assumed that economic growth was beneficial to all (Pareto optimal) even if the benefits were not always equally shared. Furthermore, according to Ferraro (1996), dependency theory was viewed as a possible way of explaining the persistent poverty of the poorer countries. The traditional neoclassical approach did not allude to the aforementioned conclusion, except to assert that the poorer countries were late in coming to solid economic practices and that as soon as they learned the techniques of modern economics, then the poverty would begin to subside.

Dependency theorists argue that underdevelopment exists because of the dominance of developed countries and multinational corporations over developing countries (Hein, 1992). The dependency theory seems to be a paradox, as literature and economists have leaned to the notion that funds from developed nations in form of foreign aid, galvanise poverty levels in poorer nations. Therefore, in relation to the study, with the dependence on multilateral DFIs, may not be a panacea to Zambia economic growth conundrum. For instance, Zambia's public and private sector could be resistant to a consensus with the DFIs as their policies may have autonomy or control over certain decision making after investing or funding, in attempting to disseminate the relationship between foreign direct investment and economic growth in Zambia, a study by Maliwa and Nyambe (2015) applied Johansen co-integration test and the granger causality econometric tests to examine the interrelatedness of the variables. Contrary, the results showed that FDI did not cause economic growth in Zambia and unless the

Government of the Republic of Zambia considers reforming its existing policies. The authors further asserted that, foreign direct investments will not foster desired economic growth and that FDI inflows should be deployed with the best interest of the host nation and not the multinational (Mawila and Nyambe, 2015)

The study by Sheriff et al (2015) examined some of the fundamental issues of dependency and underdevelopment in contemporary international economic and political relations. In addition, the study also analysed the paradox of foreign debt, which is supposed to be debt for development and financing developmental projects, but is instead used as an instrument to perpetuate third world domination through financial imperialism. The paper found that both first world societies and leaders of the developing world were perpetuating underdevelopment in the developing world. Furthermore, the study found that third world indebtedness only exacerbated third world dependency on the economies of the developed nations in this 21st century. Ilorah (2011) argued that African countries had generally encouraged dependence, exaggerated hopelessness and instrumentalised aid to obtain resources that had afforded autocratic regimes a long stay in power. Using historical data, the study showed that foreign aid to Africa has not led to any significant sustainable growth in the region but had, at best, provided short-term relief to few poverty-stricken countries and, at worst, pushed recipient countries deeper into debts.

Khan and Asghar (2015) investigated aid dependency and external debt on Pakistan's economy. The primary purpose of the study was to investigate the outcomes of the debt burden Pakistan has taken from external sources. Using the three gap models being trade deficit, fiscal deficit and saving-investment, the main findings of the paper suggested that there were a number of financial problems in Pakistan's economy, which have weakened the financial muscle of the country. The shortfalls are financed by external debt which created severe negative impact on Pakistan's economy due to their aid and debt dependency. Ikejlaku (2008) attempted to employ and apply the dependency and liberal economic theories in order to demonstrate how these two theories helped in the accurate analysis and explanations to debt crisis in the developing countries particularly Nigeria. The study found that the IMF, WB and the west should be blamed for Nigeria's debt.

The foreign governments have often stepped in to help to solve dire situations od developing nations but with strict caveats. In return for assistance to repay the private creditors and bailout

loans they have often demanded budget cuts and adjustment programs; political interference further confirming the dependency theory of developed nations making causing more damage than good.

Bildirici *et al* (2008) analysed and investigated the relationship among domestic debt-inflation, debt-cost, external debt and dependency-crisis in the Ottoman Empire and in the Republic of Turkey. The study used Autoregressive (AR) and Vector Autoregressive Regression (VAR) models and the research found that increasing costs of domestic debt resulted in increased external debt. Subsequently, the increasing external financing worsened the cost of external debt especially in the periods in which the channels of domestic borrowing becomes obsolete. As a result, the country becomes less immune to economic crises and country's external dependence increases subsequently. According to the article by Reinhart and Trebesch (2015), on the pitfalls of external dependence, case study of Greece 1989-2015 analysed the debt crises and realisation of external financing in the country. They conclude that that the cycles of external debt and dependence are perennial themes of Greek history, as well as in other countries that have been addicted to foreign savings, like Zambia for example.

2.2.3 The Crowding Out Effect

Government spending can be viewed as a double-edged sword as it may crowd out private investment but if funds borrowed are deployed into various developmental projects this promotes private investment.

The Economic Theory or "Crowding – Out" is where increased interest rates lead to a reduction in private investment spending such that it dampens the initial increase of total investment spending (Carrasco, 1998). According to Majumder (2007) the process of crowding-out generally works as follows, once public authorities borrow from the domestic market, there emerges a fund crisis (due to excess demand) which raises interest rate leading to the reduction of private investment. Furthermore, public borrowing can be seen by private investors as a warning signal of the government becoming bankrupt within the foreseeable future. They may also fear that government will impose higher taxes in future in order to facilitate the repayment and servicing of the loan. In that case, private investors will become less enthusiastic to invest. Therefore, this can deter DFI's to Zambia and this could similarly stymie economic growth in

the country. For example, if the government adopts an expansionary fiscal policy stance and increases it's spending to boost the economic activity, this could be enhanced by government using higher taxes and borrowing from DFIs in this case which could lead to an increase in interest rates. Thus, increased interest rates affect private investment decisions and high magnitude of the crowding out effect may even lead to lesser income in the economy. Consequently, these higher tax rates subdue investment incentives.

A study by Biza *et.al,* (2013) investigated whether budget deficits crowd out or crowd in private investment in South Africa, using quarterly data covering the period 1994 to 2009.The objectives of the research investigated; if the higher level of public spending and budget deficit crowd out or crowd in private investment in South Africa. Furthermore, to what extent interest rates rise in response to the greater demand for money and the supply of bonds prompted by the government and how this filters into investors response to the rise in the interest rates. The study using co-integration and vector auto-regression (VAR) analysis with impulse response and variance decomposition analyses to provide robust long run and short run dynamic effects on private investment. The variables have been linked to have a long run relationship with private investment. Thus, the results suggest that budget deficits significantly crowd out private investment as they have to be matched by borrowing, the authors further posit that government needs to have a provision for policies that protects investors physical and intellectual property rights. While Tokunbo and Oladele (2006) examined how the use of budget deficits as an instrument of stabilisation leads to the accumulation of external debt with the attending effects on growth in Nigeria between 1970 and 2003. The objective of the paper tried to elucidate and investigated the dynamics of the effects of external debt burden on economic growth in Nigeria. By synthesising the relationship between budget deficits and external debt the study showed the implications on economic growth of conducting a fiscal policy within the contexts of debt stabilisation and debt sustainability. The results in the econometric analysis confirm a debt Laffer curve and the non-linear effect presented are in line with economic theory of external debt burden being detrimental to Nigeria's economic growth

Similarly, Harrison & McMillan (2001) study tested the crowding-out effect hypothesis in Ivory Coast and empirically investigated the effect of foreign borrowing on long run sector growth in the country. The results showed that borrowing had a positive statistically significant relationship to crowding out of the domestic market in the sectors. The firms in the respective

sectors, face higher borrowing costs because of interest rate appreciation and this credit constraint restricts spending and investments in those firms; from the foregoing in the long run it reduces the GDP output of the country and subsequently growth. This stagnation of growth filtered negatively into perception of foreign investors and leads to constriction of funds flowing into country. Tuffor (2012) study also determines the effect of external debt on investment by analysing crowding out effect of private investment and debt overhang in Ghana. The study used the least square estimation techniques and multiple regression and found that debt overhang existed for the study period and simultaneously induced crowding-out effect on private investment. In addition, the huge debt and debt service raised future tax expectation and discouraged the private sector from undertaking investment projects. FDI's consider tax regiments in their decision-making process and perception of increased taxes encourages capital flight from this tax rise.

Akomolafe *et.al,* (2015) studied the effect of public borrowing on private investment in Nigeria. The objective of the paper was to investigate the impact of both the external debt and domestic debts on private investments in Nigeria. The study divided public debt into external debt and domestic debt. Johnasen Co-integration test and Vector Error Correction Model (VECM) were used in the analysis. The results showed that domestic debt crowded out domestic investment in both short run and long run. Furthermore, the findings indicate that external debt crowds in domestic investment in the long run. Contrastingly, Shahid *et.al* (2016) tried to understand the relationship dynamics of public investment and external debt on real GDP in Pakistan over the period of 1984 to 2012. Through co-integration to examine the short-run and long-run relationship among the variables show that public investment and external debt discouraged the economic growth. One unit increase of public investment was directly related to a decrease of real GDP growth rate by -10.913. External debt that is accumulated to fund unproductive public investments depress growth
The policy recommendations posited by authors include governance around the deployment of public investments and private investments as this encouraged marginal productivity of capital formation and subsequent growth. Public investments need to be directed to productive projects if they are to have a lasting effect on economic growth.

In an empirical study, Daka *et.al,* (2017) used co integration on annual time series data spanning 1980 to 2014 to investigate the impact of external debt on the economic growth in Zambia and test the dynamics relationship in short and long term. The authors revealed that external debt

had a positive relationship with economic growth in the short term and a negative relationship in the long run. External debt has been a means by which government has financed most of their economic activities and the study. One per cent increase in external debt lead to a decrease of 0.11808 per cent decrease in output growth rate. This is in line with the classical view that high accumulated debt results in higher tax and deters private investments and further retards growth. Debt servicing is also found to have a significantly negative impact on GDP growth in the short-run. As the debt servicing tends to increase, there will be fewer opportunities for economic growth through crowding out effects. External debt sourcing in the short run was found to have positive implications on poverty and growth and not in the long run. Authors proffered appropriate policy measures to reduce the detrimental effects of debt in the long run. Chongo (2017) analysed the influence of increasing public debt on Zambia's economic growth covering the period 1980 to 2008. For policy implication, the study also analysed the channels through which public debt is said to have an impact on economic growth namely through private investments, public investments and domestic savings. The Vector Error Correction Model (VECM) approach was employed to analyse the two scenarios above. The findings confirm a long-run negative relationship between public debt and economic growth. The result on the impact of public debt on private investments and domestic savings also gives indication to the presence of the crowding out and debt overhang effects which can be explained by a rising debt burden measured by both the stock of Public Debt to Gross Domestic Product (GDP) and Public Debt Service to Revenues. From the aforementioned studies, an inference of a notable relationship between that public spending through debt does indeed lead to crowding out effect on private sector investment. However, the extent to which this affects economic growth depends on how the private sector responds given existing fiscal and monetary policies. Thereby concluding that, the extent of negative impact often brought by the crowding out effect is greatly dictated by favourable macroeconomic policies.

