

**THE MACROECONOMIC DRIVERS OF ECONOMIC GROWTH IN SADC
COUNTRIES**

by

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THE MACROECONOMIC DRIVERS OF ECONOMIC GROWTH IN SADC COUNTRIES

I declare that the above dissertation/thesis is my own work and that all the sources that I have used or quoted have been indicated and acknowledged by means of complete references.



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11th March 2017

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ABSTRACT

This study empirically investigates the key macroeconomic determinants of economic growth in three Southern African Development Community countries, namely: Malawi, Zambia, and South Africa, using annual data for the period 1970-2013. The study uses the recently developed Autoregressive Distributed Lag bounds-testing approach to co-integration and error correction model. In Malawi, the study finds that investment, human capital development, and international trade are positively associated, while inflation is negatively associated with economic growth in the short run. In the long run, the results reveal that investment, human capital development, and international trade are positively and significantly associated, while population growth and inflation are negatively and significantly associated with economic growth. In Zambia, the short-run results reveal that investment and human capital development are positively and significantly associated, while government consumption, international trade, and foreign aid are negatively and significantly associated with economic growth. The long-run results reveal that investment and human capital development are positively and significantly associated, while foreign aid is negatively and significantly associated with economic growth. In South Africa, the study results show that in the short run, investment is positively and significantly associated, while population growth and government consumption are negatively and significantly associated with economic growth. In the long run, the results reveal that economic growth is positively and significantly associated with investment, human capital development, and international trade, but negatively and significantly associated with population growth, government consumption, and inflation. These results all have significant policy implications. It is recommended that Malawian authorities should focus on strategies that attract investment: in addition there is a need to improve the quality of education, encourage export diversification, reduce population growth, and ensure inflation stability. Similarly Zambian authorities should focus on creation of incentives that attract investment, provision of quality education: moreover they need to improve government effectiveness, encourage international trade and ensure the effectiveness of development aid. South African authorities are recommended to focus on policies that attract investments, the provision of quality education, and trade liberalisation: concomitantly there is also a need to reduce population growth, government consumption and inflation.

KEY WORDS

Southern Africa; SADC; Malawi; Zambia; South Africa; Macroeconomic Determinants of Economic Growth; ARDL Bounds-Testing Approach; Co-integration; Error Correction Model; Economic Reforms

DEDICATION

To my beloved wife Towera; my parents Gilbert and Faustace; my daughter, Elsie; my two sons, William and Jabulani; my beloved sisters Caroline, Lusekelo, Atupere and Jane; and also in memory of my late sister, Elizabeth.

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Notwithstanding the contribution of the aforementioned individuals, institutions and journals, the responsibility for all the views and any shortcomings of this study, including errors and omissions, is entirely mine, and should not be attributed to any of the above-mentioned.

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ACRONYMS

ADF	Augmented Dickey-Fuller
AIC	Akaike Information Criterion
AID	Foreign Aid
AIDS	Acquired Immunodeficiency Syndrome
AP	Action Programme
AR	Autoregressive
ARCH	Autoregressive Conditional Heteroskedastic
ARDL	Autoregressive Distributed Lag
ASGISA	Accelerated Shared Growth Initiative for South Africa
CES	Constant Elasticity of Substitution
CUSUM	Cumulative Sum
CUSUMSQ	Cumulative Sum of Squares
DEVPOL	Statement of Development Policy
DEVPOL80	Statement of Development Policy, 1971-1980
DEVPOL96	Statement of Development Policy, 1987-1996
DF	Dickey-Fuller
DF-GLS	Dickey-Fuller Generalised Least Squares
ECM	Error Correction Model
ESAF	Extended Structural Adjustment Facility
FEMAC	Foreign Exchange Management Committee
FDI	Foreign Direct Investment
FMAGP	Financial Management and Accelerating Growth Project
FRDP	Fiscal Restructuring and Deregulation Project
FSEDP	Financial Sector and Enterprise Development Project
GARCH	Generalised Autoregressive Conditional Heteroskedasticity
GEAR	Growth, Employment and Redistribution
GDP	Gross Domestic Product
GDPPC	Real Gross Domestic Product per Capita
HIPC	Highly Indebted Poor Countries
HIV	Human Immunodeficiency Virus
HC	Human Capital

IMF	International Monetary Fund
INF	Inflation
INV	Investment
ITPSAP	Industrial and Trade Policy Structural Adjustment Programme
LAC	Latin America and Caribbean
LCB	Lower Critical Bound
LM	Lagrange Multiplier
LSDV	Least Squares with Dummy Variable
LTP	Long-Term Plan
M2	Money Supply
MEGS	Malawi Economic Growth Strategy
MERP	Malawi Economic Recovery Plan
MGDS	Malawi Growth and Development Strategy
MGDS I	First Malawi Growth and Development Strategy, 2006-2010
MGDS II	Second Malawi Growth and Development Strategy, 2011-2015
MITPAP	Malawi Industrial and Trade Policy Adjustment Project
MK	Malawi Kwacha
MMD	Movement for Multiparty Democracy
MPRSP	Malawi Poverty Reduction Strategy Paper
MTP	Medium-Term Plan
NERP	New Economic Recovery Plan
NDP	National Development Plan
NDP1	First National Development Plan
NDP2	Second National Development Plan
NDP3	Third National Development Plan
NDP4	Fourth National Development Plan
NDP5	Fifth National Development Plan
NDP6	Sixth National Development Plan
OLS	Ordinary Least Squares
p.a.	per annum
PSRP	Poverty Reduction Strategy Paper
QLFS	Quarterly Labour Force Survey
RaDP	Reconstruction and Development Programme

RER	Real Exchange Rate
RESET	Ramsey Regression Specification Test
RDP	Rolling Development Plan
R&D	Research and Development
SADC	Southern African Development Community
SAP	Structural Adjustment Programme
SARB	South Africa Reserve Bank
SBC	Schwarz Bayesian Criterion
SIP	Sector Investment Programme
SP	Stabilisation Programme
SSA	Sub-Saharan Africa
STP	Short-Term Plan
TNDP	Transitional National Development Plan
TRD	International Trade
UCB	Upper Critical Bound
UNESCO	United Nations Educational, Scientific and Cultural Organisation
UNIP	United National Independence Party
US\$	United States Dollars
ZCCM	Zambia Consolidated Copper Mines
ZESCO	Zambia Electricity Supply Commission
ZNBC	Zambia National Commercial Bank
ZK	Zambian Kwacha

CHAPTER 1

INTRODUCTION TO THE STUDY

1.1 Background to the Study

Investigations seeking to identify the factors that increase or hinder economic growth has been one of the central pursuits amongst theoretical and empirical growth researchers; but with little consensus reached to date. Within the framework of the economic growth theory, there have been two most important new approaches that have spearheaded much of the existing discussion on economic growth. These include the neoclassical or exogenous growth theories and the endogenous growth theories: in both cases the main focus has been on the importance of state factors such as the accumulation of physical capital, human capital development and technology (see, amongst others, Solow 1956; Romer 1986; Lucas 1988; Grossman and Helpman 1991; Aghion and Howitt 1992). However, there have been other equally important contributions to the economic growth literature that focus either on the role of efficiency factors on growth (see, among others, Easterly and Wetzel 1989; World Bank 1990a) or the importance of fundamental sources of growth such as institutional, legal, demographical, geographical, and socioeconomic, and political factors (see, among others, Barro 1999, 2003; Sachs and Warner 1997; Radelet *et al.* 2001).

The neoclassical (Solow 1956) economic growth theory, also known as the exogenous growth model, advocates for the accumulation of physical capital as an important driver of economic growth in the short run, while technological advancement is the key determinant of economic growth in the long run. An important extension of this neoclassical growth model was the inclusion of human capital stock as one of the key factors driving economic growth so as to complement physical capital accumulation (Mankiw *et al.* 1992; Islam 1995). On the other hand the major contribution of endogenous growth theorists is based on productivity factors such as learning-by-doing (Becker 1962; Mincer 1962; Weisbrod 1962; Romer 1986; Lucas 1988) and the importance of useful technological knowledge (research and development) as important drivers of growth (Frankel 1962; Grossman and Helpman 1991; Aghion and Howitt 1992; Stokey 1995).

Much as there is consensus that state factors such as the accumulation of physical capital (investment) and human capital development, and productivity factors (technological growth) are

important macroeconomic determinants of economic growth in almost any country, there are other proponents that postulate the key roles of the following: factors affecting the efficiency of savings and investment such as financial repression (McKinnon 1973; Shaw 1973); real exchange rate misalignment (Balassa 1964; Samuelson 1964); inflation (Mundell 1963; Tobin 1965; Sidrauski 1967; Stockman 1981; Fischer 1983; Bruno and Easterly 1998); government spending (Wagner 1892; Peacock and Wiseman 1961; Barro 1990; Barro and Sala-i-Martin 1992); international trade (Dollar 1992; Knight *et al.* 1993; Sachs and Warner 1997); and foreign aid (Chenery and Strout 1966; Mosley 1980; Riddell 1987). All of the aforesaid, among others, are arguably equally important determinants of economic growth (Easterly and Wetzel 1989; World Bank 1990a; Fischer 1992). These efficiency factors became prominent in the 1990s with three key outcomes being targeted, namely: stability of the macro-economic environment; the effectiveness of the institutional framework of an economy related to political and economic governance, incentive structures and social infrastructure; and also the setting up of the right price mechanism and the regulatory environment that is necessary to clear markets (World Bank 1990a; Corbo *et al.* 1992, Snowden and Vane 2005).

As argued by Fischer (1992), the main reason why macro-economic stability matters in terms of economic growth is because of the certainty it creates with regard to the expectation of future values of economic variables. One source is policy-induced uncertainty that affects the efficiency of the price mechanism. If the expectation is that inflation, government spending, real exchange rates, real interest rates and population will rise, among others, they may have a negative influence on future rates of economic growth. A second source is temporal uncertainty where investors hold on to their new investments until the macroeconomic environment has stabilised: if not controlled this may lead to capital flight (Pindyck 1988; Pindyck and Somalino 1993). Barro (1990) and Barro and Sala-i-Martin (1992), for example, have modelled the significance of government spending on economic growth and found that high government spending is negatively associated with economic growth.

Inasmuch as a number of empirical studies have been conducted in order to identify the key determinants of economic growth; many growth economists have resorted to selecting as many determinants as can be included as long as there are enough cross-sectional, pooled or panel country data to handle the analysis (Sala-i-Martin *et al.* 2004; Ciccone and Jarocinski 2010). This approach has been supported by studies that argue that the relative robustness of determinants can only be guaranteed by the inclusion of more determinants of growth (Sala-i-Martin *et al.* 2004;

Bayraktar 2006). On the other hand, this approach creates a weakness, especially for key macroeconomic factors that exhibit threshold effects, as these are dependent on the policies implemented by policymakers in a particular country. Much as cross-sectional, pooled or panel data may provide a convenient analytical framework, many countries do not know what the specific key drivers of economic growth in their economies are. The new literature on empirical growth research stresses the importance of country-specific development plans and economic reforms causing different equilibria, or time paths, for *per capita* income growth (Azariadis and Drazen 1990; Durlauf and Johnson 1995). Today, it is still not clear which factors are the principal drivers of economic growth within and among countries. This study, therefore, aims to further contribute to the growing literature on country-specific empirical growth studies.

It is also postulated that for a country to benefit from economic policies and reforms, one needs to understand the status quo of its current political economy and the economic policies that have been adopted. It has been argued that reforms require austerity measures that promote fiscal discipline, macroeconomic stabilization, free trade, privatisation, decontrolling of prices, and limited political intervention (Lucas 1993; Rodrik 1996). Hence, based on this argument, many economists discuss the role that governments should play in influencing economic performance. The Keynesian school of thought that dominated much of the 1950s and 1960s saw a rapid increase in government involvement that went beyond merely addressing market failures, but moved more towards the implementation of interventions expected to be efficiently implemented by private agents (Snowdon and Vane 2005).

The focus, however, changed – especially in the 1980s – when an appropriate mix of both capitalist and state interventionism reforms (coined the ‘Washington Consensus’) were introduced that saw many developing countries adopting structural-adjustment programmes, which were supported by the World Bank and the International Monetary Fund (IMF). The proposed structural adjustment programmes, which were initially targeted to resolve the debt crisis in Latin America, included a standard package that focused on the following policy-based reforms that included: fiscal discipline with an emphasis on low fiscal deficits; a redirection of government subsidies towards increasing investments in primary education, primary health care, and public infrastructure; broadening the tax base; financial deregulation focusing on market determined interest rates; liberalisation of the foreign exchange market; promoting foreign direct investment; privatisation of state-owned enterprises; deregulation of rules that hinder market entry and restrict competition; and property rights (see Williamson 1990, 2008).

This subsequently led to the realisation that the state of politics in an economy influences the choice of economic policies and, hence, it also influences economic performance (Snowdon and Vane 2005). The traditional role of governments is to intervene in markets – in order to address market failures and public choices. Economists describe situations in which governments intervene and develop the relevant public policies required to address such market failures. Usually, market failures would be associated with situations where there are time-inconsistent interventions (Kydlund and Prescott 1977); externalities, the provision of public goods and regulation (Le Grand 1991); and also where there are information asymmetries and market structure (Stiglitz 2000).

In many African economies, the economic strategies adopted are aimed at achieving high and sustainable economic growth rates with a primary focus on achieving broader development objectives and shared prosperity. Achieving sustainable economic growth rates either to move from low- to middle-income economies or middle- to high-income economies is a necessary condition; however, it is not necessarily a sufficient condition. Easterly and Wetzel (1989) argue that the efficiency of savings and investment are equally important factors in addition to their accumulation. Thus, policies that both attract and make savings and investment more efficient by improving their resource allocation can further lead to higher and sustainable economic growth rates. However, in order for savings and investment to be efficient, there is a need for a stable macroeconomic environment that provides incentives to reduce capital flight. This includes the ensuring of stable macroeconomic conditions such as low inflation, real interest rate stability, real exchange rate stability, productive or non-distortionary government spending, and productive trade policy: in addition there should be an efficient price mechanism and regulatory environment and also efficient and effective institutions (both public and private). These factors have been empirically investigated and are seen as being capable of turning savings into productive investments (see, among others, World Bank 1990a; Fischer 1993; Acemoglu *et al.* 2005).

These stability conditions are, however, unique to a specific economy and depend on the economy's stages of development. In order for policy makers to understand the key determinants of economic growth that apply specifically to their country, country-based growth studies are, therefore, important. As argued by Anyanwu (2014), generating sustained economic growth rates is one of the pressing challenges that Africa faces today. Thus, knowing country-specific determinants of growth is equally important specifically for policy makers in a particular economy. Because efficiency factors exhibit threshold effects, the relationship between some key

macroeconomic determinants and economic growth is, therefore, to some extent variable and will differ from country to country. Some efficiency factors have been found to be either positively or negatively associated with growth (see, among others, Barro 1990; Most and Vann de Berg 1996; Bruno and Easterly 1998; Burnside and Dollar 2000; Thornton 2001; Warr 2004; Vieira *et al.* 2013). In addition, growth studies with pooled data often distort the relationship between important determinants and economic growth. Results from such studies are likely to be misleading when policy makers are developing their country-specific strategies. Thus, it is important to explicitly investigate country-specific macroeconomic determinants of growth using country-specific data.

In order to achieve this goal, the experience of three Southern African countries are investigated in this study by examining the country-specific key macroeconomic determinants of economic growth. These three countries include a low-income economy, i.e. Malawi; a low middle-income economy, i.e. Zambia; and an upper middle-income economy, South Africa. These countries have been selected for the following reasons. First, much as these countries are at different stages of economic growth, they have been affected by low economic growth rates, high poverty rates and unemployment all of which have contributed to significant social and economic hardships. Second, the selection of these three countries out of eleven countries in Southern Africa was based on the availability of historical annual time-series data covering the period 1970-2013. Third, since identifying the key macroeconomic determinants of economic growth for each country is the focus of this study, it is of paramount importance that we distinguish between their economies. Malawi, for example, is an agricultural-based economy; Zambia is a natural resource-driven economy; whilst South Africa is more of a natural resource- and services-driven economy. These same characteristics are common to all eleven countries in Southern Africa including low-income economies largely driven by agriculture (Lesotho, Malawi, Mozambique, Tanzania and Zimbabwe); and middle-income economies which are largely natural-resource based (Angola, Botswana, Namibia, South Africa, Swaziland, and Zambia).

1.2 Statement of the Problem

Most countries in Sub-Saharan Africa (SSA) face major economic challenges focusing largely on how they can raise their real GDP per capita. Economic growth rates are still not robust enough to enable such countries to make the necessary advances. It is widely recognised that investment is the most important determinant of growth. Yet in most SSA countries their growth and economic development has depended on external financing largely derived from aid and external

borrowing yet without any significant translation to sustainable economic growth (Ayadi and Ayadi 2008). The result of such a phenomenon has led to most SSA countries accumulating unsustainable amounts of external debt that have led to chronic debt crises (Ahmed 2012). There are many arguments presented in the economic growth literature as to the root causes of such poor performances in Africa. Some have argued that instead of such investments going towards investing in Africa's industrial development processes, most of the aid and borrowing incomes have been invested in inappropriate programmes (White 1992; Ahmed 2012). Others have argued that such dismal performance is a result of lack of infrastructure to ease problems due to lack of energy, transportation, communications and cross-border trade (Khandelwal 2004) and also insufficient institutional development (Andersen and Jensen, 2014). For economies that have relied on natural resource endowments, such wealth has also impeded economic development in SSA, by either encouraging economic systems that are nondemocratic or that are more authoritarian (Tsui 2010).

In Malawi, for example, since attaining independence in 1964, the economy enjoyed a brief moment of high rates of economic growth averaging 6.0% per annum (p.a.) in the 1960s. However, from the 1970s onwards, Malawi's economy faced numerous social, economic and political hardships resulting in low rates of both real GDP and per capita income. In spite of undertaking numerous political and economic reforms, the consequences of such a low economic performance resulted in high poverty levels averaging 71% in 2010 and also the lowest per capita income in the Southern Africa region, averaging \$274 per capita in 2014 (World Bank 2015b, 2015c). If this continues, the low growth performance that Malawi continues to experience will lead if unchecked to more social, economic and political hardships. Conversely, Zambia recorded a per capita income of \$1,033 at 2005 constant US dollars and was categorised as a low-middle income economy in 2014. At the same time, Zambia is one of the five countries in the world with the highest poverty headcount ratios of people living on less than \$1.25 a day estimated at 74.3% in 2010 (World Bank 2015b, 2015c). Since independence in 1964, Zambia has relied heavily on copper mining which has been the bedrock of the economy. However, the mining sector has gone through mineral booms and recessions due to fluctuations in international copper prices, thereby making the Zambian economy susceptible to external shocks. Furthermore, other equally important sectors such as agriculture and manufacturing have not been developed to their full potential: these sectors subsequently become affected whenever there is a mineral recession.

South Africa, on the other hand, is one of the emerging economies in the world with a real per capita income of US\$6,086 at 2005 constant dollar prices that was registered in 2014 (World Bank 2015c). Since the mid-1990s, the South African authorities have relied on national programmes to improve the economy – but with only slight success. As a result, the South African economy continues to experience social and economic challenges (National Planning Commission 2012). The performance of the economy has been unimpressive during the period 1994-2013, with real GDP growth rates averaging 3.1% p.a. Moreover during the post-2008 global financial crisis, real GDP growth rates slowed down further, averaging 2.1% p.a. during the period, 2008-2013 (World Bank 2015c).

For these economies to bounce back, it is important to understand their key macroeconomic determinants of growth – and this includes an understanding of the major factors that either drive economic growth or cause the economy to lag behind. In addition, an understanding of what policy directions can be adopted to reduce poverty and achieve high sustainable growth rates is crucial. It is against this backdrop that this study attempts to address these issues by examining the key macroeconomic determinants of economic growth in each country using the recently developed autoregressive distributed lag (ARDL) bounds testing approach to co-integration developed by Pesaran and Shin (1999) and enhanced by Pesaran *et al.* (2001).

1.3 Objectives and Hypotheses of the Study

1.3.1 Objectives of the Study

The main objective of this study is to investigate the key macroeconomic determinants of economic growth in three Southern African Development Community (SADC) countries, namely: Malawi, Zambia, and South Africa.

The specific objectives of the study are to:

- 1) Empirically investigate the key macroeconomic determinants of economic growth in the selected three SADC countries.
- 2) Empirically investigate the impact of the key macroeconomic determinants on economic growth in the selected three SADC countries.

- 3) Empirically examine the key policy implications and provide policy recommendations as to which economic strategies may be adopted, both in the short and long run, based on the relevant study results from the three SADC countries.

1.3.2 Hypotheses of the Study

The hypotheses that are empirically tested in this study include:

- 1) In the short run macroeconomic determinants of economic growth in the selected three study countries are the accumulation of physical capital, human capital development, population growth, government consumption, real exchange rate depreciation, inflation, international trade and foreign aid.
- 2) In the long run macroeconomic determinants of economic growth in the selected three study countries are the accumulation of physical capital, human capital development, population growth, government consumption, real exchange rate depreciation, inflation, international trade and foreign aid.
- 3) The accumulation of physical capital, human capital development, international trade and foreign aid are positively related with economic growth in Malawi, Zambia and South Africa.
- 4) Population growth, government consumption, real exchange rate depreciation and inflation are negatively associated with economic growth in the selected three SADC countries under study.

1.4 Significance of the Study

The significance of the study is seven-fold. Firstly, the study is related to the recent growth literature that explores country-specific key macroeconomic determinants of economic growth by focusing on developments in three SADC countries (Malawi, Zambia, and South Africa). Despite the abundant literature on the importance of key macroeconomic determinants such as the role of investment, human capital development, population growth, government consumption, inflation, exchange rate depreciation, international trade, and foreign aid on economic growth in many developing countries; little empirical work has been done in the selected countries of interest.

Second, by studying the important contribution that country-specific macroeconomic determinants have on economic growth, important policy guidelines relating to specific countries can be drawn to assist policy makers in these countries in their quest to promote economic growth, both in the short and long run.

Third, the key macroeconomic determinants of economic growth especially those that have been found to be good indicators of macroeconomic stability related to fiscal discipline, inflation and real exchange rate stability have been investigated in this study. In addition these determinants are also important towards successfully pursuing regional integration and macroeconomic convergence in the SADC region as a precondition towards sustainable economic growth of the entire region.

Fourth, given that the focus of the study is to investigate the key macroeconomic determinants of growth, proxied by the level of real GDP per capita, the methodological approach adopted measures the relationship between the key macroeconomic determinants selected and economic growth both in the short and long run. The short-run results identify factors that contribute towards short-run real GDP per capita growth; whereas the long-run results identify factors that affect the long-run level of real GDP per capita.

Fifth, the study uses both state and efficiency factors to ensure that no biased results are reported: it therefore avoids the approach of many theoretical growth models that have focused mainly or solely on state factors as independent variables included (see, among others, Mankiw *et al.* 1992; Bernanke and Gurkaynak 2001).

Sixth, the study carries out country-specific investigations on the key macroeconomic determinants of economic growth. Most empirical studies that have investigated the relationship between key macroeconomic determinants and economic growth have done so using cross-sectional or pooled data: in such cases results are often generic and fail to take into account the threshold effects that such variables may have on economic growth in a specific country. The approach adopted in this study on the other hand aims to result in sound policy recommendations being made to policy makers in each country.

Lastly, the study utilises the recently developed autoregressive distributed lag (ARDL) bounds testing approach to co-integration in order to investigate the key macroeconomic determinants in the study countries. The ARDL approach to co-integration developed by Pesaran and Shin (1999)

and Pesaran *et al.* (2001) has several advantages over earlier co-integration techniques such as the Engle and Granger residual-based test to co-integration (Engle and Granger 1987) or the maximum-likelihood test to co-integration developed by Johansen and Juselius (1990); especially when dealing with small sample sizes (see, among others, Narayan 2005, Acikgoz and Mert 2014).

The study is expected to contribute significantly to the empirical growth literature, especially with regard to identifying country-specific key macroeconomic determinants of economic growth. Furthermore, given this approach, the study aims to provide evidence-based policy recommendations to the selected SADC countries and apropos factors that either drive or hinder economic growth.

1.5 Organisation of the Study

The rest of the study is organised as follows: Chapter 2 discusses country-based literature on the key macroeconomic drivers of growth in Malawi while Chapter 3 surveys country-based literature on the key macroeconomic factors affecting growth in Zambia. Similarly Chapter 4 examines country-based literature on the key macroeconomic drivers affecting economic growth in South Africa. Chapter 5 reviews both theoretical and empirical literature on the macroeconomic determinants of economic growth. Chapter 6 discusses the empirical model specification and estimation techniques used in this study. Chapter 7 covers econometric analysis approach adopted and the discussion of empirical results. Finally, Chapter 8 concludes the study and offers country-specific policy recommendations.

CHAPTER 2

THE MACROECONOMIC DRIVERS OF GROWTH IN MALAWI

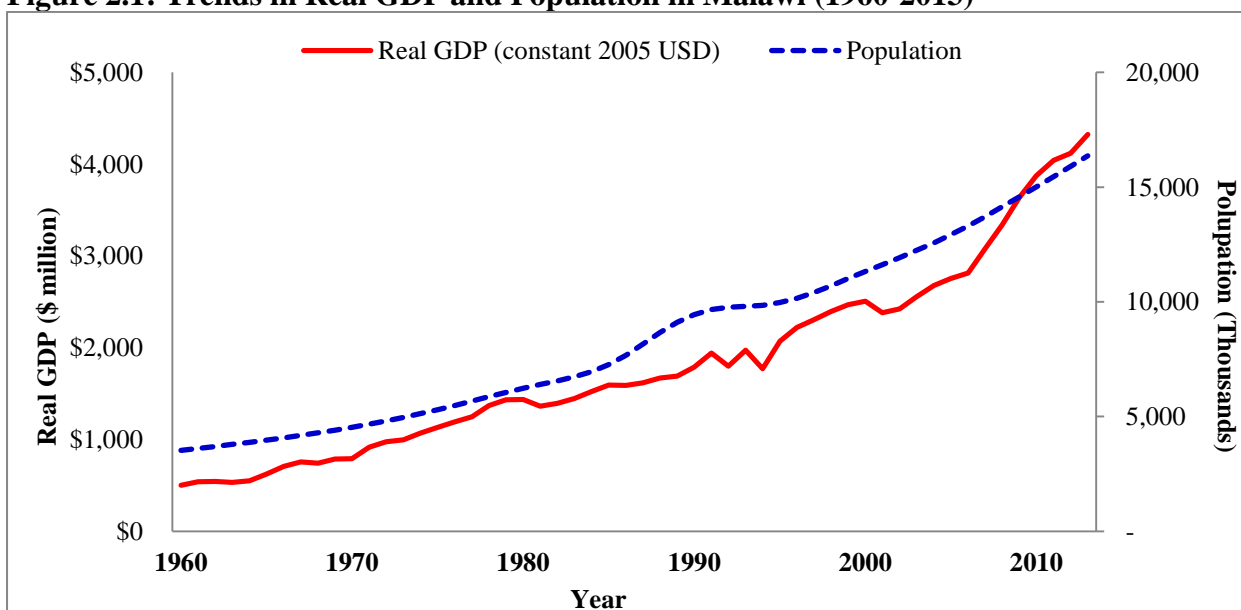
2.1 Introduction

This chapter reviews the key macroeconomic drivers of economic growth in Malawi since the 1960s. The chapter is divided into seven sections. Section 2.2 briefly discusses the performance of key macroeconomic indicators in Malawi. Section 2.3 reviews the main economic development policies implemented in Malawi during the study period. Section 2.4 examines the main macroeconomic reforms implemented in Malawi since the 1980s in order to support the implementation of the development plans and to address structural challenges emanating during the period 1980 and 2010. Section 2.5 summarises the key macroeconomic drivers of economic growth in Malawi. Section 2.6 discusses the key policy issues or challenges that directly affected the performance of the key macroeconomic determinants. Lastly, section 2.7 provides concluding remarks.

2.2 Trends in Economic Growth

Based on available data for the period 1960-2013, the overall performance of real GDP, real GDP per capita, and population are illustrated in Figures 2.1 and 2.2. Figure 2.1 illustrates trends in real GDP and population during the study period.

Figure 2.1: Trends in Real GDP and Population in Malawi (1960-2013)

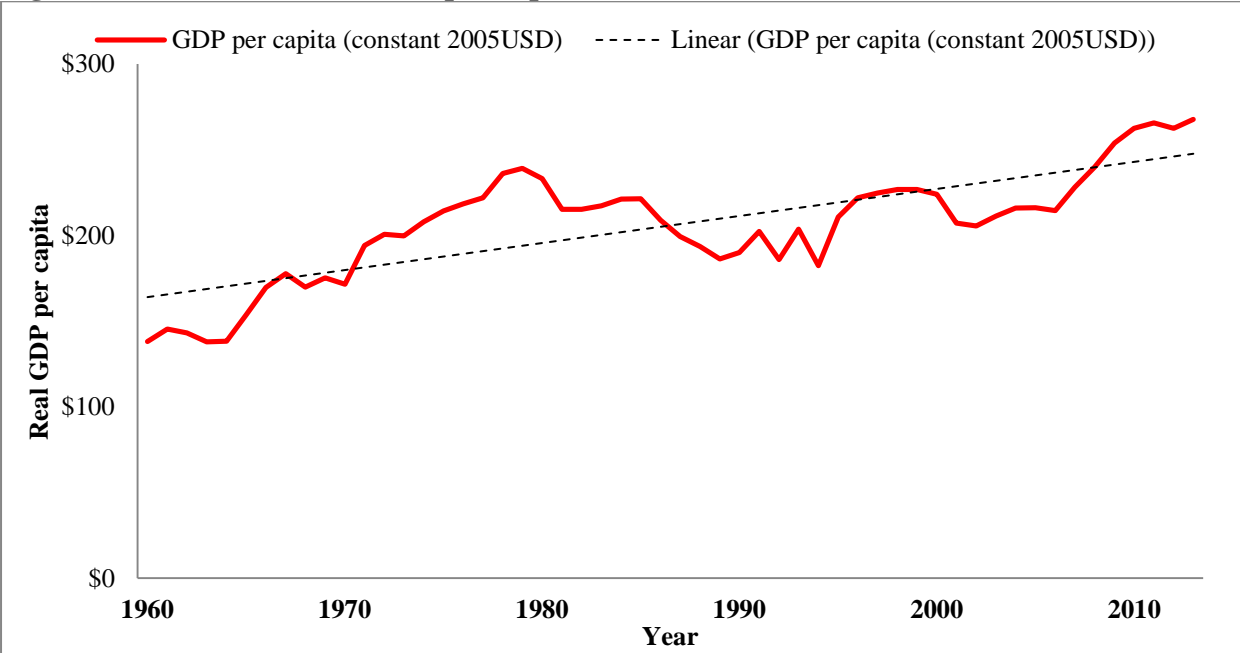


Source: World Bank (2015c)

The primary vertical axis represents a scale for real GDP while the secondary vertical axis is a scale representing population figures. Real GDP at 2005 United States Dollars (USD/US\$) constant prices in Malawi increased from US\$0.5 billion in 1960 to US\$4.3 billion in 2013, growing at an average rate of 4.3% p.a. This growth rate was more than the rate of population growth that averaged 2.9% p.a., increasing from 3.5 million in 1960 to 16.4 million in 2013 (World Bank 2015c).

Figure 2.2 illustrates positive trends in terms of real GDP per capita during the same period, 1960-2013, expressed in 2005 US\$ constant prices.

Figure 2.2: Trends in Real GDP per capita in Malawi: 1960-2013



Source: World Bank (2015c)

As illustrated in Figure 2.2, the performance of real GDP per capita was also not impressive. It rose from US\$138 per capita in 1960 to US\$268 per capita in 2013. This resulted in an average real GDP per capita of US\$206 p.a. – that is, growing at an average rate of 1.4% p.a. between 1960 and 2013 (World Bank 2015c). The growth in real GDP per capita was, therefore, lower than the growth rate of population during the same period.