2.3 Empirical Literature

Plethora of literature has been dedicated to explaining the cause of economic growth. Researchers have provided both economic and theoretical framework to establish the determining factors of economic growth in context of developed and developing nations. The section will begin by addressing factors that influence GDP growth relating to research study topic and lastly provide reviews of related studies done on DFIs and economic growth in other respective countries.

2.3.1 Factors that Influence GDP Growth

GDP is the most widely used variable to determine a country's economic growth prospect. GDP measures the monetary value of final goods and services, which are bought by the final user and produced in a country in a given period of time (a quarter or a year). It counts all the output generated within the borders of a country government (Callen, 2008). GDP also includes some non-market production, such as defence or education services provided by the government. According to economic literature the factors that can affect the rise or fall in GDP are consumption which may vary throughout seasons as preferences change, government spending which changes at the discretion of the government, investment which may depend on a country's interest rates, general attractiveness, security, and financial robustness, exports and imports which may change according to export taxes, quotas, tariffs and exchange rates.

A study by Upreti (2015), using cross country data for 76 countries from 1995 to 2010, aims to identify the factors affecting economic growth in developing countries. The central focus of the study was to find the nuances in the factors that determine economic growth in developing countries and compare as to whether these factors that affect growth of developed countries. The study finds that a high volume of exports, plentiful natural resources, longer life expectancy, and higher investment rates have positive impacts on the growth of per capita gross domestic product in developing countries. However, contradictory, results were found on the effects of foreign direct investment on growth. It had a positive effect in one period and a negative result in the other for developing nations. In comparison, the study conducted by Kira (2013) analyzed the factors that affect the GDP of Developing Countries with Tanzania as a selected representative a multivariate economic model was used to test the association between GDP, and investment, consumption and Balance of Payment. With consumption being defined as government final expenditure and household final expenditure. The results uncovered prove that investments and imports are inactive to influencing GDP growth and developing nations are strongly influenced by exports and consumption. In the case of Tanzania, 1 percent increase in consumption and exports leads to a.06513 and 0.1620 increase in GDP, respectively. The R^2 results show that GDP is growth can be explained 98 percent by consumption and exports. Furthermore, the author posits that for growth to be further stimulated, developing countries need to set institutional infrastructure and measures that attract foreign direct investments and investments in industrialization. This lends support to most research, in that developing nations

need to harness inflow of investments if they expect sustainable development that can boost GDP to unprecedented levels.

The study by Jain *et al* (2015) tries to investigate the impact of various macro-economic factors on GDP components on India. GDP was divided into 3 sectors namely, Manufacturing, Service, Industry and various macro-economic factors, FDI, Net Foreign institutional investment(FII) equity, Net FII debt, Import, Export. The crux of the paper was to understand the nature and direction of relationship between the economic growth of a country and its components in India. The results show that Net FII debt, Import, Export has no influence on manufacturing in India. Results show a significant dependability in the industry component on GDP on FDI, a unit increase of FDI leads to 6.397% increase in industry activity in India.In the analysis, the study found a significant effect of FDI, net FII equity and import on GDP components. Furthermore, the study could not find a significant effect of net FII debt on GDP components and the study found that there was no significant effect of export on GDP. Similarly, India being a developing nation, Jain *et al* (2015) mention that the country needs to implement policy's around promoting FDI and Net FII for healthy growth levels. Mehmood (2012) investigates the effect of thirteen selected factors (independent variables) on the economic growth in Pakistan and Bangladesh economy, for the purpose of comparing both countries finding. Both Bangladesh and Pakistan are considered one of the poorest nations in the world. The purpose was to conduct a comparative study and analyze that which country is in better position by comparing both countries findings. According to results found, that Bangladesh is at a comparative advantage if compared to Pakistan. This was on account that Bangladesh has managed to attract to higher capital investments inflow compared to Pakistan, which promoted goods export industry which positively affected GDP.In the paper, economic growth was measured by GDP using time series data stretching over 1976/77 to 2008/09 for the last thirty-four years. This study found that in Pakistan gross national expenditures, goods exports, gross saving and final consumption expenditure have a positive effect on the GDP. But the factors such as external debts total stock and services exports have a negative effect. In the case of Bangladesh, the study found that factor such as gross national expenditures, external debts stock total, goods imports and exports have positive effect on the GDP. The author further recommended that Pakistan need to evolve and develop private sector but attracting foreign resources.

In a similar study, but in the case of China, Assbring (2012) seeks to find the factors that have been the main sources of economic growth in China from 2003 to 2010.The theoretical

framework is the Solow model and the dependent variable is GDP per capita which is regressed against investments, household savings, and the level of GDP per capita, population growth, healthcare and education. The results show that the Solow model can explain economic growth in China. Furthermore, investments, the level of GDP per capita and population growth are variables most significant to growth. The author mentions that this extreme growth witnessed in China, proceeded reforms to open up the economy to foreign direct investments, stimulated private sector and promoted urban industrialization. Conclusion alluded to is that capital inflow, in various forms of investments, has been very significant to the growth of China.

Chirwa and Odhiambo (2016) empirically probe into sources of economic growth in Zambia using the recently developed ARDL bounds-testing approach. The study's aim was to elucidate on the reasons why Zambia has experienced unsustainable growth and understand the key macroeconomic determinants that have driven the Zambian economy, as well as those that hinder its growth. The study's results reveal that in the short run, investment and human capital development are positively associated with economic growth. In the long run results show there is a significant inverse relationship between foreign aid the long-run level of real GDP per capita, at a 10 per cent level of significance. The findings are synonymous to most research on developing countries needing to dissolve dependence on foreign aid, if they are to have long lasting economic growth. While government consumption and international trade are also negatively associated with economic growth. The results are consistent with empirical literature on growth levels that for developing nations there is a positive relationship between investment and economic growth. In the case of Zambia, 1% increase in growth in investments augmented growth levels by 0.06%.

For decades, Africa's growth rhetoric has been marred by the mammoth debt levels that have since hindered the growth capabilities of the continent. Foreign aid has been long used to ameliorate the debt levels with the hope of alleviating poverty and thrusting growth (Berrittella, 2017). In view of DFIs providing debt to developing countries with the aim of spurring economic growth, Zouhaier and Fatma (2014) study the effect of debt on economic growth of 19 developing countries over the period 1990-2011, using a dynamic panel data model. The paper found a negative effect of the total external debt to GDP. In comparison, Were (2001) examined the structure of Kenya's external debt and its implications on economic growth. The paper states that Kenya has been paying out more funds than it receives, thereby reducing domestic resources available for development and the empirical results indicate that external

debt accumulation has a negative impact on economic growth and private investment and only current debt inflows stimulate private investment.

Another study by Ijirshar *et.al* (2015) examined the interrelatedness witnessed between external debt and economic growth in Nigeria for the period of 1981-2014. The analysis found a significant relationship between external debt and economic growth in Nigeria, however, external debt stock impacted positively while external debt service impacted negatively on the annual growth rate of the Nigerian economy both in the long and short run. In the case of Nigeria this answers the question as to whether external borrowing promotes growth and authors recommend that capital inflow should be directed to manufacturing sector to boost exports and reduce debt service burden. In contrast to most research, Al-Refai (2015), examined the connection between debt and economic growth in Jordan during the period (1990-2-13) and found that debt has a positive effect on growth in Jordan.

2.3.2 DFIs and Economic growth

DFIs are government-controlled institutions that invest in sustainable private sector projects with the twofold objective of spurring development in developing countries while themselves remaining financially viable (Dalberg, 2010). DFIs also often act in co-operation with governments and other organizations in providing, finance, management consultancy and technical assistance (Griffith and Evans, 2012). The instruments often used by DFIs are grants, equity and quasi equity, debt and de-risking. As result DFIs can be catalyst of economic growth in Zambia through their investment in the private sector by bridging the gap with the public sector. Economic growth is the most powerful tool for poverty reduction and improving the quality of life in developing countries.

Economic growth refers to an increase in the productive capacity of an economy as a result of which the economy is capable of producing additional quantities of goods and services (Palmer, 2012). The standard of living is normally measured by the quantity of goods and services available to us so that economic growth is synonymous with an increase in the general standard of living. Therefore, from wide literature researched on the best measure of economic growth is through GDP because it takes into account all economic output of a country whether sold domestically or internationally.

According to the research by Dalberg (2010), the private sector plays a crucial role in developing countries. It is a vital factor for growth and job creation and, by spurring economic development, provides the fiscal base which allows governments to realize general investments and bring about redistribution of wealth. In addition, more than just an object of public policy, the private sector can itself become a key player in society. As per the research, demonstrated in the impact evaluation analysis of European DFIs 'financed projects, it can be directly responsible for the provision of certain basic services in the social sector, and plays an important role in providing access to certain essential services such as water, sanitation, energy, transport and communication, particularly through public-private partnerships.

The world is entering the new post-2015 era of the Sustainable Development Goals (SDGs). These include poverty eradication, education for all, inclusive economic growth, full employment, reduced inequality, climate change mitigation and sustainable use of the world's ecosystems. Hence, economic change is critical to make these socioeconomic and environmental goals realizable and sustainable (UNCTAD, 2016). Africa has grown rapidly in the 2000s, but this growth did not create jobs, and was based on the expansion of the services sector, to the detriment of manufacturing. Between the late 1980s and late 2000s, the region saw strong de-industrialization taking place. As a consequence of a lack of structural transformation and the creation of good quality jobs and sustainable incomes, Africa missed many Millennium Development Goals (MDGs), some by a large margin (UNCTAD, 2013; UNCTAD, 2014).