2.3 Economic Development Policies in Malawi

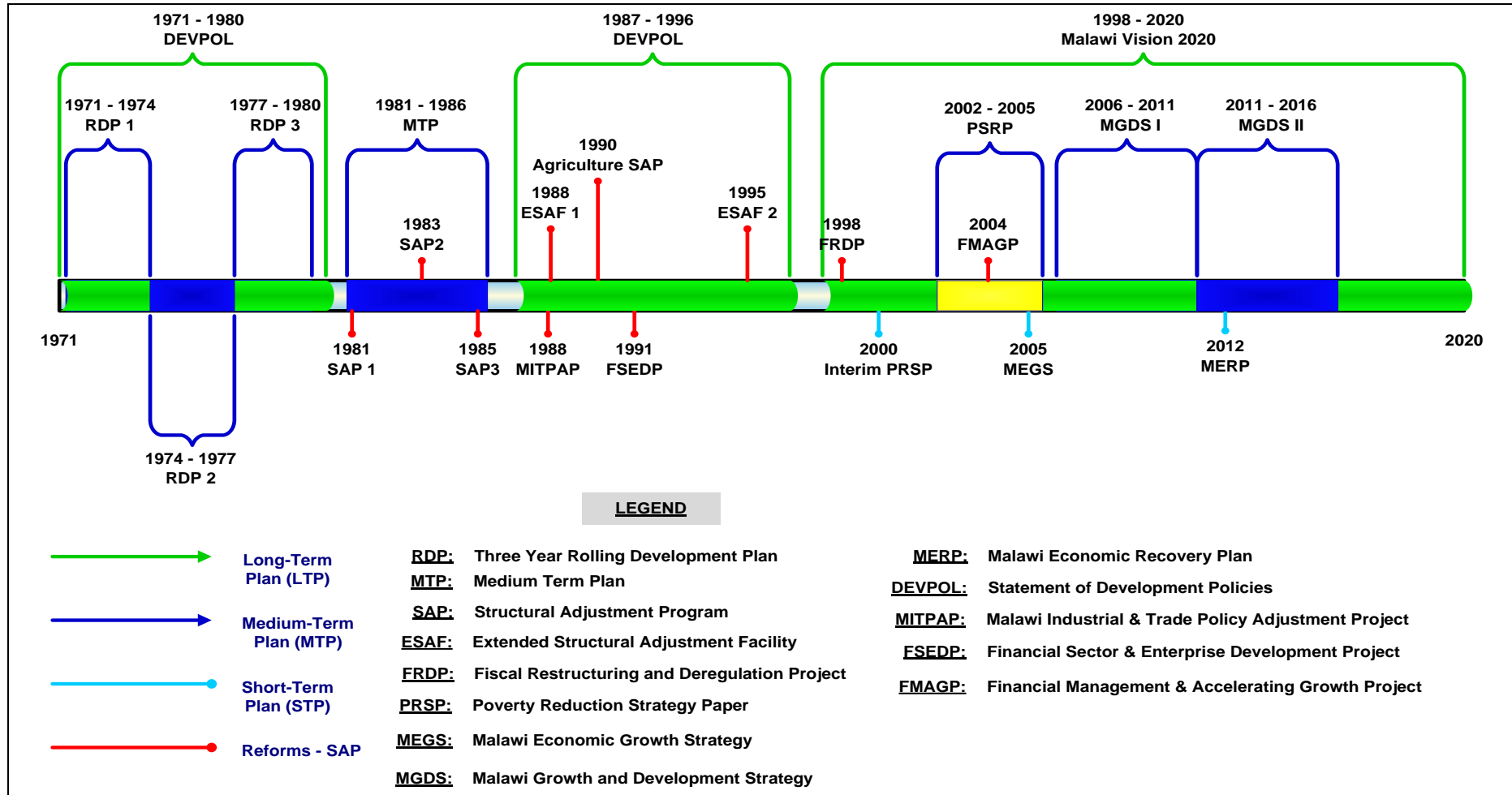
The nature of Malawi’s economic and development policy planning since independence in 1964 was guided by the availability of its natural resources endowment and driven largely by abundant fertile land and availability of cheap unskilled labour. The institutional framework and stage of

development at independence were the two most important factors that defined the structure and content of future development policies in Malawi (Government of Malawi 1971). Though taking different approaches, the institutional framework was characterised by a mixed economic system that defined a national regulated state development planning process which was highly centralised and driven by state planning (World Bank 1966).

In 1964, the Malawian economy was dominated by agriculture; and by Malawi's erstwhile membership of the Central African Federation that existed between 1953 and 1963 and which exported labour to work in the mines of Zambia, Zimbabwe and the South Africa (World Bank, 1966). With its having no existing mining industry of its own, the availability of abundant fertile land and cheap labour guided the development of an economic policy that was focused on Malawi's comparative advantages in labour-intensive agricultural development (Government of Malawi 1971; World Bank 1975). As in many mixed economic systems, development planning in Malawi started from the agricultural sector where the formulation of public investment projects was geared towards supporting agricultural production and productivity. Hence, to increase agricultural production, new lands were opened in the central and northern region of the country (Government of Malawi 1971; World Bank 1966, 1975).

Figure 2.3 provides a chronology of Long-Term Plans (LTPs), Medium-Term Plans (MTPs) and Short-Term Plans (STPs) that have been implemented in Malawi since independence. The LTPs were plans that had a planning horizon of at least ten (10) years. These were comprised of the Development Plan of 1971-1980; the Development Plan of 1987-1996; and the Malawi Vision 2020 covering the period 1998-2020 (Government of Malawi, 1971, 1987, 1998). The MTPs covered a period of three (3) to five (5) years and these were implemented within the cohort of long-term plans, but not including the Medium-Term Plan of 1981-1986. These plans included the three-year rolling Development Plans implemented in the 1970s, the Medium-Term Plan of 1981-1986, the Malawi Poverty Reduction Strategy of 2002-2005, the Malawi Economic Growth Strategy of 2004-2008, and the Malawi Growth and Development Strategy I and II of 2006-2011 and 2011-2016, respectively (Government of Malawi 2002, 2004, 2006, 2011). Supporting the implementation of the LTPs and MTPs were a number of short-term reform programmes that each covered a period of fewer than three (3) years. These included the World Bank and IMF Structural Adjustment Loans and the Enhanced Structural Adjustment Facilities (World Bank 1981b, 1983, 1985, 1988, 1998, 2004). The sub-sections 2.3.1 – 2.3.7 and section 2.4 give an overview of the development policies and reforms implemented during the period 1971-2011.

Figure 2.3: Malawi Development Policies and Reforms: 1970-2020



Source: the chronology of events was combined by the author from various Development Policies, Plans and Reforms implemented in Malawi since 1971 from the Statement of Development Polices, 1971-80; Three Year Rolling Development Plans, 1971-1980; Medium Term Plan, 1981-86; Statement of Development Policies, 1987-96; Malawi Vision 2010; PSRP, MEGS, MGDS I, MGDS II, and a number of Structural Adjustment Reforms financed by the World Bank and International Monetary Fund.

2.3.1 The Development Plan of 1971-1980

The first long-term development plan to be implemented by the government of Malawi was the Statement of Development Policies, 1971-1980 (DEVPOL80). The implementation of the development plan was done through three-year rolling development plans for the periods 1971-1974, 1974-1977, and 1977-1980 (World Bank 1975). The central objectives of the DEVPOL80 were to (i) achieve an average growth rate of 8% per annum (p.a.); (ii) increase agricultural production and productivity to raise rural incomes and national foreign exchange earnings; (iii) expand geographical distribution of economic activity by opening up new areas in the Central and Northern Regions of the country; (iv) increase local participation in economic activities via management and ownership of enterprises; and (v) reduce of the dependence on foreign assistance to cover government's recurrent expenditure (Government of Malawi 1971).

Within the framework of the DEVPOL80, investment was identified as the key driver of growth. The second driver of growth was the opening of new land in the central and southern regions of the country so as to increase production and development. At independence, most of the developments were concentrated in the south of the country and the government's strategy therefore aimed at increasing agricultural production and development through opening up of new land. The third driver of growth was human capital development. At independence, the availability of skilled personnel was very low and it is reported that about 33 Malawians had a university degree out of an estimated population of 4 million (World Bank 1966). The fourth driver of economic growth during the DEVPOL80 period was international trade where terms of trade, the trade balance and the current account balance were identified as important drivers of economic growth (Government of Malawi 1971).

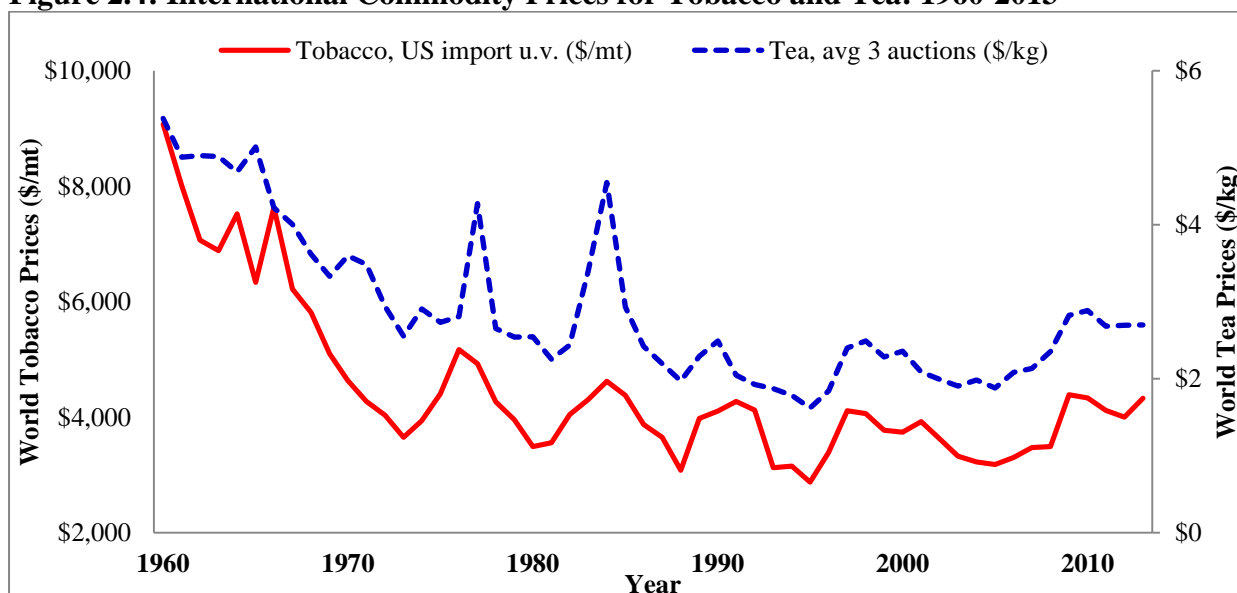
The government of Malawi took up development planning, with little engagement of the private sector since this sector had been underdeveloped during the 1960s. According to the World Bank (2015), Gross Domestic Savings in the 1960s were negative and averaged -0.2% p.a. while economic growth averaged 4.8% p.a.: as a result, government involvement was crucial (World Bank 2015c). Parastatals were being created in areas, such as commerce and industry, agricultural production, transport and communications, tourism and social services (Government of Malawi 1971). Consequently, economic growth in the 1970s rebounded; and the economy grew at an average rate of 6.2% p.a., which was more than twice the growth rate of the population which was averaging 2.9% p.a. during the same period (World Bank 2015c). Furthermore, Gross Domestic

Savings, as a share of GDP, improved from -0.2% p.a. in the 1960s to an average of 14.4% p.a. in the 1970s (World Bank 2015c).

However, towards the end of the decade, six major problems that affected the sustainability of Malawi's future economic growth emerged. These included the slow growth and the poor quality of traditional exports from smallholder farmers; the declining terms of trade; the continued problem of population growth that increased pressure on the land available for the cultivation of export crops; the low performance of public enterprises; the increasing government budget deficit; and the slow growth in human capital development – resulting in a continued shortage of skilled labour, and reliance on expatriates (World Bank 1981a). Moreover lack of diversification of cash crops for exports, such as tobacco and tea, which accounted for 90% of all foreign exchange earnings, was coupled with the significant challenge of unpredictable export prices and price controls by the government. The low international tobacco and tea prices; taxes on export crops, such as cotton, groundnuts and tobacco; and the ad hoc or arbitrary price controls imposed on agricultural products, such as meat, poultry and dairy products, led to a growth stagnation of smallholder agriculture (World Bank 1981a).

Figure 2.4 is an illustration of the real price movements for international tobacco and tea prices that affected the Malawian economy during the period 1960-2013.

Figure 2.4: International Commodity Prices for Tobacco and Tea: 1960-2013



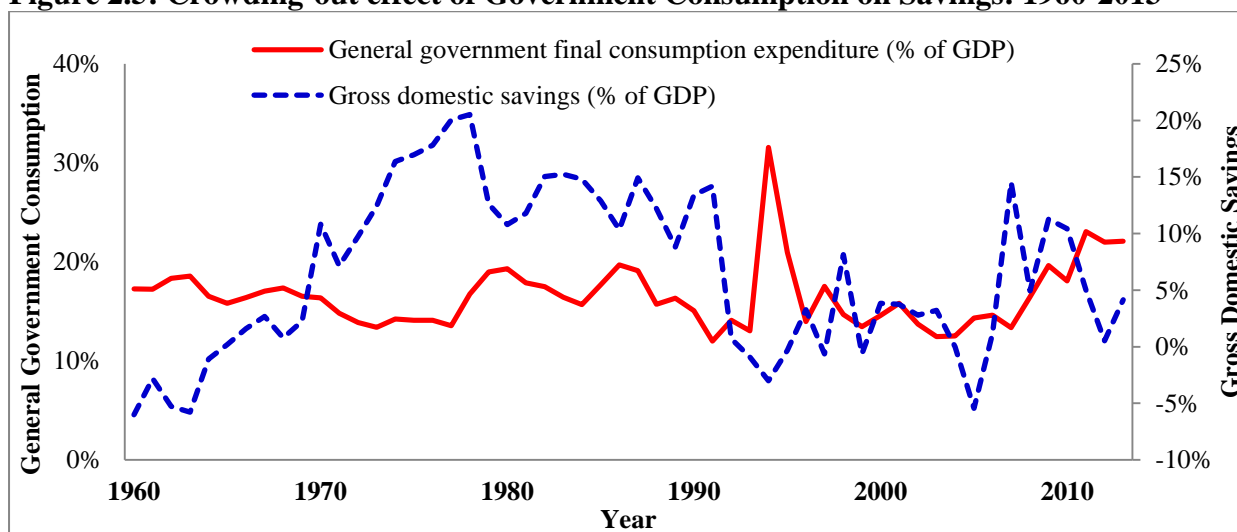
Source: World Bank (2015a)

As illustrated in Figure 2.4, the international prices for tobacco and tea declined sharply in real terms between 1960 and 1970. For example, international tobacco prices fell by almost two-thirds from US\$9,073 per metric ton in 1960 to US\$3,500 per metric ton in 1980. Similarly, international tea prices fell by more than half – from an average of US\$5.38 per kg in 1960 to US\$2.54 per kg in 1980 (World Bank 2015a).

In addition, the continued growth in population as a driver of economic growth became a concern, owing to the fact that available fertile land for cultivation was sharply declining (Government of Malawi 1987). Between 1966 and 1976, population growth was estimated at 3.3% p.a., declining to 2.9% p.a. between 1977 and 1986 (Government of Malawi 2010). The rising population meant that government had to spend more on social services, such as health and education, which were already constrained: as a result, the shortage of skilled labour continued to increase in the 1970s. This shortage of skilled labour was also exacerbated by wage controls implemented by the government: this restrained increases in real wages – leading to serious adjustment problems affecting the Malawian economy (Government of Malawi 1987; World Bank 1981a). Consequently, this led to increasing government budget deficits, thus crowding out private investment. Although the government registered surpluses on its recurrent account and also modest budget deficits between 1973 and 1979, the situation changed drastically between 1979 and 1981, when the fiscal position deteriorated sharply (Government of Malawi 1987).

Figure 2.5 illustrates the co-movements between government consumption and the accumulation of Gross Domestic Savings during the period 1960-2013.

Figure 2.5: Crowding-out effect of Government Consumption on Savings: 1960-2013



Source: World Bank (2015c)

The primary vertical axis represents a scale for government consumption while the secondary vertical axis is a scale for gross domestic savings. As illustrated in Figure 2.5, government consumption, as a share of GDP, was on average over the minimal threshold of 10% of GDP. The poor performance of a number of public enterprises registering significant losses had an adverse impact on the government's budget and necessitated increased subventions to such poor enterprises (Government of Malawi 1987; World Bank 1988). Although Gross Domestic Savings as a share of GDP improved in the 1970s and 1980s the crowding-out effect of increased government consumption started to be felt in the 1990s; when Gross Domestic Savings declined sharply from an average of 14.4% in the 1970s to 2.5% p.a. in the 1990s. At the same time government expenditures rose sharply from an average of 13.0% in 1993 to an average of 31.6% in 1994: this was the same year that Malawi held its first multiparty elections and underwent a transition from an authoritarian to a democratic state (World Bank 2015c).

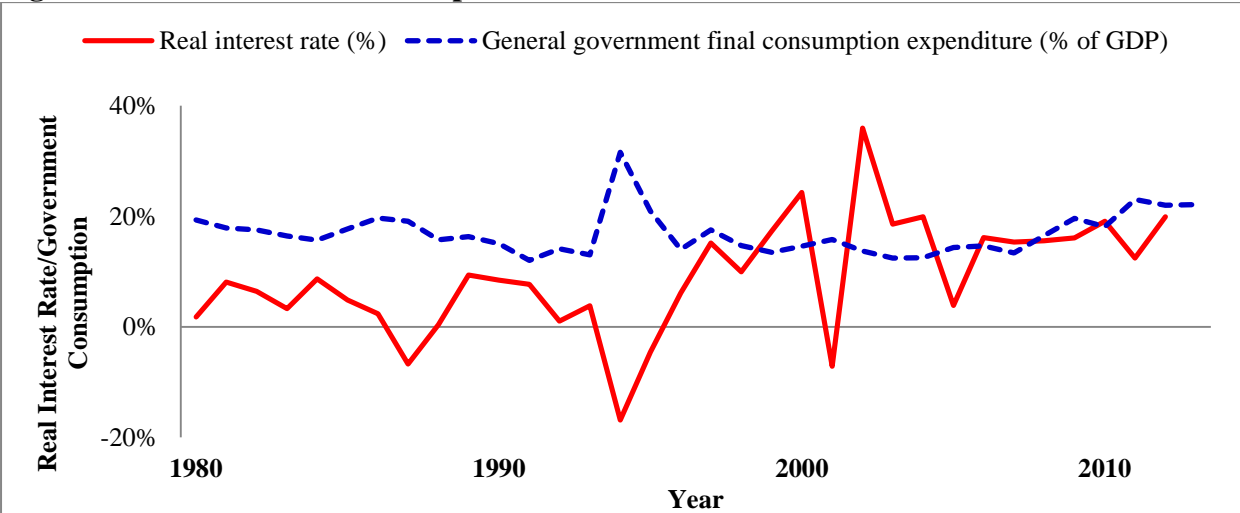
2.3.2 The Medium Term Plan of 1981-1986

The advent of Structural Adjustment Programmes in Malawi commenced with the development of a five-year Medium-Term Plan covering the government of Malawi's fiscal years of 1981/82 to 1985/86. This was formulated in consultation with the World Bank and International Monetary Fund in order to tackle the structural problems and economic shocks faced by Malawi during the period 1979-1981 (Government of Malawi 1987). The major objectives of the medium-term plan were threefold: (i) to achieve a real GDP growth rate of 4.8% p.a.; (ii) to increase export diversification through the development of new smallholder and estate crops, livestock and forestry industries, and agro-businesses; and (iii) to improve the financial performance of public enterprises so as to reduce the burden on domestic borrowing and debt (World Bank 1988; Collier and Gunning 1999). The Medium-Term Plan was supported by three structural adjustment loans funded by the World Bank in June 1981, November 1983 and November 1985 (World Bank 1981b, 1983, 1985). The principal objective of these loans was to assist the government of Malawi in addressing its balance-of-payment problems. However this balance-of-payment support had conditions, one of which was related to influencing fiscal and monetary policies targeting those high fiscal deficits that caused increases in prices (inflation), and exchange rate misalignment. During the period when the structural reforms were implemented, the government of Malawi managed to contain current account deficits, which fell from 23.5% of GDP in 1979-80 to an average of 9.5% of GDP during the period of 1981-85 (World Bank 1988).

The progress made was a result of reducing external borrowing by government of commercial loans in favour of concessional loans offered by the World Bank, the African Development Bank and others; the rescheduling of debt-service payments that were due between 1981 and 1985; and the reduction of public sector consumption of merchandise imports (World Bank 1988). The Structural Adjustment Programmes also had the arduous task of exploring ways to improve output growth through trade, investment in agriculture and industry, and employment performance in sectoral institutions and government services (World Bank 1981a). The crowding-out effect of increased government expenditures was felt when the levels of investments fell sharply by almost 50% during the 1979-81 period; and when gross capital formation, as a share of GDP, fell from 30.2% of GDP in 1979 to 17.6% of GDP in 1981 (World Bank 2015c). The vulnerability of the government’s budget continued with a rapid deterioration of the government’s budget deficit that rose from 12.3% of GDP during the 1978/79 fiscal year to 16.5% of GDP in the 1980/81 fiscal year. Although the government managed to reduce the overall government budget deficit from 16.5% of GDP during the 1980/81 fiscal year to 8.3% of GDP in the 1985/86 fiscal year, this was at the expense of a significant reduction in development expenditure (Government of Malawi 1987).

The growth in government recurrent expenditures was marred by high interest payments which had increased due to borrowing at commercial interest rates. The increased borrowing was used to support recurrent expenditures and counter a sharp deterioration of the performance of public enterprises (Government of Malawi 1987; Collier and Gunning 1999). Figure 2.6 illustrates the co-movement between government consumption share in GDP and real interest rates.

Figure 2.6: Government Consumption and Real Interest Rates: 1980-2013



Source: World Bank (2015c)

As illustrated in Figure 2.6, high rates of government consumption are associated with high rates of real interest rates, revealing a positive co-movement. The real interest rate had grown from an average of 3.8% p.a. in the 1980s to 16.1% during the period 2001-2013 (World Bank 2015c). The economy during the period of implementation of the Medium-Term Plan, however, did not perform as expected. Between 1981 and 1985, the real GDP growth rate for the period averaged 2.2% p.a. as opposed to a target of 4.8% p.a. (World Bank 2015c). Although there were some improvements in the balance of payments position – due to foreign capital inflows from the World Bank and the IMF – the key drivers of economic growth deteriorated sharply. Inflation grew at an average rate of 13.1% p.a., followed by exchange rate devaluations that averaged 9.5% p.a. (World Bank 2015c).

On a more positive note, the structural adjustment programmes supported by the World Bank and the IMF assisted Malawi in improving its balance-of-payments position. The trade balance registered a significant improvement, that is, from an average of -8.4% of GDP between 1978 and 1980 to a surplus averaging 7.1% of GDP during the period 1981-85. The current account deficit also declined significantly – from an average of -24% of GDP between 1978 and 1980 to a lower average of -11.5% of GDP during the 1981-1986 period (Reserve Bank of Malawi 1989).

2.3.3 The Development Plan of 1987-1996

The Medium-Term Plan implemented during the 1981-1986 period did not provide a coherent blueprint for the government in terms of prioritizing where investments were to be channelled. A new comprehensive development strategy was formulated in 1987 with a focus on reducing poverty, promoting education and health, and improving income distribution and welfare stability for Malawians. The Statement of Development Policies, 1987-1996 (DEVPOL96) had four critical objectives, that is to (i) achieve an average real GDP growth of 4.4% p.a. that was expected to exceed the rate of population growth that was projected to grow at 3.7% p.a.; (ii) restore fiscal discipline in order to ease pressure on the balance of payments position; (iii) improve the balance of payments position through export diversification; and (iv) reduce the annual rate of inflation from 26% in 1987 to 5% by 1991 (World Bank 1988).

The DEVPOL96 was also the first long-term development plan that outlined structural policy reforms needed to boost the key productive sectors of the economy in order to increase production and productivity. This was expected to be achieved by following a more market-oriented approach with increased private sector participation. To restore structural and financial imbalances, the

government followed strict monetary and credit policies to control inflation, and provide for exchange rate adjustments to restore declining terms of trade: trade liberalization and tax reforms aimed at removing restrictions on trade were also introduced (Government of Malawi 1987).

The government in its statement outlined four critical policies aimed at improving private sector participation (Government of Malawi 1987). The first policy was to ensure that a favourable climate to attract private sector investment from both domestic and foreign investors was encouraged through the provision of incentives in order to undertake specific economic activities. This was to be achieved by ensuring that government moved away from direct control and strict regulation of enterprises to a policy of promotion and support (Government of Malawi 1987). The main source of total investments during the period 1972 to 1986 came from private investments that averaged 14.5% of real GDP while public investments represented 13.9% of real GDP. During the same period, domestic investments represented an average of 13.7% of GDP while foreign investments represented 14.7% of real GDP. In 1987, both private and public investments had declined to 8.7% and 8.8% of real GDP, respectively, while domestic investment declined to 9.4% of real GDP with foreign investment representing 8.2% of real GDP (Reserve Bank of Malawi 1983, 1989).

Second, the government took up the responsibility of providing essential public infrastructure services such as roads, electricity supply, telecommunication and land. Third, the government took up the responsibility of promoting Research and Development (R&D) particularly in the key sectors of agriculture, fisheries, mineral exploration, industrial technology, disease control and the environment. This led to the establishment of a number of Parastatals such as the National Research Council of Malawi which was later renamed as the National Commission of Science and Technology (Government of Malawi 1987). Fourth, the government took up the responsibility of developing human capital to ensure the availability of skilled labour. Investments in education emphasised expansion and improvements in the quality of primary and secondary education, enhancing scientific and technical skills – and improving teacher training. Health and population growth were also critical areas for investments that the government planned: in particular provision was made for increasing resources for maternal and child care services and for increasing the number of primary health clinics in rural areas (Government of Malawi 1987).

However, performance during the decade of implementation of the DEVPOL96 was, nevertheless, not satisfactory. During the period, 1987-1996, the economy grew at an average growth rate that equalled the rate of population growth at 3.7% p.a. as opposed to a projected

growth rate of 4.4% p.a. The inflation rate continued to increase, averaging 29.8% p.a. against a target of 5% (World Bank 2015c). The terms of trade failed to improve due to declining international export prices and rising import bills: hence the current account deficit as a proportion of real GDP rose from an average of -10.7% of real GDP during the 1981-86 period to an average of -18.1% of real GDP between 1987 and 1996 (Reserve Bank of Malawi 1995, 1998, 1999; World Bank 2015c).

Commercial agriculture still dominated representing 34.3% of real GDP and slightly declining from a period average of 37% of real GDP during the 1981-86 period. On the other hand the modern sector represented by manufacturing, public utilities, construction and distribution services represented 33.8% of real GDP growing at an average rate of 6.2% p.a. and slightly increasing by 1.9% as regards its contribution to real GDP during the 1981-1986 periods. The other sectors represented 32% of real GDP, growing at an average rate of 0.8% p.a. (Reserve Bank of Malawi 1995, 1998, 1999).

The long-term development plan, therefore, identified physical capital investment, human capital development and population growth as still the most important traditional macroeconomic factors of economic growth. In addition, the balance of payments position, inflation, exchange rate misalignment, research and development, trade and tax reform were also identified as important macroeconomic factors influencing economic growth in Malawi (Government of Malawi 1987; World Bank 1988).

2.3.4 *The Malawi Vision 2020*

Malawi's third long-term strategy, the Malawi Vision 2020, was developed through an extensive consultative and participatory process in 1998 that provided a different dimension to long-term strategic development management. The Vision was a collection of aspirations – and not development plans *per se*, as described in the previous long-term development plans. Rather than adopting a project-by-project approach, the Vision adopted a multi-faceted and multi-sectoral approach that involved considering changes in economic, technological, social and political attitudes (Government of Malawi 1998b).

Consequently the Malawi Vision 2020 comprised of a set of nine (9) recommended strategies for satisfying the aspirations of the people of Malawi. These included good governance, sustainable economic growth and development, a vibrant culture, a well-developed economic infrastructure, food security and nutrition, science and technology-led development, social sector development,

fair and equitable distribution of income and wealth, and sustainable environmental management. Each strategic objective had its own set of agreed sub-activities and, unlike the previous long-term plans, no details were provided as to what needed to be implemented in order to realise these aspirations (Government of Malawi 1998b).

The aspirations under each strategy identified important key priorities that future medium-term growth and development strategies to be formulated were expected to adopt. On the related strategies of sustainable economic growth and development, for example, eight focal areas were agreed upon: these were expected to foster sustainable economic growth. Unlike previous long-term and medium-term plans, the Malawi Vision 2020 identified new sources of macroeconomic determinants that were expected to be led by the manufacturing sector, tourism, and mining: no longer was there to be a focus only on the agricultural sector as the key contributor to economic growth in the country. The development of the financial sector was also prioritised owing to the fact that domestic savings and investment were declining sharply. Lastly, the lack of an entrepreneurial culture requiring appropriate skills was critical as the local participation in development especially outside the agricultural sector was still low. The balance of payments was also a priority area as Malawi was regarded as a predominantly consuming nation and the need to turn Malawi into an export-oriented nation was part of the long-term objective (Government of Malawi 1998b).

The other distinguishing feature of the Malawi Vision 2020 was the coverage period of 20 years unlike the earlier DEVPOLs that covered a period of 10 years. The overall goal of the new Vision plan was for Malawi to become a middle income country with a per capita real income of US\$1,000 by the year 2020 (Government of Malawi 1998b). This aspiration meant that, given a population growth rate of 2.0% p.a. projected by the Population and Housing Census (Government of Malawi 1998a), real GDP growth was expected to increase at an average rate of 9% p.a. while real income per capita was expected to increase at a rate of 7% p.a. with baseline values from the year 1998.

The Malawi Vision 2020 was a very ambitious long-term development perspective, especially as its precursor long-term plan, the DEVPOL96, had only registered an actual real GDP growth rate of 3.7% p.a., a per capita growth rate that declined at an average rate of -0.7% p.a., a population growth rate that averaged 3.7% p.a., a macroeconomic environment that was characterised by volatile prices with an average inflation growth rate of 29.4% p.a., together with a local currency that depreciated annually at an average rate of 26.8% p.a. (Reserve Bank of Malawi 1995, 1999).

In terms of sources of economic growth, the economy was still largely dependent on one sector – the agricultural sector: this contributed significantly to the macroeconomic problems that Malawi was facing at that time such as balance of payment problems due to declining terms of trade and worsening of the current account balance. In 2002, the agricultural sector contributed about 64% of total income to the rural poor and supporting on average 87% of total employment. In addition, the agricultural sector still accounted for at least 65% of the supply of raw materials for the manufacturing sector (Government of Malawi 2002).

At the time of formulating the Malawi Vision 2020, the level of domestic investment was still too low to meet the required investments needed to achieve the aspirations. By the end of the Statement of Development Policies, 1987-1996, the total investment share represented 16% of GDP of which gross domestic savings declined from 9.4% of GDP in 1987 to -1.5% of GDP in 1998 (World Bank 2015c). With rising inflation and currency depreciations, Malawians lost the incentive to save and were largely dependent on foreign capital inflows especially development aid to finance planned investments (Reserve Bank of Malawi 1998).

In an ideal and pragmatic scenario, a long-term development plan driven by the aspirations of the Malawi Vision 2020 was expected to provide in detail a comprehensive investment plan that took into account the need to implement interrelated long-term development programmes in phases covering both public and private sector plans. This was expected to be supported by public and private investment resources financed either through taxation, non-inflationary domestic borrowing, external loans, foreign direct investment or foreign aid – and to be evaluated through a cost-benefit analysis to determine the importance of the projects in relation to others completed or still in the pipeline.

Unfortunately, rather than formulating a comprehensive long-term investment plan covering both public and private investment strategies, the Vision proved to be misguided as the development of investment plans adopted a sector-by-sector approach to planning which was not different from earlier approaches implemented through the DEVPOLs which had taken on a project-by-project basis with few linkages between each project planned or implemented. The short- and medium-term plans that were implemented after the development of the Vision such as the Poverty Reduction Strategy Paper of 2002 and the Malawi Growth and Development Strategy of 2006 focused only on public investments, with little regard to the inclusion of private sector investment plans (Government of Malawi 2002, 2006).

During the first half of the Vision implementation period, which also partially covered the last decade of the study period, 1998-2010, an actual average real GDP growth rate of 2.9% p.a. was registered, as opposed to a target of 9% p.a.: moreover there was an actual real GDP per capita growth rate of 1.6% p.a. versus a target of 7% p.a., and an unstable inflation rate that grew at a rate of 19.1% p.a. versus a policy of having a single-digit inflation rate with a target of 5% p.a. In addition the local currency depreciated at an annual rate of 20.5% p.a. (Reserve Bank of Malawi 2005, 2010). The three medium-term strategies that were developed in support, partly or wholly, of the Malawi Vision 2020 are discussed in sub-sections 2.3.4.1 to 2.3.4.3, including the Malawi Poverty Reduction Strategy Paper, the Malawi Economic Growth Strategy and the Malawi Growth and Development Strategy.

2.3.4.1 The Malawi Poverty Reduction Strategy of 2002-2005

The Malawi Poverty Reduction Strategy Paper (MPRSP) was approved by the government in April 2002 as another statement of medium-term national strategy statement. The MPRSP was implemented for a period of three years, that is, 2002-2005: as such it provided a major departure from the previous long-term development plans; and most importantly the Development Policies of the 1970s and 1980s (Government of Malawi 2002, p. 1). The MPRSP's focus was on poverty-reduction through addressing socio-economic and political issues with the underlying philosophy of empowering the poor. Another distinguishing feature of the MPRSP was its focus on an integrated development strategy to move away from centralised planning and towards more decentralised planning and implementation. The central government's role was therefore expected to be reduced to one of national policy planning and development and enforcement of standards and regulations (Government of Malawi 2002).

The MPRSP objectives were threefold. The first objective was to achieve an average real GDP growth rate of 4.3% p.a. during the period 2002-2005 that would progressively increase yearly – from 3% in fiscal year 2002/03, 4.5% in fiscal year 2003/04 and 5.2% in fiscal year 2004/05. The second objective was to reduce the rate of inflation from 27.6% in fiscal year 2001/02 to 4.4% in fiscal year 2004/05. The third objective was to ensure a stable exchange rate that depreciated at an annual rate of 2.7% p.a. from MK71 in fiscal year 2002/03 to MK78 in fiscal year 2004/05 (Government of Malawi 2002). The MPRSP was guided by four pillars that strongly focused on alleviating rates of poverty suffered by the majority of poor Malawians. The first pillar targeted sustainable pro-poor economic growth, with a focus on creating a stable macroeconomic environment, improving access to credit, providing technical skills' development and increasing

local participation. The second pillar targeted the development of human capital through increasing investment in health and education. The third pillar focused on improving the quality of life of the most vulnerable through the provision of safety nets and public works. The last pillar focused on good governance to ensure effective and efficient implementation by public sector agents. In the MPRSP philosophy, the public sector was thus the main implementer of the proposed strategies, contrary to the requirements set out in the Vision 2020 policy (Government of Malawi 1998, 2002).