A report by UNCTAD (2016) discusses the role of development banks in promoting long-term development. The research states that development banks have been a major feature of the development finance architecture for many years. The post-Second World War era saw the emergence of the World Bank and regional banks. Since their established, these banks have played a fundamental role in funding global and regional public goods, and in providing long-term finance to developing countries. Furthermore, the report states that they will continue to do so by helping address the financing needs of the post-2015 era, together with other sources of financing for development, such as aid, which are part of global development finance. The large international development banks are, however, few. Despite their sizes, their aggregate lending is limited. In 2015, the World Bank and the three main regional banks – African Development Bank (AfDB), Asian Development Bank (AsDB) and Inter-American Development Bank (IADB) lent in aggregate only $69 billion.

As mentioned in the previous section, this paper seeks to research on the role DFIs can play in the economic transformation of Zambia. Thus, regarding the subject matter of the study, the paper can review comparable studies that have been conducted

Massa (2011) sets on a task to contribute to current literature by analysing the extent of the impact of multilateral development finance institutions on economic growth. The paper considered different income categories of countries and grouped them in either "lower-income" or "higher-income" to measure if the growth levels with DFI inflows is consistent in these countries. The study used Generalized Method of Moments (GMM) for panel data analyses, to determine relationship between the investments of a selected sample of multilateral DFIs and economic growth. The study found that investment by multilateral DFIs plays a positive and significant role in fostering economic growth in recipient countries, and that their impact is stronger in lower-income countries than in higher-income countries. From the observations presented, the authors found that growth rate is experienced in low-income countries was 0.4% higher at 1.3% than that in high-income countries. Despite result not being uniform in most countries, depending on the stage of economic development, the econometric results confirms the role of DFIs fostering economic growth in countries. Furthermore, the author stretched their analysis to gain understanding into which economic sectors proved more relevant in for growth. In order of highest growth impact, the econometric results presented show that if DFIs direct their investments into infrastructure, the industrial sector, agriculture sector, respectively. With DFIs investment commitment to financial sector leading to negative economic growth.
Velde and Massa (2011) also conducted a study on the role of development finance institutions in tackling global challenges. The authors categorized global challenges into: 1) economic – maintaining investment during global economic and financial crises; 2) environmental – facilitating the transition towards a low-carbon development path; and 3) other – providing global health and security, especially in post-conflict countries, and addressing volatility and equity concerns. The study examined the role of development finance institutions (DFIs) in addressing the aforementioned challenges and found that DFIs can indeed play an important role in the policy options suggested to the respective governments and help address global challenges but that their impact can be improved with greater cooperation from host countries.

Inanga and Mandah (2008) paper examined the role of two foreign aid financing agencies, namely, Enterprise Development Fund (EDF) and Export Development Programme (EDP),

in promoting Zambia's economic growth. The study examined the impact of each of the agencies on the growth and development of different sectors of the Zambian economy. The sector impact analysis includes manufacturing, agriculture, transport, and institutional capacities. The results presented from the study showed that, although it may be difficult to separate the effects of foreign aid finance from those of other growth-inducing factors, efficient and effective utilization of foreign aid finance can contribute to growth in a stable macroeconomic environment. This is a similar rhetoric in most research done on developing nation, that effective mobilization of funds into dire developmental sectors is very crucial if new heights of growth levels are to be reached. Mbah and Amassoma (2014) analysed the link between foreign aid and economic growth in Nigeria. Nigeria has over the years received an abundance of foreign aid that was supposed to accelerate growth and bridge the poverty gap, but Nigeria is still identified as a poor nation with high unemployment levels with minimal industrial advancement (Mbah and Amassoma, 2014). Hence this study wanted to establish the nature of the relationship that exists between foreign aid and economic growth via the welfare of the overall economy. The study used econometric techniques such as; Ordinary Least Square, Augmented Dickey Fuller (ADF) test, Johansen Co-integration test using data spanning from 1981- 2012. The paper found a negative and non- significant relationship between foreign aid to Nigeria and GDP. A unit increase in foreign aid led to the depressing of GDP by -1.63 units. The authors link this negative relationship to poor fund management, corruption and funds not being permeated into investments that propel economic growth.

The effectiveness of foreign aid and its effectiveness on eliciting desirable growth levels in developing nations has been a subject of contention. Hotouom (2015) re-examined the literature on the aid-growth nexus. The research attempted to shed light on whether there are causal links between foreign aids received and the economic growth in Tanzania. Focusing on a panel data analysis of the link between aid and economic growth in Tanzania from 1987 to 2014, the study found that foreign aid has contributed to growth in the case of Tanzania and that sound policies, although not conditional, lead to foreign aid creating more growth in Tanzania. In comparison to Nigeria, Tanzania seemed to have sound constitutional reforms that addressed corruption and improved governance of funds. Girma (2015), investigated the impact of foreign aid on economic growth in Ethiopia using time series data between 1974 and 2011, using the Autoregressive Distributed Lag (ARDL) approach to co-integration proposed by Pesaran and Shin (1997). The study's objectives were to determine the magnitude and direction of impact of foreign aid on economic growth and to find out whether the impact of foreign aid on

economic growth of Ethiopia depends on macroeconomic policy environment or not. In the case of Ethiopia, foreign aid is proven to stymie growth in both the short and long run by 0.65% and 0.28%, respectively. The study found that foreign aid in regression model shows aid has negative impact on economic growth, but the positive coefficient of aid was evident when foreign aid had an interaction with the policy index then, aid had positively contributed to economic growth in Ethiopia when supplemented with stable macroeconomic policy environment

Using macro level for 90 countries, stretching from 1980 to 2002, Johnson (2006) paper discusses and models the potential of FDI inflows and what effect it has on the host country's economic growth. The paper argues that FDI should have a positive effect on economic growth because of technology spill-overs and capital inflows. Additionally, the papers tries to probe as to whether there is a difference in the growth enhancing ability of FDI inflows between developed and developing economies. Performing both cross-section and panel data analysis, the empirical evidence suggests that FDI inflows enhance economic growth in developing economies but not in developed economies. However, contrary to this, high growth economies tend to be have substantial inflow of FDI stock, whilst low growth economies that need it the most, have been unsuccessful in their bid to attract FDI inflow. On a study in Uganda on determinants of FDI and their impact on economic growth being the focus, Obwona (2001) discusses infrastructure and institutional bottlenecks that act as deterrents to FDI. Obowona (2001) theorises, that the determining factor of FDIs inflow has been macro economic stability, structural reforms and natural resource deposits. In the case of Uganda, the largest portion of FDI has been directed towards the manufacturing sector, accounting an estimated 52 percent. The results shown prove there has been a positive impact on GDP in Uganda from FDIs This growth has been further complimented by various structural reforms implemented by government to eliminate both structural and financial bottlenecks. The author posits that nations should have growth oriented polices if they expect to attract these crucial FDI inflows,

2.4 Conclusion

The purpose of this section is to disseminate literature in respect various theories pertaining to factors that affect economic prosperity in nations. Moreover, the section dissects existing literature that has examined the multidimensional role DFIs and other forms of capital inflow play in recipient nations. Section 2.2 explores theoretical research on the Neo-Classical Theory, where authors argue the importance of capital, labour and technology and how they should be in tandem if a country is to expect steady economic growth. Section 2.2.2 on the popularised Dependency Theory that economic activity in richer countries leads to a series of economic problems in poorer nations which is contradictory to results asserted by most economists that capital inflow can indeed elicit economic growth in poorer nations. In an effort to propel growth levels through infrastructure development Zambia like most developing nations has incurred high debt levels and lead to Crowding Out Effect. These high levels of borrowing have led to high interest rates, stymied local growth and further deter the much needed capital inflow. Section 2.3 details empirical literature and various asserted views on the determinants of GDP growth. From the foregoing, most literature highlighted that indeed investments have contributed positively to growth levels in most countries but these investments have to be reinforced by a stable macroeconomic and political environment coupled with sound policies that attract and sustain these capital inflows. The main thrust of this research is to assess the impact DFIs have made on Zambia's growth trajectory. Section 2.3.2 disseminates previous research on role played by DFIs in various countries. The results presented proved congruous that DFIs have elicited some form of positive impact but more so if deployed to core sectors such as agriculture, industry and manufacturing to augment growth.

In the assessment of the literature, most of the papers highlighted and found that investments and capital inflow are a key factor to the level of economic growth experienced in a nation, more so in developing nations. Furthermore, from the foregoing, one could argue that most forms of capital inflow, can be seen as mutually supportive to growth prospects of the host country. However, the level of impact is dictated by the sector in which the funds are directed, the level of development in the country as well as sound governance policy's that ensure a "zero corruption" policy.

However, the literature has been limited and excluded Zambia as a sample nation in their assessment of the role DFIs have played in fostering economic growth. Hence this paper serves to fill the aforementioned research gap by using empirical methods to explore the impact of DFIs and various macroeconomic variables against the economic growth in Zambia.

Chapter 3 explains the research methodology applied in an effort to understand the relationship and propose policy recommendations deduced from test results

CHAPTER 3: RESEARCH METHODOLOGY

3.1 Introduction

It has been argued that DFIs play a significant role in the uplifting of developing nations and have been rendered useful for sustainable structural advancements. The main purpose of this study is to assess and understand the link, if any, of DFI inflows fostering economic growth to Zambia. To better inform policies within Zambia, it is cardinal that the methodical tools employed can unpack the dynamic relationship that exists between the dependant and independent variable. This chapter explains the methodology and empirical analysis that is utilized and informed by literature review conducted in Chapter 2.

The chapter is arranged as follows; 3.2 addresses the research approach and strategy used; 3.3 details the data collection, frequency and choice of data; 3.4 describes the variable selection; 3.5 presents model specification; 3.6 specifies the data analysis methods to be used in the paper; 3.7 provides the research reliability and validity; 3.8 lastly addresses the limitations during the research.