The MPRSP identified three important drivers of economic growth for the period 2002-2005. The first related to increasing investment in pro-poor growth activities such as the following: agricultural production; sustainable use of natural resources; micro, small and medium-scale enterprises; increased productivity of existing manufacturing and agro-processing by large-scale enterprises; development of the tourism sector and of small-scale mining (Government of Malawi 2002). Additional investments were also required for increasing rural infrastructure where constraints to economic growth had been identified as well as limiting factors towards the commercialization, modernization and expansion of key economic sectors in the country. The key infrastructure shortcomings that constrained development and required attention included lack of rural feeder roads, and problems with regard to provision of water and sanitation, energy, and telecommunications: moreover trade barriers such as unfavourable preferential arrangements and taxation policies required attention (Government of Malawi 2002).

The second driver related to ensuring macroeconomic stability as a precondition for economic growth through improved fiscal discipline and tight monetary policy. The most important factors for a stable macroeconomic environment included drivers such as the addressing of inflation rates, nominal exchange rates, and interest rates. The third driver of economic growth was identified as a need to address lack of access to credit markets. However, the macroeconomic instability conditions continued to worsen the domestic investment position that declined further to -26.9% of GDP in 2005 with foreign capital inflows that stood at 40.7% of GDP dominating the contribution towards total investments in the country. Total investments as a proportion of GDP fell from 16.3% of GDP in 1998 to 13.9% in 2005 (Reserve Bank of Malawi 1998, 2005).

The MPRSP macroeconomic objectives, therefore, were contrary to the Malawi Vision 2020 target of achieving an annual growth rate of 9% p.a. Between 2002 and 2005, the actual average real GDP growth rate achieved was 1.7% p.a. (World Bank, 2015c). The inflation rate averaged 17.3% p.a. despite falling from 28.3% in 2002 versus a target of 11.5%: it further declined to

13.7% in 2004. The exchange rate depreciated at an average rate of 15% p.a. rising from MK72.2 to the dollar in 2001 to MK118.9 to the dollar in 2005 (Reserve Bank of Malawi 2008).

2.3.4.2 *The Malawi Economic Growth Strategy of 2004-2008*

In July 2004, the government of Malawi after realizing the deficiencies brought in by the MPRSP, launched a short-term plan, the Malawi Economic Growth Strategy (MEGS), as a complementary strategy to strengthen the first pillar of the MPRSP that is, achieving sustainable pro-poor growth. The development of the MEGS was developed based on the philosophy that a high rate of economic growth is achievable if an economy stimulates trade and investment as well as restoring macroeconomic stability (Government of Malawi 2004). Government realised that the strategies and actions that were implemented aimed at achieving a minimum and sustained annual economic growth of 6% p.a. under this pillar of the MPRSP were ineffective. The evidence was supported by the MPRSP Progress Report (International Monetary Fund 2003) that identified a lack of proper prioritization of strategies under the pillar that would eliminate impediments to economic growth: in addition there had been a lack of strategy for articulating the role of the private sector in the growth process. The MEGS, thus, focused on stimulating trade and investment in key sectors of the economy (Government of Malawi 2004).

The agricultural sector was still regarded as the key source for economic growth: however government did not make a proper assessment as to whether the contribution from agriculture was going to be realised through increased production or productivity. Growth in the agricultural sector was predicted to increase at a rate of 7.8% p.a. between 2004 and 2008 with growth coming from cotton (13.8% p.a.), tobacco (6.8% p.a.), tea (2.6% p.a.) and sugar (3.7% p.a.). The second source of economic growth was to be due to investments in the manufacturing sector which were expected to grow at an average rate of 5% p.a. driven by growth in agro-processing (6.8% p.a.) and textiles and garments (13.8% p.a.). The third source of economic growth was to be the mining sector with a projected average growth rate of 9.4% p.a. Tourism was the fourth source of economic growth projected to grow at a rate of 9.6% p.a. (Government of Malawi 2004).

According to the Government of Malawi (2004), these key sources of economic growth were expected to be supported by infrastructure developments in energy generation and supply (increased power generation through investments to interconnect with Mozambique): insufficient energy was identified as the major constraint to economic growth and development of the mining and manufacturing sector. Based on these projections, economic growth rate was projected to

need to grow at an average rate of 6.2% p.a. which was expected to rise transitionally from a projected growth rate of 4.9% in 2004, 5.7% in 2005, 6.4% in 2006, 6.8% in 2007 and 7.2% in 2008. (Government of Malawi 2004)

In order to sustain these projected growth rates, a sound macroeconomic stabilization policy was important in order to reduce volatility in the domestic market. The inflation rate was projected to be reduced from 13.7% in 2004 to an average rate of 6% p.a. between 2005 and 2008. This entailed the government pursuing tight monetary and fiscal policies in order to curb inflationary pressures that arose from fiscal indiscipline. Domestic investment as a proportion of GDP was expected to rise to an average of 9.1% of GDP by 2008 with total investments expected to increase from 8.6% of GDP in 2004 to 14% of GDP in 2008 (Government of Malawi 2004).

The MEGS identified four structural constraints that affected economic growth in Malawi. The first constraint related to persistent macroeconomic instability driven by high inflation rates, interest rates and unstable exchange rates, affecting business planning and accumulation of savings and investments through private agents. The second related to an inefficient and ineffective tax and incentive system that only focused on revenue collection for the government and provided less attention to stimulating economic growth. The third constraint related to poor infrastructure to support key growth sectors: for example, problems related to energy generation and supply, water supply, rural feeder roads and access to major ports especially in Tanzania and Mozambique – negatively affected production and productivity. The fourth constraint related to a weak and inefficient human resource base that lacked skills and productivity due to structural constraints in the education and health systems (Government of Malawi 2004).

The MEGS identified fifteen strategies that were expected to facilitate the promotion of private sector involvement in the growth process. The first key strategy was to restore macroeconomic stability in the economy by controlling the fiscal deficit, privatizing loss-making public enterprises and deepening financial sector reforms. Savings and investment were also considered as very crucial areas and a strategy was put in place to increase the availability of long-term capital through the promotion of institutions offering long-term development capital. Other important strategies included tax reforms, improving regulation of public service delivery, as also security, infrastructure, and human capital development (Government of Malawi 2004).

The implementation of the MEGS was, however, short-lived as government realised the need for the strategy to cover other equally important development aspects such as human capital

development, safety nets, good governance and the achievement of Millennium Development Goals. A comprehensive strategy was, therefore, developed by the government in 2005 to account for both economic growth and social development: this was coined the Malawi Growth and Development Strategy, MGDS (Government of Malawi 2006).

2.3.4.3 *The Malawi Growth and Development Strategy of 2006-2011*

The Malawi Growth and Development Strategy (MGDS) was another five year medium-term strategy covering the period from 2006 to 2011 and directly linked to four themes under the Malawi Vision 2020 that is, on sustainable economic growth, social development, infrastructure development, and improved governance. The goal of the strategy was to create wealth through sustainable economic growth by first building Malawi's key infrastructure requirements as the main catalyst in reducing poverty. The main objective was to address the balance of payments problems as the performance of the external sector portrayed Malawi as a predominantly consuming rather than a producing and export-oriented nation (Government of Malawi 2006). The MGDS was also a paradigm shift from its medium-term strategy predecessor, the MPRSP, in that rather than directly focusing on pro-poor growth and promoting social consumption the focus was to shift towards the provision of infrastructure for sustained economic growth. The key investments were therefore targeted under six priority areas that included: (i) agriculture and food security; (ii) irrigation and water development; (iii) transport infrastructure development; (iv) energy generation and supply; (v) integrated rural development; and (vi) health needs (Government of Malawi 2006).

Industrial development was assumed to be led by the private sector while the government was to provide key infrastructure requirements that would create an enabling environment for their growth. The resource envelope to implement the proposed strategies was to be largely funded by the government budget which already had problems of overspending and large budget deficits inherited from previous implementation arrangements. At the end of the MPRSP implementation period, macroeconomic instability conditions still persisted as the domestic debt stock had increased substantially due to lack of fiscal discipline, thereby resulting in high inflation rates, interest rates and unstable exchange rates (International Monetary Fund 2005; Government of Malawi 2006).

The main underlying assumptions of the MGDS was to achieve a minimum growth in real GDP of 6% p.a. during its implementation period: this was a conservative estimate that was lower than

the projected growth rate stipulated in the Malawi Vision 2020. The MGDS also recognised the importance of stabilising key macroeconomic variables in terms of inflation rate, interest rate and exchange rate as critical variables that affected the sustainability of economic growth in the previous regimes. The government's target was, therefore, to achieve stability in these macroeconomic variables during the implementation period. The target for inflation was set at 5% by year 2011: moreover per capita income was expected to grow from US\$242 to US\$450 by year 2011 and the exchange rate policy was expected to remain market determined within a managed float (Government of Malawi 2006).

In the World Bank's (2015c) view, the macro-economic performance during the MGDS period was impressive, with high economic growth rates registered in the first four years of implementation, at an average growth rate of 7.2% between 2006 and 2009. The highest growth rate was achieved in 2007 at 9.5%, followed by 8.3% in 2008, and 9% in 2009. However, this performance record was disturbed in 2010, when real GDP growth declined to a rate of 6.5%. Real per capita income also rose at an average rate of 4.1% p.a., versus a population growth rate of 3% p.a. (World Bank 2015c). The highest rise in per capita income was recorded in 2007 at a rate of 6.2%. The performance of stabilizing macro-economic variables was also impressive with the inflation rate registering an average growth rate of 9.3% during the MGDS implementation period – with the lowest value achieved in 2010 at 7.4% (World Bank 2015c).

The exchange rate also remained relatively stable due to government policy to move away from a market determined exchange rate to a managed floating exchange rate regime. This policy reversal saw the exchange rate depreciating within a band at an average rate of 5% p.a. during the MGDS implementation period, and reduced to 1.3% p.a. between 2007 and 2010 (World Bank 2015c). The balance of payments position, however, did not perform well; and Malawi continued to register significant trade deficits averaging -17.4% of real GDP p.a. during the MGDS implementation period. Gross domestic savings almost tripled – from an average of -5.5% of GDP in 2005 to 10.4% of GDP in 2010. This facilitated an increase in gross capital formation, which grew from 22.7% of GDP in 2005 to 26.0% of GDP in 2010 (World Bank 2015c).

The source of total investments, however, continued to be based on foreign capital inflows financed mainly by concessionary loans from the World Bank, the IMF and foreign aid, through bilateral agreements with Malawi's major donors. During the MGDS implementation period, foreign aid averaged 26.5% p.a. It was for this reason that Malawi's economic growth was disturbed in 2010 – when most of its major donors pulled out – due to poor macroeconomic

governance: this led to a sharp deterioration of economic growth from a buoyant growth rate in 2009 of 9% to 6.5% in 2010 (World Bank 2015c). During the MGDS period, investment and stabilization of macroeconomic factors such as inflation and exchange rates were, therefore, important macroeconomic drivers of growth.

2.4 Economic Reforms in Malawi

A series of reforms were implemented during the study period to address structural problems that Malawi faced in the late 1970s. The study, however, only focuses on ten major reform programmes that the government implemented with support from the World Bank and International Monetary Fund (IMF): these were aimed at improving the performance of key macroeconomic determinants of economic growth. The two main sources of support came from the World Bank Structural Adjustment Loans (SAL) and the IMF Extended Structural Adjustment Facilities (ESAF) with the aim of providing budget support to the government of Malawi to address its balance of payment problems (Collier and Gunning 1999; World Bank 1981b, 1983, 1985, 1988, 1998, 2004). In order for the government to access these funds, a number of structural reforms needed to be implemented to address problems such as exchange rate misalignment, quantitative trade restrictions and tariffs, deregulation of agricultural and financial markets, overstaffing in civil service, and deregulation of public enterprises (Collier and Gunning 1999). A list of these structural reforms and when they were implemented are illustrated in Figure 2.3 under Section 2.3.

2.4.1 Structural Adjustment Reforms

The rapid deterioration of Malawi's economic performance between 1979 and 1981 prompted the government to implement Stabilization Programmes (SP) and Structural Adjustment Programmes (SAP) funded by the Bretton Woods Institutions. There were six major problems that were affecting the sustainability of Malawi's potential for future economic growth. These included the slow growth and poor quality of traditional exports from smallholder farmers, declining terms of trade, the problem of population growth continuing to increased pressure on land available for cultivation of export crops, the low performance of public enterprises, an increasing government budget deficit, and slow growth on human capital development resulting in continued shortage of skilled labour and reliance on support from expatriates (World Bank 1981a).

The SAP were introduced in 1981 and were aimed at strengthening a number of public enterprises and institutions that were registering losses and/or underperforming, improving production

incentives mainly of export crops and assisting the government to prioritise on public expenditures. The Stabilization Programmes implemented through the IMF ESAF, were aimed at reducing the government budget deficits that were a significant exacerbating cause of Malawi's balance of payment problems (Collier and Gunning 1999).

During the period when the structural reforms were implemented, the government of Malawi managed to contain current account deficits which fell from 23.5% of GDP in 1979-80 to an average of 9.5% of GDP during the 1981-85 period (Government of Malawi 1987). The progress made was a result of reduced external borrowing by government on commercial loans to concessional loans offered by the World Bank, African Development Bank and others: the rescheduling of debt service payments that were due between 1981 and 85; and reducing public sector consumption on merchandise imports also contributed. The SAP also had an arduous task of exploring ways on how to improve output growth through trade, investment in agriculture and industry and employment performance in sectoral institutions and government services (World Bank 1981a).

The expansion in export production remained important and necessary in order to contain the current account deficit where the value of imports in almost all years was larger than for exports. It is important at this juncture to note the key macroeconomic determinants that had driven Malawi's macroeconomic performance since independence. Increasing savings and investments had been of paramount importance since 1964 and there was evidence of an increase in domestic investment from an average of 9% of GDP in 1964 to 25% of GDP in 1980 (World Bank 1981a).

The growth in government recurrent expenditures was marred by increased interest payments which outweighed collected revenues, as also increased borrowings at commercial interest rates: these loans were used to support recurrent expenditures while, at the same time, there was a sharp deterioration in the performances of public enterprises (Government of Malawi 1987; Collier and Gunning 1999). This implied the need to find ways of improving the collection of government revenues: it was also necessary to increase short-term investments on export production of tea, tobacco and sugar and to improve the efficiency and profitability of public enterprises. By 1980, the government tax base was still relatively small, representing 13% of GDP, which had risen from an average of 8% in 1970, thereby leaving the government budget heavily dependent on foreign assistance (Government of Malawi 1987). Though eliminating foreign assistance on the government budget was a priority during the 1971-80 period, such efforts were premature (World Bank 1981a; Government of Malawi 1987).

2.4.2 Exchange Rate Liberalization Reforms

Another important structural reform that the government of Malawi implemented was the Industrial and Trade Policy Structural Adjustment Programme (ITPSAP) signed on May 25, 1988 with the World Bank. The aim of the ITPSAP was to facilitate the creation of an enabling environment for the growth of the manufacturing sector, to increase the efficiency of resource allocation and also to create employment and promote the growth of exports. The ITPSAP was also implemented to support an existing agreement that the government signed with the IMF on its first ESAF in 1988 that was aimed at reducing government expenditure from 33% of GDP in 1986 to 24% of GDP in 1991 (Collier and Gunning 1999).

The ITPSAP introduced major trade liberalization policy reforms targeting fiscal spending, exchange rate liberalization and trade tax reforms. The ITPSAP also provided the needed foreign exchange to finance imports by promoting a market determined allocation of foreign exchange and developing a liberalised import regime that constituted the removal of import prohibitions, rationalization of import tariffs and price controls (World Bank 1988). The main objective of the ITPSAP was to promote efficient industries in the Malawian economy: these were to have a comparative advantage in their production and provision of goods and services while at the same time forcing inefficient enterprises to exit their respective markets. The fund provided Malawi with a short-term solution and it was hoped that in the long-term such trade reforms would lead to export diversification by increasing the value of exports and lessening the burden created by the deteriorating balance of payments position (World Bank 1988). The ITPSAP targeted the phasing out of the foreign exchange rationing system and the flexible managed foreign exchange rate allocation mechanism in order to adopt a market-determined exchange rate floating system (World Bank 1988).

The restrictive monetary policies that aimed at controlling inflation were non-operational due to requirements to provide for public sector credit requirements. Poor fiscal policies, high inflation and an overvalued exchange rate that was characterised by foreign exchange rate rationing and management led to a progressive closing out of the Malawian economy from international participation (World Bank 1988). With an over-valued exchange rate, government's policies to promote export diversification failed and the economy was faced with excessive product diversification due to the influx of cheap imports, and monopolistic pricing behaviour with little regard to the adoption of cost-reflective tariffs for most commercial parastatals (World Bank 1988).

The policy target for the government was therefore to achieve full exchange rate liberalization in terms of three phases by the year 1991. The first phase was introduced in February 1988: restrictions were removed on foreign exchange allocation for the first 25% of essential items in the total import bill such as fertilisers, petroleum, spare parts and also for 25% of essential raw materials. The second phase, implemented in 1989 removed restrictions on 30% of the total import bill that covered an additional 50% of essential raw materials, spare parts, and finished goods. The last phase was implemented for the remaining raw materials, spare parts, intermediate and capital goods (World Bank 1988).

The market-determined exchange rate regime was, however, short-lived and survived only up to November 1994. Policy inconsistencies grossly affected the implementation of a market-determined exchange rate regimen. The numerous devaluations and depreciations of the Malawi Kwacha, for example, 28.5% in 1992, 22.2% in 1993, and 98.4% in 1994 led the government to move back to a fixed exchange rate regime which was implemented between December 1994 and June 1997 (Reserve Bank of Malawi 2003). During this period, the exchange rate depreciated: it depreciated at a rate of 74.9% in 1995 before stabilizing in 1996, depreciating at rates of 0.2% and 7.4% in 1997. From July 1997 to July 2003, the exchange rate policy moved back to a flexible exchange rate regimen (Reserve Bank of Malawi 2003).

Exchange rate policy reversals continued during the study period and from August 2003 to February 2005 the regime went back to a fixed exchange rate system. In 2005, there were two policy reversals: between March and June 2005 the Reserve Bank of Malawi adopted a flexible exchange rate regime which was changed to a fixed exchange rate system from July to December 2005 (Reserve Bank of Malawi 2007). This policy reversal trend continued and from January 2006 to November 2007, a flexible exchange rate policy was adopted before being reversed to a fixed managed float with occasional devaluation between December 2007 and April 2012. From May 2012 onwards, the policy moved to a full market-determined (floating) exchange rate regime (Reserve Bank of Malawi 2007, 2008).

2.4.3 Restructuring, Deregulation and Financial Sector Reforms

The main sector driving Malawi's economic growth since independence had been agriculture as it was seen to be the key source for alleviating rural poverty, improving rural incomes and increasing export earnings. However, in terms of the supply situation from the agricultural sector – and despite the implementation of earlier structural adjustment programmes – the response was

weak owing to a number of structural constraints (Government of Malawi 1987). These constraints emanated from inappropriate use of technologies in farming such as low yielding varieties and limited fertiliser use, underutilization of scarce land resources use in estates and limited infrastructure mainly in the rural areas such as inadequate access to electricity, water and sanitation – and lack of paved rural feeder roads, access to credit and microfinance, and of telecommunications (Government of Malawi 1987).

In 1990, the government of Malawi signed an Agriculture Structural Adjustment Programme with the World Bank to support government's objectives outlined in the DEVPOL96 in five key areas: (i) promoting research and development in crop expansion technology; (ii) expanding fertiliser use through access to credit to reduce the burden on government for the provision of fertiliser subsidies; (iii) improving agricultural extension services in rural areas; (iv) promoting export diversification; and (v) price decontrols (World Bank 1990b).

Additional difficulties faced included internal and external transportation constraints that affected the development of smallholder agricultural, manufacturing and industrial production. The internal constraints included poor road networks in the country particularly on feeder roads. The Malawi public road network falls into five (5) classes of roads categorised as main, secondary, tertiary, district and urban roads. In 2010, Malawi had a total of 15,451 km of total road length of which paved roads constituted 26% (70% as main roads, 19% urban roads, and 11% secondary and tertiary roads) while 74% were unpaved roads of which 95% were feeder roads and in rural areas – and 5% were in urban areas. Such structural constraints led to high on and off-farm costs and limited export diversification (Government of Malawi 2010).

Further transportation problems had escalated as a result of the closure of international corridors to the sea due to the civil war in Mozambique that started in 1977 and ended in 1992 thereby increasing the cost of essential imports that were expected to facilitate the growth of the agricultural exports. Other structural constraints affecting economic growth included low access to electricity for production (Government of Malawi 2006). The third Integrated Household Survey results conducted during the period 2010-2011 indicated that access to electricity in the country stood at 6%, which is the lowest access connection figure in the Southern African region (Government of Malawi 2012a).

Deregulation of the financial market was also one of the targeted reforms that the government implemented. In June 1991, the government of Malawi signed an agreement with the World Bank

on a line of credit to support the development of the financial sector and enterprise development. The line of credit provided funds to address structural problems by financing medium to long-term investment projects in the industrial, transport, tourism, commercial and agro-industrial sectors. The long-term financing was provided through financial intermediaries in Malawi for the construction and provision of essential infrastructure at industrial sites such as access roads, electricity, water, factory shells and telecommunications (World Bank 1991). The line of credit also provided financing to support institutional capacity development such as strengthening the management of monetary policy in the Reserve Bank of Malawi and the establishment of key financial and investment institutions such as an investment promotion agency, merchant banking and project management (World Bank 1991).

The period of multiparty dispensation in 1994 came with additional reforms that aimed at addressing structural constraints. In April 1996, the new government signed a Fiscal Restructuring and Deregulation Project with the World Bank to continue supporting balance of payment financing requirements faced by Malawi year after year on condition that certain policy reforms were implemented to restore macroeconomic stability. The project also supported the reforms initiated through the second ESAF that was financed by the IMF in 1995 (World Bank 1998).

With the first Fiscal Restructuring and Deregulation Credit from the World Bank, the government removed restrictions on smallholder production of key cash crops such as burley tobacco. Restrictions were also removed for private traders to trade freely in terms of key agricultural inputs such as seeds and fertilisers, and also outputs such as burley tobacco and other cash crops. The government, on the other hand, stopped the provision of fertiliser subsidies: it also introduced privatisation programmes to restructure commercial parastatals that were a significant drain on government resources, and undertook major tax and civil service reforms (World Bank 1998).

A second credit on Fiscal Restructuring and Deregulation was signed in November 1998 with the World Bank to continue supporting policy reforms aimed at promoting private sector led growth, accelerating privatisation efforts of public parastatals that were a drain on the government's budget and at supporting public sector reforms aimed at improving public expenditure management (World Bank 1998). The credit also supported the government in attempting to increase its official reserves to more than three months of import cover so as to ease pressure on exchange rate depreciation, inflation and interest rate adjustments (World Bank 1998).

The support to government in implementing reforms continued with the World Bank financing the Fiscal Management and Accelerating Growth Programme in January 2004 so that the government could continue reforming the public sector and create a stable macroeconomic environment. Such reforms were implemented in order to continue strengthening fiscal management, parastatal reforms, improve macroeconomic governance on public expenditure, corruption and fraud, and promote of decentralization (World Bank 2004a).

Despite Malawi implementing all these structural adjustment reforms, high fiscal deficits still continued to constitute significant setbacks on attaining the macroeconomic stability that was crucial for sustainable economic growth. At the helm of the high fiscal deficits was the continued poor performance and mismanagement of public expenditures coupled with weak policy and strategic planning that created a mismatch between planned projects and availability of resources to fund them: all of this continued to bring about excessive government borrowing both from local and external financial markets (Government of Malawi 2004, 2006).

2.5 The Macroeconomic Drivers of Growth in Malawi

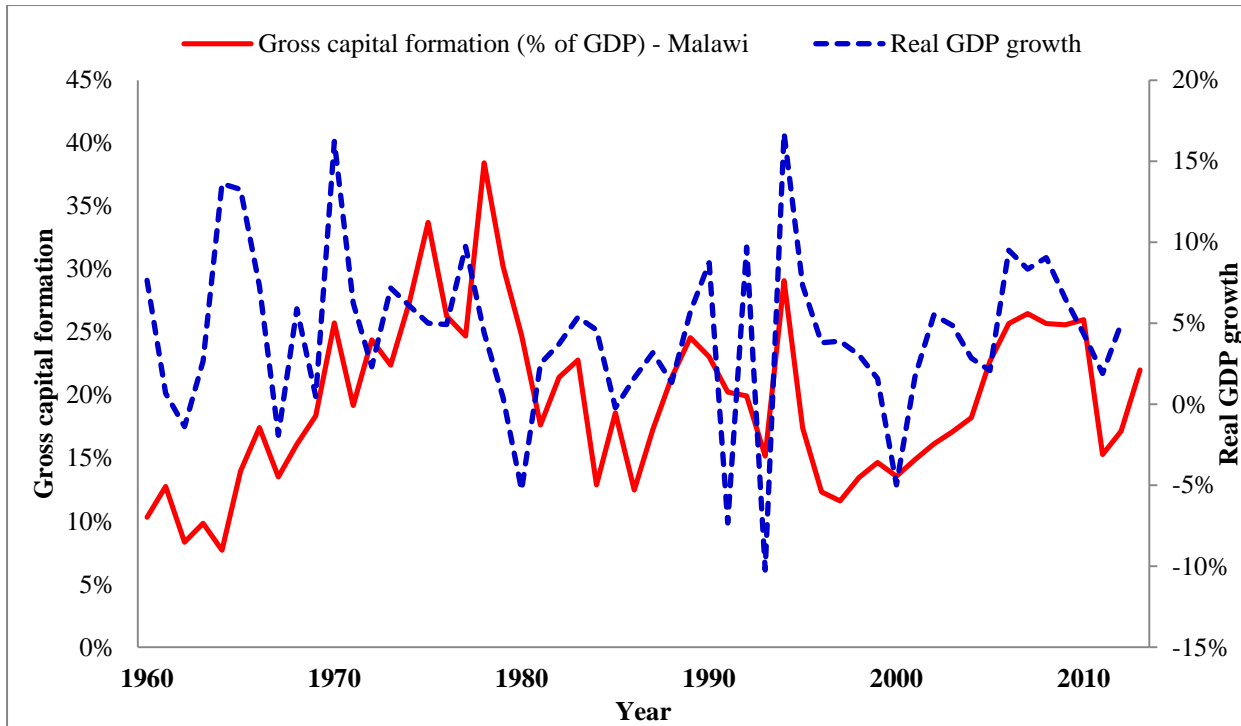
The growth performance in Malawi was largely driven by the following key macroeconomic drivers as mentioned in sections 2.3 and 2.4: the accumulation of physical capital, human capital development, international trade, inflation, government consumption, exchange rate movements and population growth. These macroeconomic drivers were directly affected by the performance of other drivers such as fiscal discipline, research and development, financial sector development, and tax and trade reforms. Sections 2.5.1 to 2.5.5 present the performance of the key macroeconomic drivers that were promoted by the various development policies and reforms implemented in Malawi between the period 1970 and 2011.

2.5.1 Accumulation of Physical Capital and Growth

The major factor behind Malawi's economic growth performance since the 1970s was the accumulation of physical capital through the rapid expansion of investments in key sectors of the economy (Government of Malawi 1998, 2006). Bassanini *et al.* (2001) argued that private investment was an important determinant of long run economic growth with long run averages of private investment rates ranging from a minimum 10% to over 20% of GDP. Aschauer (1989), on the other hand, advocates the inclusion of public investments in the estimation of long run growth patterns. The combined effect of both private and public investments is, therefore, expected at a minimum to average at least 20% of GDP (Bassanini *et al.* 2001). Gross national investment was

an important driver for the accumulation of physical capital in Malawi. Figure 2.7 illustrates the growth patterns of gross national investments and real GDP growth.

Figure 2.7: Gross Investment Share and Real GDP Growth: 1960-2013



Source: World Bank (2015c)

The primary vertical axis represents the percentage change in gross national investments over time, while the secondary vertical axis represents the growth rate of real GDP. Overall, the evidence shows a positive co-movement between real GDP growth and investment. As a proportion of real GDP, investment share in Malawi averaged 19.8% p.a. during the period 1960-2013. The trend declined significantly from an average of 27.1% of real GDP p.a. in the 1970s, down to 16.7% of real GDP p.a. in the 1990s before improving to an average of 21.0% share of real GDP during the 2001-2013 period (World Bank 2015c).

The overall investment position in Malawi, therefore, was at the margin of recommended levels as suggested by Bassanini *et al.* (2001) in order to support growth in the economy after taking into account the balance of payment position that the nation faced throughout the study period. While total investments were supported by significant foreign capital inflows, the investment share position deteriorated significantly as most sources of investments both foreign and domestic were used for budget support for the government in order to clear factor and non-factor payments (World Bank 1990b).

2.5.2 Human Capital Development and Growth

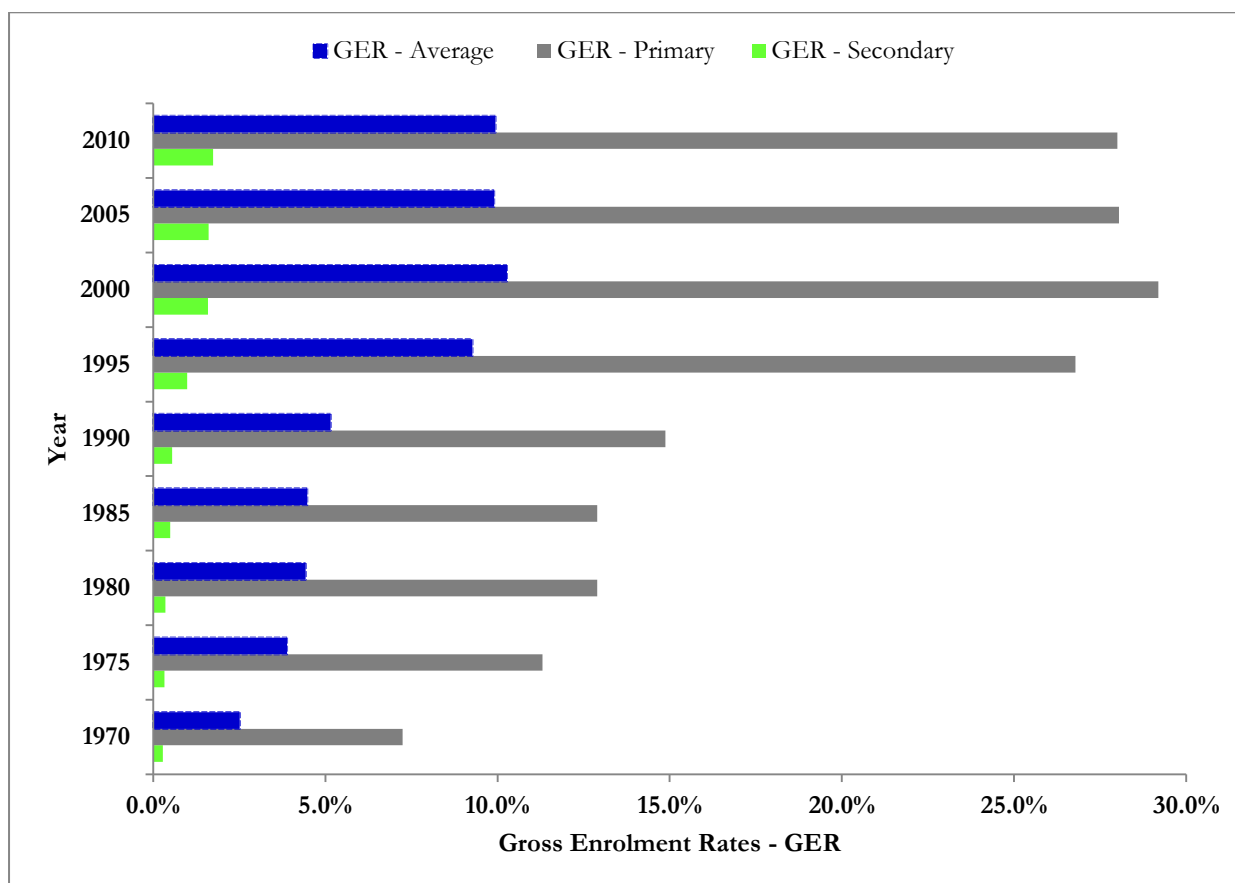
The second important driver of economic growth in Malawi was related to investment in human capital development which has been well manifested in all development policies under review since the 1970s (Government of Malawi 1998, 2006). It has been argued that investments in human capital development have similar effects on economic growth as does the accumulation of physical capital (Bassanini *et al.* 2001).

The education policy adopted after Malawi attained independence was in response to severe human capital constraints. The government policy on education was based on the understanding that in order to achieve improvements in agricultural productivity, improvements in the utilization and training of the rural labour force – especially smallholder farmers was of paramount importance (Government of Malawi 1971, 1987).