3.2 Research Approach and Strategy

The research makes use of a quantitative approach using numerical analysis to elucidate the research questions in this paper. Leedy & Ormrad (2010) defined quantitative analysis as the use of numbers and statistics to make better sense of a problem. Quantitative approach allows for measurement and analysis of the data to determine the interrelationship that can be observed between the variables. Furthermore, the findings of the analysis allow for better predictions of future trends.

Moreover, it allows for hypothesis testing of research questions as compared to qualitative which is more explanatory in nature. A regression model will be specified to explore the forms of these relationships and to investigate whether DFI's are significant to economic growth in Zambia. To further illuminate, the VAR-based co-integration model tests are employed to understand if the variables have a long-run relationship.

3.3 Data

The data is quarterly time series data spanning 1992:Q1 to 2015:Q4. The time series data of the selected indicators were collected from African Development bank, International Financial Statistics (IFS), International Monetary Fund-Issuing International Sovereign and World Bank database. Some missing variables had to be replaced with standard statistical procedures. The regression analysis and co-integration tests were performed using E-views 9 statistical package is utilized as it allows for various estimation techniques and graphical illustrations were necessary.

3.4 Variable Selection

The variables selected are informed by the literature review, as suggested determinants of GDP (Economic growth). The variables include- multilateral DFI inflows; based on literature higher inflows are expected to enhance GDP growth upwards; Interest rate serves as a proxy for investor's ability to borrow in the local and international market; Unemployment serves as the percentage of the total labour force lacking employment, thus the higher the rate the lower the GDP; Real exchange rate as a proxy for macroeconomic stability that is, increased GDP is led by the appreciation of the local currency ;inflation this reflects to the cost of living, that is the higher the inflation the lower the GDP of the economy.

The **table 1.1** below shows the expected relationship based on economic theory to be observed between the aforementioned independent variables and the dependant variable which in the study is GDP.

Table 1. 1: Specified Variables and their expected signs

Variable	**Coefficient**	**Expected sign**
Multilateral DFI inflow	$DFIFLOW_{i,t}$	+
Unemployment	$Unemp_{i,t}$	-
Inflation	$Inflat_{i,t}$	-
Real exchange rate	$RealEx_{i,t}$	+
Interest rate	$lnintrest_{i,t}$	-

Where; (+) is positive relationship and (–) is a negative relationship

3.5 Model Specification

A multiple regression will be specified to evaluate and describe the relationship between multilateral DFI capital flows and economic growth (GDP), as well as other variables. The macroeconomic indicators used comprise of exchange rates, interest rates, inflation rate and the level of unemployment.

The regression model takes the following form:

$$\Delta logGDP_t = \beta_0 + \beta_1 \Sigma logDFI_{t-i} + \beta_2 \Sigma logEX_{t-i} - \beta_3 \Sigma loINF_{t-i} + \beta_4 \Sigma log\ INT_{t-i} + \beta_5 \Sigma log\ UNEMPL_{t-i} + \ + \Sigma_t \ldots\ldots (1)$$

Where

- GDP_t = Gross Domestic Product at time t
- DFI_{t-i} = multilateral DFI inflow at time t
- EX_{t-i} = real exchange rate at time t
- INF_{t-i} = interest rate at time t
- $UNEMPL_{t-i}$ = Unemployment at time t
- INF_{t-i} = Income at time t
- Σ_t= error term
- Such that the expected sign are; $\beta_0,\beta_1,\beta_3,\beta_4,>0$ and $\beta_2< 0$.

3.6 Data Analysis Methods

3.6.1 Unit Root Tests

The unit root tests ensure regression estimation is valid by testing whether the data is stationary or non-stationary to prevent spurious results. A spurious relationship arises when the variables are related via a trend component even though there is no economic long-run relationship. According to Brooks (2002), the short coming of most macroeconomic variables, are that they are non-stationary. Other theoretical literature and other empirical studies suggest that time series data are associated with the problem of non-stationary. The relevance of unit root tests for this research is to avoid the aforementioned "false results" in the regression model, as this will lead to wrong inferences and defeat the purpose of the research.

Therefore, all the variables included in the model will be subjected to the Augmented Dickey–Fuller (ADF) unit root test to test for stationary, to allow for proper inference of the results.

3.6.2 Co-integration Test

To further understand the dynamism of the financial variables and whether they are linked by a long run equilibrium relation co-integration test is used to asses if the variables are cointegrated. Various co-integration tests may be used such as the Johansen test (Johansen, 1988) method and the two steps Engle and Granger (1987) approach. The major advantage of the Johansen method is that it allows estimation of multiple co-integrating vectors where they exist. However, its application presupposes that the underlying regressors are all integrated of order one and in the presence of a mixture of stationary series and series containing a unit root, standard statistical inference based on conventional likelihood ratio tests is no longer valid and the Johansen procedure may lead to erroneous inferences.

Pesaran and Shin (1999) developed a new Autoregressive Distributed Lag (ARDL) bounds testing approach which will be used in this paper. This is to test the existence of a co-integration relationship that is applicable irrespective of whether the underlying series are integrated to I(0) and I(1) to be used . This approach rehabilitates the ARDL framework while overcoming the problems associated with the presence of a mixture of I(0) and I(1) regressors in a Johansen-

type framework. An ARDL model is a dynamic specification, which uses the lags of the dependent variable and the lagged and contemporaneous values of the independent variables, through which the short-run effects can be directly estimated, and the long-run equilibrium relationship can be indirectly estimated.

Pesaran and Shin (1999) introduce the bounds test for co-integration that can be employed within an ARDL specification. In comparison to other co-integration procedures it can be employed regardless of whether the underlying variables are I(0), I(1) or fractionally integrated. Thus, the bounds test eliminates the uncertainty associated with pre-testing the order of integration. Secondly, it can be used in small sample sizes, whereas the Engle–Granger and the Johansen procedures are not reliable for relatively small samples (Narayan, 2004). The ARDL approach involves two steps for estimating the long-run relationship. The first step is to examine the existence of a long-run relationship among all variables in the equation under examination. The second stage involves estimating the long-run coefficients and the short-run coefficients using the associated ARDL and ECMs.

3.6.3 Diagnostic Tests

Diagnostic tests are undertaken to investigate whether the model is a reasonable fit for the data and to determine whether the model that has been estimated conforms to the classical assumption of the ARDL. Therefore, the model is checked for Serial Correlation, Normality and Heteroscedasticity. Serial correlation states that error terms from different (usually adjacent) time periods (or cross-section observations) are correlated (Williams, 2015). This test is useful in time-series studies when the errors associated with a given time frame carry over into future time periods. Hypothesis tests are performed with normality tests to examine whether or not the observations follow a normal distribution (Shapiro and Wilk, 1965). In addition, normal probability plot could be produced to graphically assess whether the sample comes from a normal distribution. Finally, heteroscedasticity is diagnosed if the variance of the error term is constant and if the error terms do not have constant variance and said to be heteroskedastic (Williams, 2015).

3.6.4 Stability Test

Perveen *et al* (2014) investigated the stability of linear regression models and established that the stability of linear models is based on the structural changes when the numbers of observations are small. The point where structural changes occur in time series data is a basic point. The stability of these models relates to the various parameters involved in the model. The estimated values of the parameters are obtained through OLS method and therefore the stability is analysed by recursive test. Recursive least square and recursive residual provides better information when prior knowledge, regarding structural change occurrence is not given.

To accommodate for structural breaks in the modelling approach in the paper CUSUM stability test is used. Brown et al. (1975) derived the CUSUM and CUSUMSQ tests based on recursive residuals based on the assumption that the break-points were unknown and that all regressors were independent of disturbances. The CUSUM test retains its asymptotic significance level even if the model contains lags of the dependent variable (Kramer, 1988). Therefore, according to Ploberger and Kramer (1992) CUSUM test can be carried out using OLS residuals hence avoiding the recursive estimation of regression coefficients.

3.7 Research Reliability and Validity

Reliability in a quantitative research is the extent to which results are consistent over time (Golafshani, 2003). An accurate representation of the total population under study is referred to as reliable if the results of a study can be reproduced under a similar methodology. On the other hand, validity determines whether the research truly measures that which it was intended to measure or how truthful the research results are. In other words, the research instrument should allow the researcher to reach research objectives.

In this study reliability and validity will be ensured through the consistent application of one theoretical definition of the role of DFIs; the use of the data will be collected from various data bases, such as African Development bank, International Financial Statistics (IFS), International Monetary Fund-Issuing International Sovereign and World Bank database. Thus, the methodologies will be accurate and be able to capture and measure variables to ensure research results validity and reliability.

3.8 Methodological Limitation and Conclusion

The findings of this paper are relevant to informing policy makers and it is therefore cardinal empirical tests are able to capture and produce correct results. Like most studies based on African samples the main methodological limitation is lack of data in required frequency form and non-availability of time series that spans over a long period of time. Additionally, limitation observed is inherent in the use of secondary data from several sources and there was a lack of a comprehensive database in relation to topic understudy as it has been thinly researched in context of Zambia . Furthermore, there was an evident lack of congruence in data collected from IMF, World Bank and government publications from various estimation techniques applied.

Notwithstanding this challenge, the research methodology such as diagnostic and stability are able to account for estimation non consistency and errors and present accurate results for correct inference and subsequent policy recommendations. Non -stationarity of time series data has often been regarded as a grave problem in empirical analysis and tests in section 3.6, are used to ensure non spurious regression. Variable selection in section 3.4 is informed by economic literature and this feeds into model specification presented in section 3.5. The concept of co-integration presented in section 3.6.2 is to concisely asses if there is a long run interrelatedness between DFIs and economic growth in Zambia which the root of this paper.

The topic on the role of DFIs in economic growth has been thinly researched in the context of Zambia and Sub Saharan Africa. Where studies existed, they did not broadly describe the relationship between the two and disregarded country uniqueness and regional nuances. Papers did not observe particularly the impact of DFI inflows fostering economic growth but rather grouped this in FDI or private investment inflow. The aim of this thesis is to determine the effect, if any, which multilateral DFIs may have on economic growth in Zambia by observing various relationships with the variables, listed above.

The results are interpreted and presented in Chapter 4.

CHAPTER 4: RESEARCH FINDINGS, ANALYSIS AND DISCUSSION

4.1 Introduction

Employing the various models specified in chapter three, this chapter is meant to analyse and interpret the results and thereby providing accurate policy recommendations. The results obtained from econometric techniques employed are meant to lend support to answer the following research questions: What is the relationship between DFIs and economic growth? Is the level of DFI inflow a significant determinant of economic growth in Zambia? To what extent do the independent variables (multilateral DFI inflows, inflation rates, exchange rates, interest rates and unemployment) affect economic growth in Zambia?

The quarterly data is obtained from the World Bank (WB) database, African Development Bank (ADB), International Financial Statistics (IFS), International Monetary Fund-Issuing International Sovereign and stretching from 1992:Q1 to 2015:Q4.

The chapter has seven sections which are as follows; 4.2 gives summary of statistics of all the data; 4.3 shows the results of the stationary/unit root tests; 4.4 shows the results of the co-integration test used; 4.5 presents and interprets the regression model and results 4.6 displays the results of the diagnostic tests employed; 4.7 illustrates the results of the stability test; 4.8 summarizes the main chapter findings.

4.2 Description of data

Prior to the estimation of the model, an analysis of the time series characteristics of the data was carried out to ascertain the normality of the variables. In addition, before evaluating the empirical impact of DFIs on economic growth, the descriptive statistics summary provided in **Table 4.1** serves as preliminary analysis to glance at some basic characteristics of the data.

Table 4. 1: Descriptive Statistics

	LDFI	LEX	LGDP	LINF	LINT	LUNEMPL
Mean	27306083.332	0.881	2760051584.712	8.081	8.913	3.253
Median	27896595	0.981	1375635292	5.021	7.563	3.281
Maximum	53182574	2.331	7127081178	51.412	31.223	4.974
Minimum	-6112018	0.03	85860796.821	1.522	2.253	1.714
Std. Dev.	11653456.384	0.521	2214212700	11.331	5.762	0.931
Skewness	-0.321	0.162	0.702	2.731	1.712	0.02
Kurtosis	3.051	2.872	1.942	9.271	6.831	2.091
Jarque-Bera	1.641	0.512	12.391	276.512	105.437	3.312
Probability	0.432	0.775	0.272	0.011	0.892	0.198
Sum	2621384000	85.41	264964952133.8	776.55	855.91	312.5
Sum Sq. Dev.	1.292	25.282	4.657	12200.031	3148.142	82.891
Observations	96	96	96	96	96	96

Source: Author's calculations using E-views software

Table 2 shows that all the variables are normally distributed except for the Inflation (LINF). The results Jarque-Bera test for normality shows that the null-hypothesis of normality is not rejected for all variables except with inflation. The non-normality exhibited by the inflation variable is in line with the usual non-normality exhibited by financial data. Brooks (2001) argues that financial variables are almost always non-normal in distribution. The variables are all positively skewed except LDFI which is marginally negatively skewed. The kurtosis for all variables does not show an indication of fat tails in the distribution.

4.3 Unit Root Tests

The importance of unit root tests is to avoid results that show statistical significance even when there is lack of meaningful linkage. The Augmented Dickey-Fuller (ADF) test is employed in the series to assess the presence of unit root in the dependent and independent variables. The results of the test are reported in **Table 4.2** below.

Table 4. 2: Unit Root Test Results 1992 Q1 – 2015 Q4

Variables	ADF Statistic at Level	ADF Statistic at 1nd Difference	Order of Integration
LNGDP	-1.991	-5.892	I(1)
LNDFI	-1.492	-6.183	I(1)
LNEX	-1.493	-8.516	I(1)
LNINF	-4.865		I(0)
LNINT	-3.567		I(0)
LNUNEMPL	-3.184	-4.539	I(1)

Source: Author's calculations using E-views software

Based on the ADF test statistic, it visible that out of six variables, GDP, multi-lateral DFI inflow, exchange rate and unemployment were induced stationary at an order of integration of I(1), the null hypothesis of unit root was not rejected. While inflation and interest rate were stationary at level I(0), with unit root hypothesis being rejected. The combination of both I(0) and I(1) variables is a constraint with Johansen procedure, thereby this solidifies the justification for using the bounds test approach and ARDL model.

4.4 Co-integration Test

To test for co-integration in the bounds testing approach will be employed and this requires the construction the conditional Unrestricted Error Correction Model (UECM). The results of the test are reported in **Table 4.3** below.

Table 4. 3: Bounds Test for Co-integration Analysis

Critical value	Lower Bound Value	Upper Bound Value
1%	3.41	4.68
2.5%	2.96	4.18
5%	2.62	3.79
10%	2.26	3.35

Note: Computed F-statistic: 8.44 (Significant at 0.05 marginal values).Critical Values are cited from Pesaran et al. (2001)

According to Pesaran and Shin (1999), under the null hypothesis of no co-integration and regardless of the degree of integration of the variables, the asymptotic distribution of the obtained F-statistic is non-standard. This is dependent on whether variables included in the ARDL model are I(0) or I(1), the number of regressors, whether the ARDL model contains an intercept and/or a trend, and the sample size. Two sets of critical F-values, representing the lower bound and the upper bound, have been provided by Pesaran and Shin (1999) for large samples. Narayan (2005) presents the critical F-values for sample size ranging 30–80 and states that according to the bound test for co-integration if the computed F-statistic for a chosen level of significance lies outside the critical bounds, a conclusive decision can be made regarding co-integration of the regressors. If the statistic is higher than the upper bound, the null hypothesis of no co-integration can be rejected and the next step is to estimate the ARDL Error Correction Model (ECM) where the short-run and long-run elasticities may be determined. The null hypothesis of no long-run relationship is rejected if the computed F-statistic is greater than the upper critical bound as tabulated by Narayan (2005). Therefore, since the computed F-statistic for our regression model was found to be 4.9721 as per **Table A2 (Appendix)** which is greater than the upper bound limits, it was concluded that a long run relationship among the variables existed. This is a cardinal finding, as it shows that DFIs inflow does reverberate in the economy and is able to elicit growth in Zambia.

4.5 Regression Model and Results

Therefore, having established the existence of a co-integration among the variables, the next step is to estimate the ARDL ECM where the short-run and long-run elasticities may be determined. The regression analysis serves as the ground work analysis in trying to unpack the relationship that can be observed between DFIs and economic growth. The ordinary least squares results are presented in the **Table 4.4** below.

Table 4. 4: Estimated Regression Model Based on Equation (ADRL)

Dependent Variable: LGDP				
Method: ARDL				
Date: 01/21/18 Time: 15:00				
Sample (adjusted): 1992Q3 2015Q4				
Included observations: 94 after adjustments				
Maximum dependent lags: 4 (Automatic selection)				
Model selection method: Akaike info criterion (AIC)				
Dynamic regressors (4 lags, automatic): LDFI LEX LINF LINT LUNEMPLY				
Fixed regressors: C				
Number of models evalulated: 12500				
Selected Model: ARDL(2, 2, 2, 0, 0, 2)				
Note: final equation sample is larger than selection sample				
Variable	Coefficient	Std. Error	t-Statistic	Prob.*
C	321291597.816	125470598.305	2.561	0.012
LGDP(-1)	0.637	0.101	6.301	1.504
LGDP(-2)	0.360	0.102	3.547	0.000
LDFI	-9.991	4.872	-2.051	0.043
LDFI(-1)	24.247	8.311	2.918	0.004
LDFI(-2)	-15.580	4.924	-3.164	0.002
LEX	-3884534766.887	486920289.508	-7.978	8.941
LEX(-1)	2607165543.110	992169895.533	2.628	0.010
LEX(-2)	1368380219.702	635742048.836	2.152	0.034
LINF	-1080196.557	2509643.944	-0.430	0.668
LINT	8612420.845	6124365.972	1.406	0.164
LUNEMPLY	-317409129.611	145635939.571	-2.180	0.032
LUNEMPLY(-1)	603179372.491	258426325.383	2.334	0.022
LUNEMPLY(-2)	-358935703.900	140782331.310	-2.550	0.012
ECM(-1)	-0.052	0.016	0.339	0.003
R-squared	0.998	Mean dependent var		2801780166.346
Adjusted R-squared	0.997	S.D. dependent var		2218939253.970
S.E. of regression	116959117.466	Akaike info criterion		40.129
Sum squared resid	1.099	Schwarz criterion		40.508
Log likelihood	-1872.070	Hannan-Quinn criter.		40.282
F-statistic	2568.757	Durbin-Watson stat		2.036
Prob(F-statistic)	0.000			
*Note: p-values and any subsequent tests do not account for model selection.				

Source: Author's calculations using E-views software

The signs of the results are in line with economic theory. As shown above show that there is a significant positive effect of the second and first lag of LGDP, first lag of LDFI and LUNEMPLY as well as the current LEX and LUNEMPLY depress economic growth.

Based on the lags Real GDP rate would still affect the rate of economic growth in the next 2 quarters, the current Exchange Rate and Unemployment would affect economic growth rate for the coming quarter. This suggests that higher past economic performance is positively related to higher growth in the current period. This may be the case because higher growth implies

higher savings and investment for future production. The results also show that the goodness of fit is reasonable (i.e. adjusted $R^2 = 0.998$), which implies that the exogenous variables in the model explains about 99.8% of economic growth. In general, the model is significant as indicated by the F statistic of 2568.757 with a probability of 0.000000. The coefficient of the error term ECM (-1) is negative and highly significant at 0.52 per cent level, further providing evidence of a long-run co integrating relationship among the variables.

Table 4.4 shows that at 5% level of significance, the second and first lagged values of Exchange rate (LEX), First lag of multilateral DFI inflow (LDFI), and Unemployment (LUNEMPLY) are positively related to economic growth (GDP). A unit of LDFI (1) leads to increase in economic growth by 24.247 units. From the table above, it shows that the coefficient of ECM is -0.052. The ECM is significant with the appropriate negative sign. The coefficient of ECM in the parsimonious model indicates that the speed of adjustment of any past deviation to long run equilibrium is about 5.2%. Therefore, from these results, it could be deduced that EX(-2), EX(-1), LDFI(-1) and LUNEMPLY (-1) have a direct relationship with GDP because of the positively signed coefficient. This is so because the appreciation of exchange rates reduces the cost of importing foreign products including oil which is needed to drive the economy.