Significant investments in human capital development were more pronounced in primary education as enrolment significantly increased from an average of 10.2% of total population p.a. in the 1970s, to 13.4% of total population p.a. between 1980 and 1990, to 22.9% of total population p.a. during the 1991-2000 period and to an average of 28.3% of total population p.a. during the 2001-2010 period. Enrolment in secondary education also increased marginally over the decades that is, increasing from an average of 0.3% of total population p.a. enrolled in secondary education between 1970 and 1980, to 0.5% p.a. during the 1981-90 period, to 1.2% p.a. during the 1991-2000 period and to an average of 1.6% of total population p.a. during the 2001-2010 period. Tertiary education was given the lowest priority by government nevertheless enrolment rates marginally increased from an average of 0.02% in the 1970s to 0.06% of total population during the 2001-2010 period (Government of Malawi 2012b).

Figure 2.8 illustrates the growth in enrolment of students at two levels of education – that is, primary and secondary– expressed as a proportion of total population.

Figure 2.8: Gross Enrolment Rates in Primary and Secondary Education: 1970-2010



Source: UNESCO (2015)

The gross enrolment rate for tertiary education was not included since its proportion to total population has been nearly zero throughout the entire period. The education policy in Malawi was, therefore, demand-driven and aimed at addressing technical skills required to support the agricultural sector as the key source of economic growth. Even advances in technological adaptation have strong links with education, especially when education investments are at the highest level (Grossman and Helpman 1991; Aghion and Howitt 1992). The trend in Figure 2.8, however, shows investment in education development in Malawi was more focused on basic skills obtained through investing in primary education and less on secondary or tertiary education (Government of Malawi 1987, 2006).

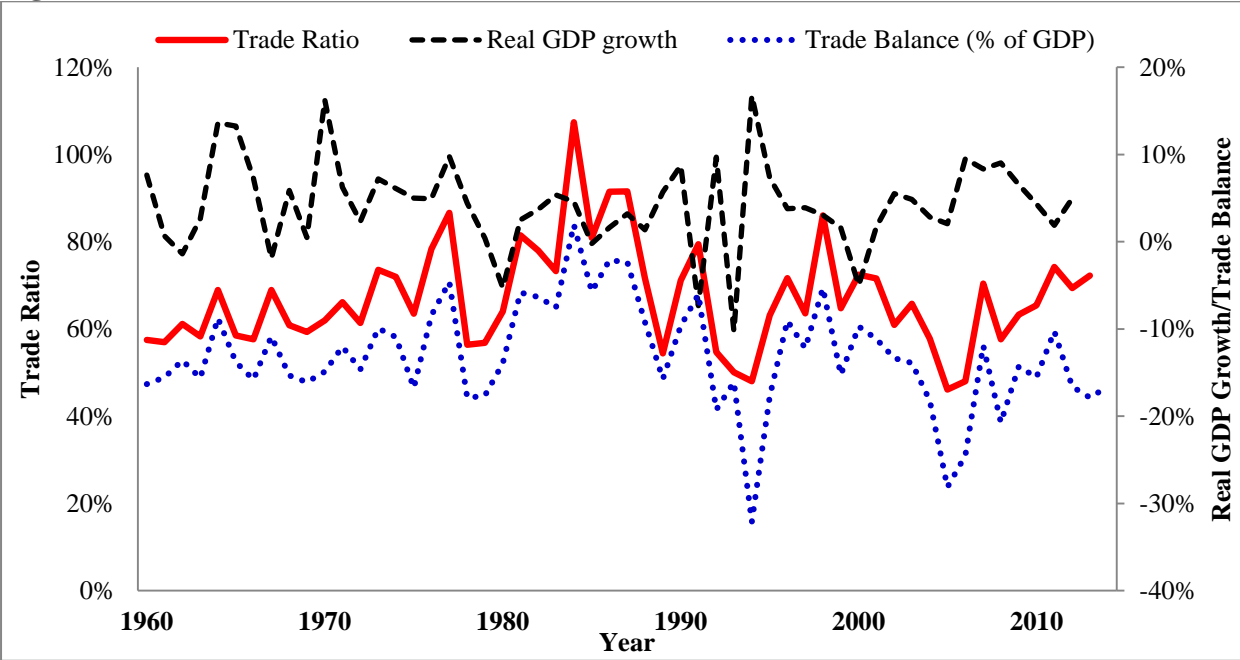
2.5.3 International Trade and Growth

The third important driver of economic growth in Malawi and an important driver of real incomes was international trade (Government of Malawi 1987, 2006, 2010). The government’s strategy to promote agriculture since the 1970s and the small size of the effective domestic economy to provide a market for trading in goods and services necessitated the government focusing more on

external trade and openness. Realizing that Malawi’s comparative advantage relied on small-scale agricultural production and productivity, the most plausible route to improve on per capita incomes – and provide a stable market for all exportable agricultural produce was to promote exports to other countries (Government of Malawi 1987). At the same time, the Malawian economy was susceptible to external shocks such as falling terms of trade and rising freight costs (Government of Malawi 2006).

Figure 2.9 illustrates the relationship between two trade proxies (trade ratio and trade balance) and real GDP growth.

Figure 2.9: Real GDP Growth, Trade Ratio, and Trade Balance: 1960-2013



Source: World Bank (2015c)

The primary vertical axis represents the percentage change in trade ratio, while the secondary vertical axis represents the growth rate of real GDP and trade balance share in real GDP covering the period 1960-2013. Overall, the trend shows a positive co-movement between the trade ratio, trade balance and real GDP growth. During the period 1960-2013, the trade ratio averaged 67.1% as imports on average grew faster than exports. The trade balance, as a proportion of GDP, registered a deficit of -13.1% of GDP p.a. during the same period. This deficit rose sharply from an average of -6.3% of GDP in the 1980s, to an average of -16.7% of GDP p.a. between 2001 and 2013 (World Bank, 2015c). Malawi being a landlocked country experienced significant balance of payment problems due to the increase in high net factor and non-factor service payments,

dominated by high debt service obligations and external transport costs (Government of Malawi 1987, 1998, 2004, 2006).

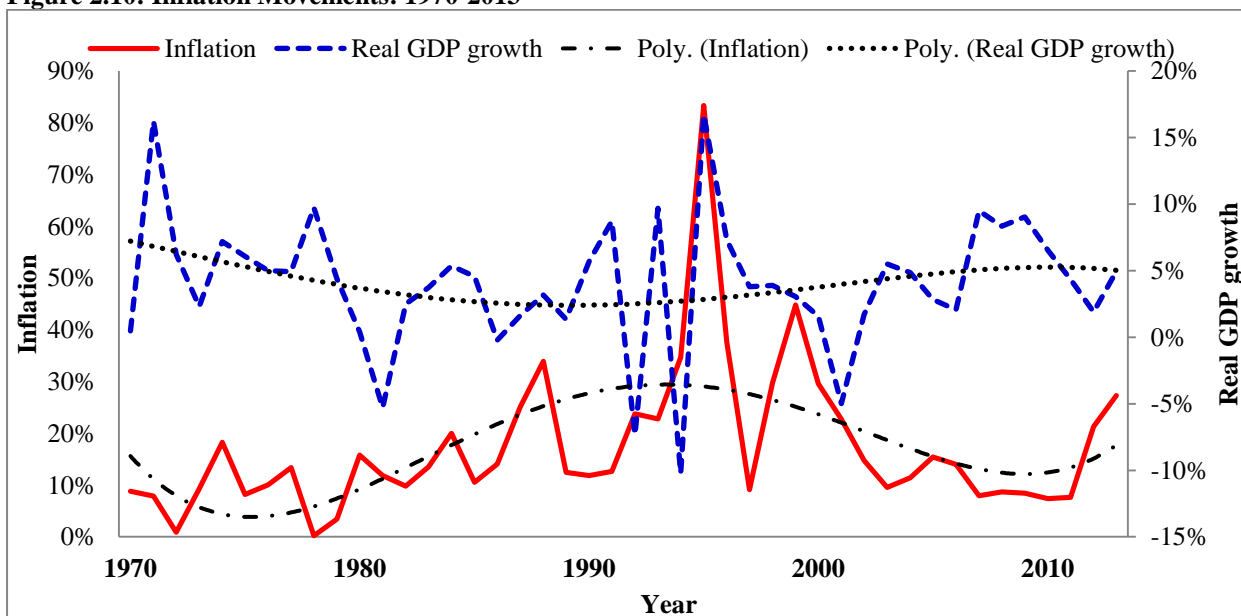
2.5.4 Inflation and Growth

The fourth important driver of economic growth in Malawi was inflation. A number of studies in the economic growth literature identify inflation as an important driver of economic growth. Inflation brings in uncertainty and thus acts as a tax on investment (Fernandez Valdovinos 2003; Guerrero 2006). As such, it is expected that inflation and growth will reveal an inverse relationship. Apart from controlling for population growth, the Malawi government did put a lot of emphasis on ensuring stability in inflation movements in order for Malawi to sustain its growth achievements. The importance of reducing the inflation growth rate is evidenced by the strategic objectives incorporated in its development policies since 1987 to reduce inflation to a single digit growth of at most 5% p.a. (Government of Malawi 1987, 2006).

In the 1970s, it was deliberate government policy to ensure that inflation at all costs was managed and that price and wage controls were effective (Government of Malawi 1971, 1987). The control of inflation was also crucial in controlling other variables such as domestic interest rates.

Figure 2.10 presents the growth trajectory of price movements (inflation) and real GDP growth performance during the period 1970-2013.

Figure 2.10: Inflation Movements: 1970-2013



Source: World Bank (2015c)

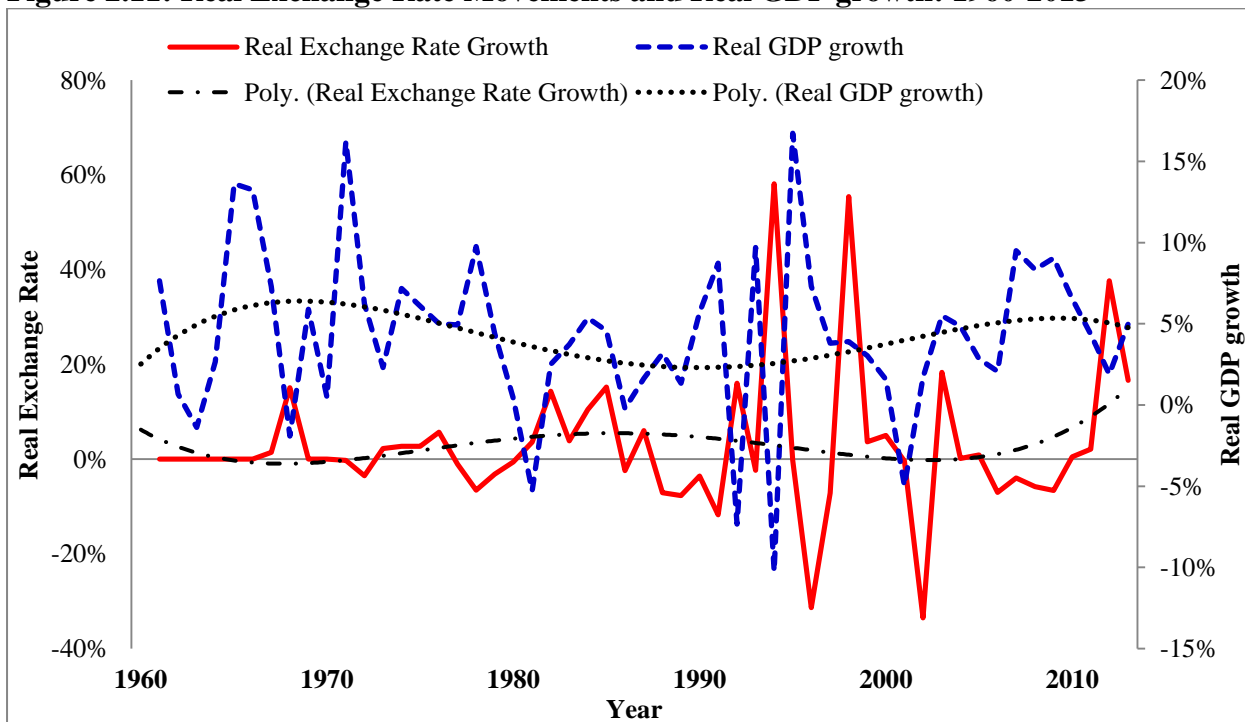
The growth pattern on the primary vertical axis shows the percentage change of inflation while the right hand side represents real GDP growth. Overall, Figure 2.10 illustrates an inverse co-movement between inflation and economic growth in Malawi. During the period 1970-2013, inflation grew at an average rate of 17.9% p.a. The average inflation rate rose from an average of 8.7% in the 1970s to 32.8% in the 1990s before dropping to 13.6% p.a. in the 2000s (World Bank 2015c).

2.5.5 Real Exchange Rate and Growth

The fifth important driver of economic growth in Malawi was the real exchange rate. Recently, exchange rate misalignment has become an important determinant of growth particularly for developing countries that are recipients of foreign aid (Elbadawi *et al.* 2012). A real exchange rate misalignment – that is, either an overvaluation or devaluation, has a significant influence on economic growth where the former has led to economic stagnation (Johnson *et al.* 2006; Rajan and Subramanian 2011) and the latter has led to growth accelerations (Hausmann *et al.* 2005; Rodrik 2008), respectively.

Figure 2.11 illustrates the real exchange rate movements versus real GDP growth during the period 1960-2013.

Figure 2.11: Real Exchange Rate Movements and Real GDP growth: 1960-2013



Source: World Bank (2015c)

The growth pattern on the left vertical axis shows the percentage change of the real exchange rate while the right hand vertical axis represents real GDP growth. Overall, Figure 2.11 illustrates an inverse co-movement between the real exchange rate and real GDP growth. During the study period, the real exchange rate grew at an average rate of 2.9% p.a.; with significant growths experienced in the 1980s and 1990s, averaging 3.3% and 8.5%, respectively. A number of structural adjustment reforms were implemented from 1981 onwards to restore a once buoyant economy that had been affected by external economic shocks and policy inconsistencies (Government of Malawi 1987). The overreliance of the economy on an agricultural sector that depended on natural resources, especially fertile land, created a very weak foundation for sustained economic growth. Moreover the sector was heavily affected by international shocks such as falling world market prices for major exports crops and high import prices: this led to a decline in terms of trade and high transportation costs on international corridors thereby affecting Malawi's competitiveness within and outside the SADC region (Government of Malawi 1987; World Bank 1988).

Moreover the economic shocks that Malawi faced during the 1979-1981 period affected exchange rate movements. The rapid deterioration of Malawi's economic performance between 1979 and 1981 prompted the government to implement stabilization programmes and structural adjustment programmes funded by the Bretton Woods Institutions. There were three major problems that were affecting exchange rate movements. These included the slow growth and poor quality of traditional exports from smallholder farmers, declining terms of trade, increasing government budget deficit and slow growth on human capital development, thereby resulting in a continued shortage of skilled labour and reliance on support from expatriates (World Bank 1981a; 1988).

These problems drove exchange rate movements leading to a number of currency devaluations / depreciations during the 1980-2013 period. On average, the exchange rate depreciated at an average rate of 22.5% p.a. during this period. In the 1980s, the depreciation of the local currency averaged 13.1% p.a. and significantly increased during the 1990s depreciating at an average of 40% p.a. before declining to an average depreciation rate of 16% p.a. during the 2001-2013 period (World Bank 2015c). The pressure exerted by Malawi's balance of payments position, on the other hand, necessitated that the government to implement a number policy reforms on exchange rate liberalization: this in turn led to a number of currency devaluations (World Bank 1988).

The reforms that the government of Malawi implemented in the late 1980s aimed at introducing a free-floating exchange rate regime in order to reduce the rate at which imports were growing

while at the same time stimulating the production of exports. The exchange rate alignment policy was seen as an important tool for both monetary policy and external balance of payments management. Another control used by the government to manage the availability of foreign exchange was the prioritization of expenditure on essential imports through the Reserve Bank of Malawi (Government of Malawi 1987; World Bank 1988).

2.6 Policy Challenges affecting Economic Growth in Malawi

The evidence provided in the literature review on development plans and reforms implemented in Malawi during the study period shows a high degree of state-intervention aimed at leading the growth process. This is in sharp contrast to the principles leading the Structural Adjustment Programmes that aimed at promoting a market-oriented economy – with increased private sector involvement in the economy (Bird and Rowlands 2000). The aim of the structural adjustment loans were to enforce a market-oriented economy and a significant move away from a State-regulated economy, with a focus on institutionalising fiscal discipline, pro-poor social and economic growth, financial liberalisation, creating incentives to attract foreign direct investment, the privatisation of state-owned industries, the liberalization of capital markets, market-based pricing, and property rights (Williamson 1990, 2008; Easterly 2005).