As expected, inflation, which is a proxy for macroeconomic stability, is significant and negatively signed, thus suggesting that a stable macroeconomic environment is crucial for economic growth. This can be explained by the fact that macroeconomic stability not only reduces the problem of informational asymmetries but also the vulnerability of any financial system. The low and predictable rates of inflation are essential for growth because investors are usually unwilling to invest in an economy where there are expectations of high inflation as it increases uncertainty around absolute returns.

From results presented, multilateral DFI inflow lagged by one period has a positive impact on GDP, thus confirming the hypothesis that inflows enhance economic growth. This is because it compliments domestic investment, enhances technology transfer and is generally associated with job creation. DFI in the current period has a negative influence since most DFI funding is for various long-term capital projects, the year in which they are received will not make a significant impact. Only upon deployment of funds in growth eliciting projects do the positive impacts reverberate to the growth levels. The results of DFI lagged to second period, provide contradictory results as they show that DFIs negatively impacts growth in relation to theory.

Theory supports that DFIs can contribute to economic growth positively as per the first lag results. For instance, Weintraub (1985), states that as capital increases the economy maintains its steady state rate of economic growth. Principally, to increase the growth it is necessary there is concordance in labour supply, productivity of labour, capital and technological improvement. In relation to Weintraub (1985), therefore DFIs mandate is to increase capital through their investment inflows between public aid and private investment which are to enhance economic growth in a country. But with the results of the second lag this gives weight to preponderance of research that shows DFI funds alone are not enough to elicit economic growth to the receiving nation. Furthermore, sound macroeconomic fundamentals and fiscal policies are vital for economic growth and not just the reliance of funding from external bodies.

4.6 Diagnostic Tests

This section presents various econometric diagnostic test results which were adopted to investigate whether the model was a reasonable fit for the data. One of the main reasons for the diagnostic testing is to determine whether the model that has been estimated conforms to the classical assumption of the ADRL model. Therefore, the model is checked for serial correlation, Normality and Heteroscedasticity as per results below in **Table 4.5**.

Table 4. 5: Diagnostic Test Results

Test	
Breusch-Godfrey Serial Correlation LM Test:	
Observed R-Squared	2.043
Probability	0.359
Normality Test:	
Jarque-Bera Statistic Value	0.558
Probability	0.756
White Heteroscedasticity Test:	
Observed R-Squared	38.92
Probability	0.205

Source: Author's calculations using E-views software

4.6.1 Serial Correlation Test

H_0: Residuals are not serially correlated
H_1: Residuals are serially correlated

From the results above and **Table A4.1 (Appendix)**, we notice that the observed R-squared is 2.044 and the corresponding P-value of 36% which is greater than 5%. Thus, we fail to reject the null hypothesis which states that the residuals of the model are not serially correlated and reject the alternative which states that the residuals are serially correlated which is desirable for the model. Therefore, we conclude that the residuals are not serially correlated.

4.6.2 Normality Test

H_0: Residuals are Normally Distributed
H_1: Residuals are not Normally Distributed

From the results above and **Figure A1.1 (Appendix),** The Jarque-Bera statistic of 2.47 and the corresponding P-Value is 29% which is greater than 5%. The Jarque-Bera test for normality indicates that we fail to reject the null hypothesis that the residuals are normally distributed. Thus, we accept the null hypothesis that residuals are normally distributed and are happy with the regression model to estimate the relationship of these variables.

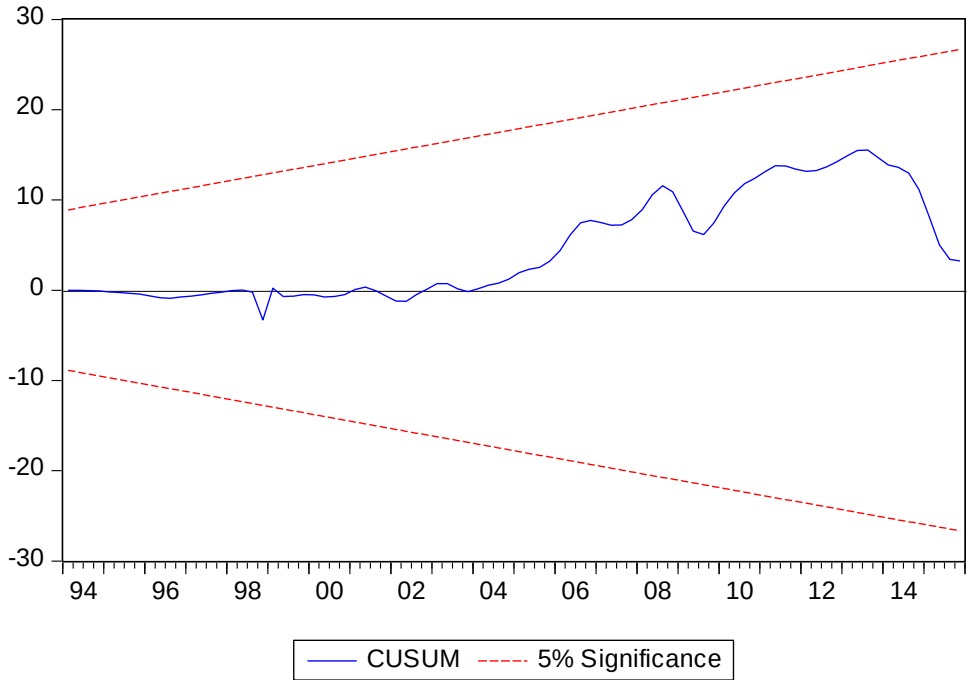
4.6.3 Heteroscedasticity Test

H_0: Residuals are homoscedastic
H_1: Residuals are not homoscedastic

From the results above and **Table A4.2 (Appendix),** the white heteroskedasticity of 38.926 and the corresponding P-Value is 0.205 which is greater than 5%. The results confirm that we fail to reject the null hypothesis that the residuals are homoscedastic. Therefore, we accept the null hypothesis that variance of the errors is the same, homoscedastic. Therefore, the regression model can be estimated and the relationship of these variables and results will not be biased.

4.7 Stability Test

Figure 4. 1: Stability Test Results using CUSUM Test.



H_0: Parameters of the equation are stable

H_1: Parameters of the equation are not stable

The CUSM test is a test that is used to help show if the coefficients of the regression model are changing significantly. The guidelines of these tests are that if the blue line as indicated in the above **Figure 4.1** is between the red lines we accept the null hypothesis (desirable) and reject the alternative. Conversely, if the blue line crosses the red lines, we reject the null hypothesis (undesirable).

4.8 Summary

The aim of this chapter was to outline, examine and interpret the empirical findings. This chapter presented the test results from the econometric analysis; applying the various techniques as outlined in chapter three. The focal point is to empirically understand the effect of DFI inflows on economic growth and assess the interactions between the two. The regression analysis shows ambiguous results and lack of congruence. Though it positively impacted GDP in one lagged period, other periods had no positive impact. An inference can be drawn that effect of DFIs and their structural change suggestions and developmental projects can only be implemented over a period of time and not instantly. Therefore, political and macro environment stability is cardinal for full impact of DFIs to be felt. The co-integration estimation results show that there is a long-run relation does exist between the variables so DFIs investment has a lasting effect on Zambia's growth.

A conclusion that can be drawn is that even though DFI does lead to economic growth, it can only be sustainable if it is deployed to growth eliciting projects that promote inclusive growth in Zambia. Investments should be in key sectors that drive the economy such as, infrastructure, energy, agribusiness, manufacturing and industry. These results have successively guided the conclusions drawn and policy recommendations made, as outlined in chapter five.

CHAPTER 5: RESEARCH CONCLUSIONS AND POLICY RECOMMENDATIONS

5.1 Research Conclusions

The thrust of the study was to determine the role of DFIs in economic growth in Zambia, with the focus on multilateral DFIs using quarterly data from 1992 to 2015. To avoid omitted variable bias, the investigation stretches further to analyse the effect of other macroeconomic variables, namely; interest rates, exchange rate, inflation and unemployment, against the economic growth in Zambia.

An observation of the results show that the first lagged value of Multilateral DFI inflows (LDFI), the first and second lagged value of Exchange rate (LEX), and the current value of Inflation (LINF) are positively related to GDP except the current and second lagged Multilateral DFI inflows (LDFI), current Exchange rate (LEX) and the current Unemployment (LUNEMPLY) which had an inverse relationship with GDP. The test results reveal that the past economic performance is significant in determining current economic performance. The GDP in lagged periods filters into current GDP levels and promotes and amplifies current GDP levels. Similarly, Exchange rate stability in previous periods boosts current GDP figures.
For the purposes of this study the most important variable was DFIs and the effect they have on economic growth. The results are not consistent. With lagged periods having both negative and positive effect this lack of consistency provides evidence that even though DFIs have a positive impact, it is not sustainable for long time periods. The uses of funds need to consistently be deployed into activities that improve macroeconomic conditions. Such as recurrent job creation and investments vital sectors that drive the economy such as finance, infrastructure, energy, agribusiness, manufacturing and industry.

Therefore, the findings emerging from this study indicates that DFIs in Zambia have played a role in the country's economic growth but have not been able consistently incite the much-needed sustained growth. The cointegration analysis showed a long-run and short-run correlation between DFIs and economic growth proved the interconnectedness lasts over a long period of time. This highlights further that at any given periods DFI have played a crucial role

in the level of GDP within Zambia. The degree of influence is reliant on effective usage of allocated funds.

5.2 Policy Recommendations

It is evident from results presented that there is a long-run interrelationship between DFI inflows and the level of economic growth. The degree of economic growth has been hindered due to incorrect deployment and or mismanagement of fund and limited sectorial range. Zambia has concentrated its capital inflows to the mining sector and has not diversified other sectors, hence internal revenue generating avenues have been scanty. If the country is to substantially benefit from DFI inflows in years to come, it is cardinal that funds are directed to revenue generating sectors that can increase export revenue such as agriculture and manufacturing.. This strengthens the fiscal balance thereby boost growth rate. These sectors also create jobs and reduce government's social burden thereby redirect government revenue for various infrastructural projects. DFI inflows alone are not enough for the sustainable growth Zambia needs. These inflows supplement government revenues and provide much needed finance for large investments projects; to ensure maintained inflow and investor confidence government policies should ensure sound macro fundamentals.

Sound and stable macroeconomic management of the economy is also very important, as it not only attracts this foreign capital, the maintenance and sustainability is dependent on fiscal policy, exchange rate policy, pricing policy and interest rate policy stance. To create credibility political stability and evident commitment to developmental activities boosts investor confidence and increases amount of capital flowing in.

Furthermore, sound institutional infrastructure and cultivating the right policies that ensure legal and monitoring framework must be in place to ensure that the funds are not malapportioned and rather deployed to deserving sectors.

5.3 Recommendations for future research

This study is mainly focused on Zambia. The study topic can be further researched on in other African countries and account for country nuances and find out if the role of DFIs in economic growth in those countries is significantly different. As noted above, this research paper did not include the effect of exports and imports, key economic indicators of balance of trade (BOT), which can be included in future models. The results of the study show a significant positive relationship between the two variables multilateral DFI inflows and economic growth (GDP). However, further research can be done to understand if this is only to a certain economical threshold, and if this same positive impact is witnessed in highly developed nations.

In addition, the paper did not include the Government debt to GDP which can be included in future research, a key indicator of the country ability to settle debt against GDP and provides an interesting dynamic on the relationship with DFI inflows. Debt levels can be considered as an indicator of fiscal policy stance and shows governments priorities. Future research to probe into the impact of DFIs in highly indebted countries could be insightful.

The paper assumes one directional causality that goes from DFIs to economic growth. However, economic growth could in itself attract DFIs, and a research paper needs to go a step further through granger causality tests, to that assesse whether the capital injection from DFIs has been due to positive growth and if this is a determining factor for DFIs.

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APPENDICES

Table A1: Unit Root Test Results

Table A1. 1: LDFI Unit Root Test Results

Null Hypothesis: LDFI has a unit root				
Exogenous: Constant, Linear Trend				
Lag Length: 4 (Automatic - based on SIC, maxlag=11)				
			t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic			-5.524	0.000
Test critical values:	1% level		-4.078	
	5% level		-3.468	
	10% level		-3.161	
*MacKinnon (1996) one-sided p-values.				
Augmented Dickey-Fuller Test Equation				
Dependent Variable: D(LDFI)				
Method: Least Squares				
Date: 01/20/18 Time: 15:19				
Sample (adjusted): 1996Q2 2015Q4				
Included observations: 79 after adjustments				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
LDFI(-1)	-0.327	0.059	-5.524	0.000
D(LDFI(-1))	0.807	0.100	8.061	0.000
D(LDFI(-2))	0.494	0.182	2.705	0.008
D(LDFI(-3))	-0.804	0.213	-3.768	0.000
D(LDFI(-4))	0.653	0.167	3.895	0.000
C	0.322	0.064	5.010	0.000
@TREND("1995Q1")	0.003	0.001	3.843	0.000
R-squared	0.708	Mean dependent var		0.017
Adjusted R-squared	0.683	S.D. dependent var		0.221
S.E. of regression	0.124	Akaike info criterion		-1.249
Sum squared resid	1.111	Schwarz criterion		-1.039
Log likelihood	56.345	Hannan-Quinn criter.		-1.165
F-statistic	29.080	Durbin-Watson stat		2.086
Prob(F-statistic)	0.000			

Table A1. 2: LEX Unit Root Test Results

Null Hypothesis: D(LEX,2) has a unit root				
Exogenous: Constant, Linear Trend				
Lag Length: 3 (Automatic - based on SIC, maxlag=11)				
			t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic			-7.913	0.000
Test critical values:	1% level		-4.080	
	5% level		-3.468	
	10% level		-3.161	
*MacKinnon (1996) one-sided p-values.				
Augmented Dickey-Fuller Test Equation				
Dependent Variable: D(LEX,3)				
Method: Least Squares				
Date: 01/20/18 Time: 15:24				
Sample (adjusted): 1996Q3 2015Q4				
Included observations: 78 after adjustments				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LEX(-1),2)	-1.012	0.128	-7.913	0.000
D(LEX(-1),3)	1.155	0.112	10.289	0.000
D(LEX(-2),3)	-0.150	0.106	-1.413	0.162
D(LEX(-3),3)	0.540	0.108	4.992	0.000
C	-0.003	0.004	-0.653	0.516
@TREND("1995Q1")	8.77E-05	8.17E-05	1.074	0.286
R-squared	0.717	Mean dependent var		-0.000
Adjusted R-squared	0.697	S.D. dependent var		0.029
S.E. of regression	0.016	Akaike info criterion		-5.378
Sum squared resid	0.018	Schwarz criterion		-5.197
Log likelihood	215.743	Hannan-Quinn criter.		-5.305
F-statistic	36.449	Durbin-Watson stat		2.009
Prob(F-statistic)	0.000			

Table A1. 3: LINF Unit Root Test Results

Null Hypothesis: D(LINF) has a unit root				
Exogenous: Constant, Linear Trend				
Lag Length: 1 (Automatic - based on SIC, maxlag=11)				
			t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic			-12.163	0.000
Test critical values:	1% level		-4.060	
	5% level		-3.458	
	10% level		-3.155	
*MacKinnon (1996) one-sided p-values.				
Augmented Dickey-Fuller Test Equation				
Dependent Variable: D(LINF,2)				
Method: Least Squares				
Date: 01/20/18 Time: 15:43				
Sample (adjusted): 1992Q4 2015Q4				
Included observations: 93 after adjustments				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LINF(-1))	-0.518	0.043	-12.163	1.265
D(LINF(-1),2)	0.775	0.051	15.142	2.334
C	-0.120	0.040	-2.993	0.004
@TREND("1992Q1")	0.001	0.001	2.163	0.033
R-squared	0.762	Mean dependent var		0.001
Adjusted R-squared	0.754	S.D. dependent var		0.365
S.E. of regression	0.181	Akaike info criterion		-0.540
Sum squared resid	2.912	Schwarz criterion		-0.431
Log likelihood	29.101	Hannan-Quinn criter.		-0.496
F-statistic	95.138	Durbin-Watson stat		2.111
Prob(F-statistic)	0.000			

Table A1. 4: LUNEMPLY Unit Root Test Results

Null Hypothesis: D(LUNEMPLY,2) has a unit root				
Exogenous: Constant, Linear Trend				
Lag Length: 9 (Automatic - based on SIC, maxlag=11)				
			t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic			-4.351	0.004
Test critical values:	1% level		-4.071	
	5% level		-3.464	
	10% level		-3.159	
*MacKinnon (1996) one-sided p-values.				
Augmented Dickey-Fuller Test Equation				
Dependent Variable: D(LUNEMPLY,3)				
Method: Least Squares				
Date: 01/17/18 Time: 22:18				
Sample (adjusted): 1995Q1 2015Q4				
Included observations: 84 after adjustments				

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LUNEMPLY(-1),2)	-1.172	0.269	-4.351	4.4012
D(LUNEMPLY(-1),3)	1.311	0.255	5.144	2.237
D(LUNEMPLY(-2),3)	0.215	0.250	0.859	0.393
D(LUNEMPLY(-3),3)	0.575	0.229	2.517	0.014
D(LUNEMPLY(-4),3)	0.327	0.215	1.523	0.132
D(LUNEMPLY(-5),3)	0.219	0.188	1.165	0.248
D(LUNEMPLY(-6),3)	0.290	0.162	1.797	0.077
D(LUNEMPLY(-7),3)	0.287	0.150	1.912	0.060
D(LUNEMPLY(-8),3)	-0.209	0.105	-2.003	0.049
D(LUNEMPLY(-9),3)	0.416	0.106	3.920	0.000
C	-0.000	0.015	-0.018	0.986
@TREND("1992Q1")	1.627	0.000	0.062	0.951

R-squared	0.757	Mean dependent var	-2.619
Adjusted R-squared	0.720	S.D. dependent var	0.110
S.E. of regression	0.058	Akaike info criterion	-2.724
Sum squared resid	0.243	Schwarz criterion	-2.377
Log likelihood	126.407	Hannan-Quinn criter.	-2.584
F-statistic	20.369	Durbin-Watson stat	2.013
Prob(F-statistic)	0.000		

Table A1. 5: Lint Unit Root Test Results

Null Hypothesis: LINT has a unit root				
Exogenous: Constant, Linear Trend				
Lag Length: 11 (Automatic - based on SIC, maxlag=11)				
			t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic			-3.569	0.039
Test critical values:	1% level		-4.071	
	5% level		-3.464	
	10% level		-3.159	
*MacKinnon (1996) one-sided p-values.				
Augmented Dickey-Fuller Test Equation				
Dependent Variable: D(LINT)				
Method: Least Squares				
Date: 01/17/18 Time: 22:16				
Sample (adjusted): 1995Q1 2015Q4				
Included observations: 84 after adjustments				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
LINT(-1)	-0.060	0.0168	-3.569	0.001
D(LINT(-1))	1.683	0.098	17.155	8.924
D(LINT(-2))	-1.357	0.166	-8.162	9.195
D(LINT(-3))	0.696	0.157	4.445	3.226
D(LINT(-4))	-0.424	0.139	-3.050	0.003
D(LINT(-5))	0.638	0.144	4.419	3.535
D(LINT(-6))	-0.492	0.150	-3.283	0.002
D(LINT(-7))	0.238	0.140	1.696	0.094
D(LINT(-8))	-0.366	0.127	-2.881	0.005
D(LINT(-9))	0.619	0.117	5.284	1.362
D(LINT(-10))	-0.494	0.096	-5.173	2.100
D(LINT(-11))	0.221	0.049	4.543	2.256
C	0.891	0.271	3.289	0.002
@TREND("1992Q1")	-0.008	0.002572171580160795	-3.147	0.002
R-squared	0.943	Mean dependent var		-0.136
Adjusted R-squared	0.933	S.D. dependent var		0.597
S.E. of regression	0.155	Akaike info criterion		-0.742
Sum squared resid	1.679	Schwarz criterion		-0.337
Log likelihood	45.151	Hannan-Quinn criter.		-0.579
F-statistic	89.524	Durbin-Watson stat		1.617
Prob(F-statistic)	0.000			

Table A2. 1: Bound Test Results

ARDL Bounds Test				
Date: 01/16/18 Time: 22:40				
Sample: 1992Q3 2015Q4				
Included observations: 94				
Null Hypothesis: No long-run relationships exist				
Test Statistic	Value	k		
F-statistic	4.972	5		
Critical Value Bounds				
Significance	I0 Bound	I1 Bound		
10%	2.26	3.35		
5%	2.62	3.79		
2.5%	2.96	4.18		
1%	3.41	4.68		
Test Equation:				
Dependent Variable: D(LGDP)				
Method: Least Squares				
Date: 01/16/18 Time: 22:40				
Sample: 1992Q3 2015Q4				
Included observations: 94				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LGDP(-1))	-0.356	0.102	-3.497	0.001
D(LEX)	-3871929371.094	489645260.258	-7.908	1.227
D(LEX(-1))	-1361515222.412	639149401.564	-2.130	0.036
D(LDFI)	-9.506	4.841	-1.964	0.053
D(LDFI(-1))	15.234	4.913	3.101	0.003
D(LUNEMPL)	-312768135.106	146479069.600	-2.135	0.036
D(LUNEMPL(-1))	364650738.445	141524852.196	2.577	0.012
C	343958909.005	126649125.094	2.716	0.008
LEX(-1)	87531162.130	52033802.522	1.682	0.096
LDFI(-1)	-1.143	1.772	-0.645	0.521
LINF(-1)	206614.975	2230620.582	0.093	0.926
LINT(-1)	5806924.645	5228177.908	1.111	0.270
LUNEMPL(-1)	-74490944.460	32032287.450	-2.326	0.023
LGDP(-1)	-0.004	0.012	-0.341	0.734
R-squared	0.747	Mean dependent var		46451091.037
Adjusted R-squared	0.705	S.D. dependent var		216117140.277
S.E. of regression	117301255.160	Akaike info criterion		40.135
Sum squared resid	1.108	Schwarz criterion		40.514
Log likelihood	-1872.345	Hannan-Quinn criter.		40.288
F-statistic	18.130	Durbin-Watson stat		2.021
Prob(F-statistic)	0.000			

Table A3. 1: Co-integration and Long Run Results

ARDL Co-integrating And Long Run Form				
Dependent Variable: LGDP				
Selected Model: ARDL(2, 2, 2, 0, 0, 2)				
Date: 01/16/18 Time: 23:32				
Sample: 1992Q1 2015Q4				
Included observations: 94				
Co-integrating Form				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LGDP(-1))	-0.361	0.102	-3.547	0.001
D(LDFI)	-9.991	4.872	-2.051	0.044
D(LDFI(-1))	15.580	4.924	3.164	0.002
D(LEX)	-3884534766	486920289	0	0
D(LEX(-1))	-1368380219	635742048	0	0
D(LINF)	-1080196	2509643	0	0
D(LINT)	8612420	6124365	0	0
D(LUNEMPLY)	-317409129	145635939	0	0
D(LUNEMPLY(-1))	358935703	140782331	0	0
CointEq(-1)	-0.002	0.012	-0.168	0.004
Cointeq = LGDP - (-666.698*LDFI + 45814149583.385*LEX				
-543761620.854*LINF + 4335418295.992*LINT -36830861385.893				
*LUNEMPLY + 161735416392.288)				
Long Run Coefficients				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
LDFI	666.698	3864.83	-0.173	0.212
LEX	-45814149583	261254848029	0.175	0.002
LINF	543761620	3969299280	-0.137	0.021
LINT	-4335418295	26680435390	0.163	0.041
LUNEMPLY	-36830861385.892	213056689138.621	-0.173	0.008
C	161735416392.288	929160874386.389	0.174	0.862

Table A4: Model Diagnostic Test Results

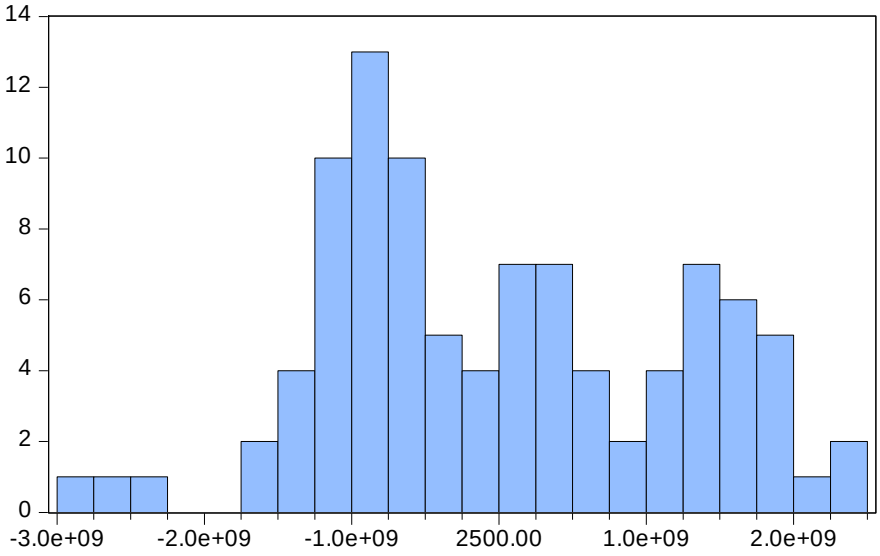
Table A4. 1: Serial Correlation

Breusch-Godfrey Serial Correlation LM Test:				
F-statistic	0.867	Prob. F(2,78)		0.424
Obs*R-squared	2.044	Prob. Chi-Square(2)		0.360
Test Equation:				
Dependent Variable: RESID				
Method: ARDL				
Date: 01/16/18 Time: 23:29				
Sample: 1992Q3 2015Q4				
Included observations: 94				
Presample missing value lagged residuals set to zero.				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
LGDP(-1)	0.5823	0.454	1.283	0.203
LGDP(-2)	-0.582	0.454	-1.283	0.203
LDFI	5.948	6.684	0.890	0.376
LDFI(-1)	-11.992	12.366	-0.970	0.335
LDFI(-2)	6.391	6.931	0.922	0.359
LEX	66037785.932	496489666.901	0.133	0.895
LEX(-1)	2123158763.621	1896459360.966	1.120	0.266
LEX(-2)	-2232847962.341	1811655060.702	-1.232	0.223
LINF	746645.993	2584072.475	0.289	0.773
LINT	-4606897.522	7068994.388	-0.652	0.517
LUNEMPLY	143467612.348	182353802.465	0.787	0.434
LUNEMPLY(-1)	-240098931.387	317298886.637	-0.757	0.452
LUNEMPLY(-2)	129862742.439	172517528.277	0.753	0.454
C	-124755559.326	157402186.747	-0.793	0.430
RESID(-1)	-0.622	0.474	-1.312	0.194
RESID(-2)	0.246	0.218	1.126	0.264
R-squared	0.022	Mean dependent var		5.358
Adjusted R-squared	-0.166	S.D. dependent var		108476983.96 6
S.E. of regression	117154419.753	Akaike info criterion		40.150
Sum squared resid	1.071	Schwarz criterion		40.583
Log likelihood	-1871.037	Hannan-Quinn criter.		40.325
F-statistic	0.116	Durbin-Watson stat		1.962
Prob(F-statistic)	0.100			

Table A4. 2: Heteroskedasticity Test

Heteroskedasticity Test: Breusch-Pagan-Godfrey				
F-statistic	4.350	Prob. F(13,80)		1.702
Obs*R-squared	38.926	Prob. Chi-Square(13)		0.205
Scaled explained SS	216.640	Prob. Chi-Square(13)		0
Test Equation:				
Dependent Variable: RESID^2				
Method: Least Squares				
Date: 01/16/18 Time: 23:30				
Sample: 1992Q3 2015Q4				
Included observations: 94				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.123	0.000	2.765	0.007
LGDP(-1)	-54655247.196	32747576.999	-1.669	0.099
LGDP(-2)	49344861.728	32922318.515	1.499	0.138
LDFI	5454029749.882	1577303750.901	3.458	0.001
LDFI(-1)	-8666612782.142	2690645832.069	-3.221	0.002
LDFI(-2)	2424704264.726	1594250803.329	1.521	0.132
LEX	0.346	1.577	0.085	0.932
LEX(-1)	-1.422	3.212	-0.442	0.659
LEX(-2)	1.088	2.058	0.529	0.598
LINF	199966568641349.1	812521039140583.5	0.246	0.806
LINT	-1800925164875548	1982821593290887	-0.908	0.367
LUNEMPLY	1.076	4.715	2.281	0.025
LUNEMPLY(-1)	-1.670	8.367	-1.995	0.049
LUNEMPLY(-2)	5.124	4.558	1.124	0.264
R-squared	0.414	Mean dependent var		1.164
Adjusted R-squared	0.319	S.D. dependent var		4.588
S.E. of regression	3.787	Akaike info criterion		79.320
Sum squared resid	1.147	Schwarz criterion		79.699
Log likelihood	-3714.048	Hannan-Quinn criter.		79.473
F-statistic	4.350	Durbin-Watson stat		2.003
Prob(F-statistic)	0.000			

Figure A1.1: Normality Test Results



Series: Residuals	
Sample 1992Q1 2015Q4	
Observations 96	
Mean	-9.04e-07
Median	-2.16e+08
Maximum	2.43e+09
Minimum	-2.77e+09
Std. Dev.	1.18e+09
Skewness	0.161386
Kurtosis	2.282929
Jarque-Bera	2.473491
Probability	0.290328