Government interventions are expected to address market failures; and from the viewpoint of a classical economist, the government is expected to limit its activities to creating an enabling environment for private sector-led growth (Snowdon and Vane 2005). The first market reforms to address this concern commenced in the 1980s, with the advent of structural adjustment programmes financed by the World Bank and the IMF. However, these reforms did not achieve their stated objectives in many African countries including Malawi (Easterly 2005). Comparable studies conducted in Africa, showed a similar trend, in which structural adjustment programmes failed (Kingston *et al.* 2011; Gebregziabher 2015). This was not entirely to be blamed on the principles governing the structural adjustment process, but rather on the policy inconsistencies that most governments were guilty of.

In a study by Kingston *et al.* (2011), structural adjustment programmes had failed to transform economies, such as Ivory Coast, Senegal, Uganda and Zimbabwe. A common feature of these countries, including Malawi, is that their economies continued to be largely driven by agriculture. The literature review for Malawi conducted in this study-corroborates the inability of the structural adjustment loans policy – with its focus on the implementation of programmes with high returns,

the efficient use of public resources, the use of rational or market-determined prices and world-market conditions to guide investment and production decisions, and the restructuring of public enterprises (Easterly 2005) – to influence government in creating an enabling environment for private sector-led growth, improving the level of public savings, and restructuring the agricultural sector.

These results also support the empirical analysis found in Gebregziabher (2015, p. 179), where Malawi experienced a sharp decline in economic growth rates – even after structural adjustment reforms had been implemented. However, based on the literature review, it is clear that the economic woes experienced in Malawi during the study period were not necessarily a problem emanating from the structural adjustment programmes: it is more likely that these woes indicate an inability to adjust towards a more market-driven economy, led by private sector development.

The period of implementing the structural adjustment programmes in Malawi was characterised by macroeconomic instability which was mainly influenced by policy inconsistencies in implementing the reforms and by declining productivity (Government of Malawi 2004, p. 12). Based on the approach that the government of Malawi has taken since the 1970s, development policies and reforms have been a major influence on the performance of key macroeconomic drivers, aimed at influencing long-term economic growth. The identification of the macroeconomic drivers was in response to policy challenges that significantly affected the movement in economic growth. Most of these challenges affecting economic growth in Malawi started during the period 1979-1981 – that is, when Malawi experienced a number of economic shocks (Government of Malawi 1987). Seven policy challenges have been identified. The following sections discuss these challenges in more detail.

2.6.1 Crowding-Out of Private Sector Investments

Since independence, the government of Malawi has promoted development policies and reforms that were inconsistent with regard to the objectives they set out to achieve. Since 1964, the government created public institutions and parastatals in areas that were expected to be efficiently delivered by private sector agents (Government of Malawi 2004, p. 16, 69-70). These policies eventually crowded-out private sector investment, destroyed incentives for increasing production and productivity, as well as entrepreneurial growth: moreover they promoted unnecessary bureaucracies, rent-seeking behaviour and corruption (World Bank 1998, p. 11).

Increased government budget deficits were manifested throughout the study period: some of the factors affected included the low accumulation of physical capital. This declined sharply, averaging 27.0% of GDP p.a. during the period 1971-1980, 19% during the 1981-1990 period, 17% between 1991 and 2000, and an average of 21% of GDP p.a. during the period 2001-2013 (World Bank 2015c). Further deterioration was experienced by the failure of Malawi to attract foreign direct investment, which averaged 1.3% of GDP at 2005 constant prices p.a.: furthermore there were low gross domestic savings, which averaged 6.5% of GDP at 2005 constant prices p.a. during the period 1960-2013; and high real interest rates, which rose from an average of 3.8% during the period 1981-1980 to 16.1% during the period 2001-2013 (World Bank 2015c).

By international standards, the level of gross domestic savings, which is a key source of investment in any economy, was insufficient, averaging only 6.5% of GDP during the period 1960-2013. This was significantly below the minimum levels required for an economy to grow, which is expected to be not less than 20% of GDP (Bassanini *et al.* 2001). As a result, the policies and institutions that the government had established and implemented failed to generate the necessary savings and investments required for the economy to grow. The level of government failure in this case was insurmountable: hence it is recommended that the government sustainably reduces its involvement in the market, as well as facilitating the necessary processes required to create a conducive environment for private sector-led growth.

2.6.2 Regulatory Arbitrage

One of the major challenges that the Malawian economy has faced is related to regulatory arbitrage that resulted from the inefficient implementation of government-led interventions – leading to price and exchange rate misalignments, commodity subsidies and subventions to parastatals that have been a significant drain on public resources (Government of Malawi 2006).

Le Grand (1991) argues that through the operations of markets, the price mechanism is crucial as this links the production costs of an intervention to the income that it generates. Similar arguments have been propounded in the literature, whereby a stable macroeconomic environment, supported by an efficient price mechanism and regulatory environment, as well as efficient public institutions, is conducive to sustained economic growth (World Bank 1990a).

However, interventions by the state do not go through such processes: this is because almost all of the government activities are financed through the collection of government revenues, whose main sources are taxes, donations, grants, or debt collections. Since the price mechanism is not

usually used when the government selects which public interventions to implement, there is no guarantee that the public policy choices made will be optimal. This missing link, therefore, increases the likelihood of misallocating public resources, which promotes interventions that are consequently implemented sub-optimally (World Bank 1990a).

Most of the public interventions that the government of Malawi implemented during the study period were, therefore, no exception to this rule. Throughout the study period, the evidence provided shows that price and exchange-rate controls, commodity subsidies and subventions to poorly performing parastatals were supported by the government budget (World Bank 1998, p. 11; Government of Malawi 2006, p. 79). In addition, government did not utilise price signals from trends in international commodity prices for its major cash crops, such as tobacco and tea, where their prices fell significantly during the study period. For instance, tobacco prices declined by two-thirds; while tea prices fell by almost half during the period 1960-2013 (World Bank 2015a).

With the likelihood that government revenues support interventions with unrelated costs of production, the government of Malawi is not able to be in a position to know whether more or fewer resources are being used to support any given public intervention optimally. The implementing of activities that would lead to reducing of allocative inefficiencies is, therefore, recommended if Malawi is to attract the necessary investments needed for its economy to grow

2.6.3 Frequent Policy Reversals

The third challenge affecting the performance of macroeconomic drivers faced by the government of Malawi included frequent policy reversals in the implementation of macroeconomic reforms (Government of Malawi 2002, 2004). The first policy reversal was related to the liberalisation of the exchange rate. From independence to the early 1970s, the exchange rate policy in Malawi had followed a fixed exchange rate regime, in which the local currency, the Malawi Kwacha, was pegged to the British Pound Sterling (World Bank 1975). Since 1984, the Malawi Kwacha has been fixed to a basket of seven currencies (World Bank 1988). However from July 1997 to July 2003, the exchange rate policy moved back to a flexible exchange rate regime (Reserve Bank of Malawi 2003): then from August 2003 to February 2005, the regime returned to a fixed exchange rate system.

In 2005, there were two exchange rate policies adopted: between March and June 2005 the Reserve Bank of Malawi adopted a flexible exchange rate regime, which was changed to a fixed exchange rate system from July to December 2005 (Reserve Bank of Malawi 2005). The exchange

rate policy reversals continued: and from January 2006 to November 2007, a flexible exchange rate policy was adopted, before being reversed to a fixed managed float – with occasional devaluation – between December 2007 and April 2012. Then from May 2012 onwards, the policy moved to a full market-determined (floating) exchange-rate regime (Reserve Bank of Malawi 2007, 2008).

The second policy reversal related to uncontrollable fiscal deficits that resulted from increased borrowing by government – from both the domestic and external financial institutions. Although the structural adjustment reforms implemented since the 1980s aimed at controlling government spending, high fiscal deficits continued to constitute a significant drawback to attaining macro-economic stability (World Bank 1998, 2004). At the helm of the high fiscal deficits was the continued poor performance and mismanagement of public expenditures, coupled with weak policy and strategic planning. This led the government to excessive borrowing both from the local and external financial markets, thereby leading to high interest rates, inflation, currency depreciations and the crowding out of any private sector investment (Government of Malawi 2006).

2.6.4 Low Accumulation of Physical Capital

The fourth challenge is related to the accumulation of physical capital. All development plans and reforms implemented since the 1970s identified the accumulation of physical capital as an important driver of economic growth. However, the over-reliance on an agrarian society in the agricultural sector exposed the Malawian economy to a number of international shocks that were affected by the international price movements of major export crops, such as tobacco, tea, cotton and sugar: furthermore there were setbacks occasioned by increasing foreign debt services; increasing factor payments; and rising import prices (Government of Malawi 2004). These, in turn, affected the accumulation of physical capital, as the gross domestic savings declined over time from an average of 14.4% during the period 1971-1980 to 4.3% of GDP during the period 2001-2013 (World Bank 2015c). This was well below the recommended level of accumulation of savings, which was expected to range at least between 10% and 20% of GDP (Bassanini *et al.* 2001).

2.6.5 Low Investments in Human Capital Development

The fifth challenge was associated with the low investments in human capital development, which has been consistently identified as a constraint to economic growth in all development plans

studied in this paper (Government of Malawi 1998, 2006). Investment in human capital development brings in capital deepening which in turn can lead to sustained economic growth. Even technological adaptations have a strong link with education and this implies that investment in human capital development should be more focused on higher learning (Romer 1990; Bassanini *et al.* 2001). In Malawi, although significant investments went into education, the majority of these investments targeted the improvement of basic skills, by increasing access to primary education, and fewer were focused on secondary and tertiary education. As a result, Malawi still faces a constraint with regard to the availability of skilled workers, even though all development plans implemented have stressed the importance of the development of technical skills needed to support growth in all sectors of the economy (Government of Malawi 1998, 2006). The quality of human capital is, therefore, inadequate to absorb any transfer of knowledge or technologies resulting from the accumulation of physical capital from abroad.

2.6.6 Weak Balance of payments Position

The sixth challenge that the Malawi economy faced related to its balance-of-payment problems (World Bank 1988; Government of Malawi 2006). Owing to the relative smallness of its domestic market, trade has been very important for Malawi: its balance of payments position has therefore been a critical factor in the economic performance of the country (Government of Malawi 1987, 1998). Instead of trade bringing in gains, such as economies of scale, diffusion of knowledge and technologies, Malawi faced declining terms of trade, and also increased trade and current-account deficits (Government of Malawi 2006). Malawi's terms of trade consequently deteriorated significantly over time, as represented by the trade ratio that declined from an average of 127.9% p.a. in the 1980s to 62.8% during the period 2001-2010. In addition, the current-account deficit increased from an average of -12.5% of GDP in the 1980s to -38.4% of GDP in the 2000s (World Bank 2015c). The situation was made worse due to increased factor and non-factor payments, increasing freight costs, interest repayments on loans and the declining terms of trade (Government of Malawi 1987, 2006).

2.6.7 Macroeconomic Instability

The seventh challenge is related to instability in the key macroeconomic factors of growth, such as inflation and the real-exchange rate. Both drivers were negatively related to economic growth, and thus represented a tax on investment. During the period 1980-2010, the inflation rate averaged 20.6% p.a. whilst the exchange rate depreciated at an average rate of 20.3% p.a. This is not a desirable position, as countries within the Southern Africa Development Community (SADC)

region are expected to adopt the principles of macro-economic convergence – that is, where, among other things, inflation is expected to remain within low and stable levels (Southern African Development Community 2006). The high inflation rates and exchange rate misalignments that Malawi faced during the period, 1980-2010, constituted a significant drawback and a tax on the economy (Bassanini *et al.* 2001; Government of Malawi 1998, 2004).

2.7 Concluding Remarks

This chapter has discussed the main macroeconomic drivers of economic growth in Malawi, by examining the policies and putative reforms that the country implemented during the period 1970-2011. Based on the available data for the period 1960-2013, real GDP growth averaged 4.3% p.a. while *per capita* GDP averaged US\$206 p.a., that is it grew at an average rate of only 1.7% p.a. Population growth, on the other hand, averaged 2.9% p.a. Malawi's level of economic growth could, therefore, be characterised as that of an economy that experienced an extensive growth pattern – with contributions not arising from increased productivity but rather from production – due to the increasing population. The most significant macroeconomic drivers of growth identified in the study include the accumulation of physical capital, human capital development, international trade, inflation and the real exchange rate. Other drivers identified, although implemented to a lesser extent, included land, research and development, population growth, trade and tax reform, financial-sector development and good governance (fiscal discipline, control of corruption, security, and public service delivery).

The performance of the macro-economic drivers during the study period has been influenced by the medium- and long-term development plans that Malawi has implemented since the 1970s. These include the Development Plan of 1971-1980; the Medium-Term Plan of 1981-1986; the Development Plan of 1987-1996; the Malawi Vision 2020 for the period 1998-2020; the Malawi Poverty-Reduction Strategy of 2002-2005; the Malawi Economic-Growth Strategy of 2004-2008; and the Malawi Growth and Development Strategy of 2006-2011. These development plans have been further supported by the structural-adjustment reforms financed by the World Bank and the International Monetary Fund, since the 1980s.

A number of policy challenges have been discussed that have affected the performance of the macro-economic drivers of economic growth in Malawi. These include the following: the low accumulation of physical capital; the low investment in human capital development; the frequent balance-of-payment problems affected by the declining terms of trade and current account

deficits; macroeconomic instability, due to rising inflation; and exchange rate misalignment; as well as the frequent policy reversals that have negatively affected the implementation of macroeconomic reforms. Based on the analysis, the study identifies the accumulation of physical capital, human capital development, international trade, and inflation and currency depreciation, as the important macroeconomic drivers of economic growth in Malawi. The study therefore concludes that it is important to include such drivers as the macroeconomic determinants, when measuring and estimating economic growth patterns in Malawi.

CHAPTER 3

THE MACROECONOMIC DRIVERS OF GROWTH IN ZAMBIA

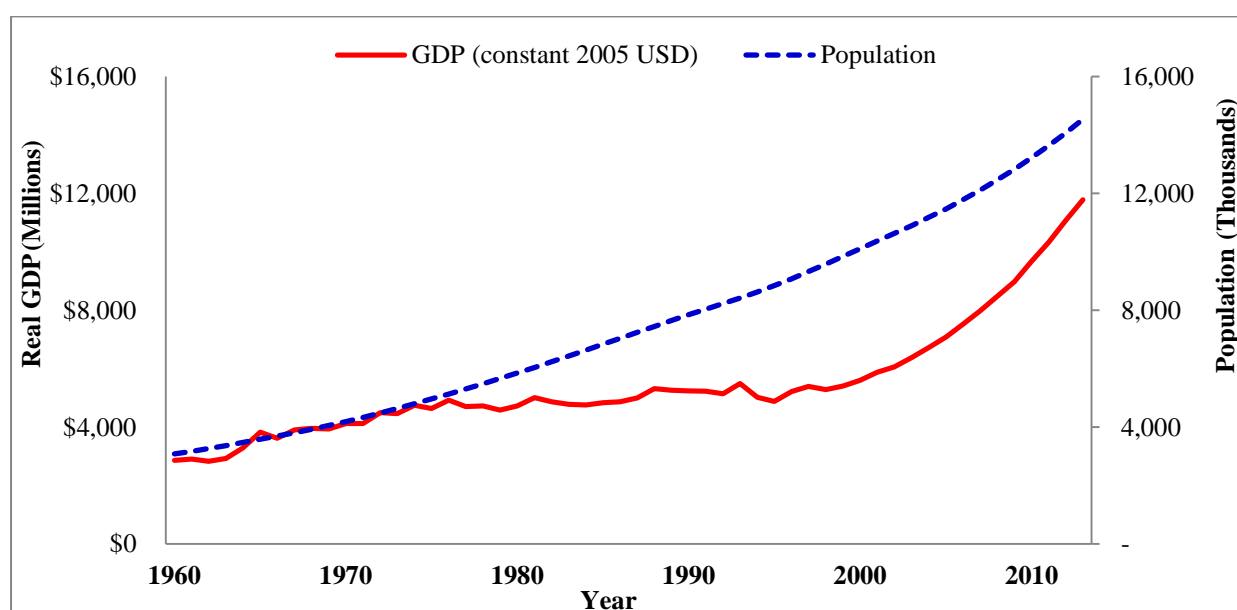
3.1 Introduction

This chapter examines the key macroeconomic drivers of economic growth in Zambia during the study period 1960-2013. The chapter focuses on examining the policies and institutional reforms that were implemented in Zambia and seeks to determine how they influenced the growth patterns of the main macroeconomic drivers of growth. The rest of the chapter is organised as follows: Section 3.2 examines the macroeconomic performance of the Zambian economy during the study period. Section 3.3 surveys the development plans and reforms that were implemented in Zambia during the study period. Section 3.4 discusses and summarises the main macroeconomic drivers of economic growth in Zambia. Section 3.5 delves into the main policy issues and challenges that directly affected the performance of the key macroeconomic drivers in Zambia; while Section 3.6 concludes the chapter.

3.2 Trends in Economic Growth

Figure 3.1 illustrates trends in real GDP at 2005 constant US\$ prices and in terms of the Zambian population growth during the period 1960-2013.

Figure 3.1: Trends in Real GDP and Population in Zambia: 1960-2013

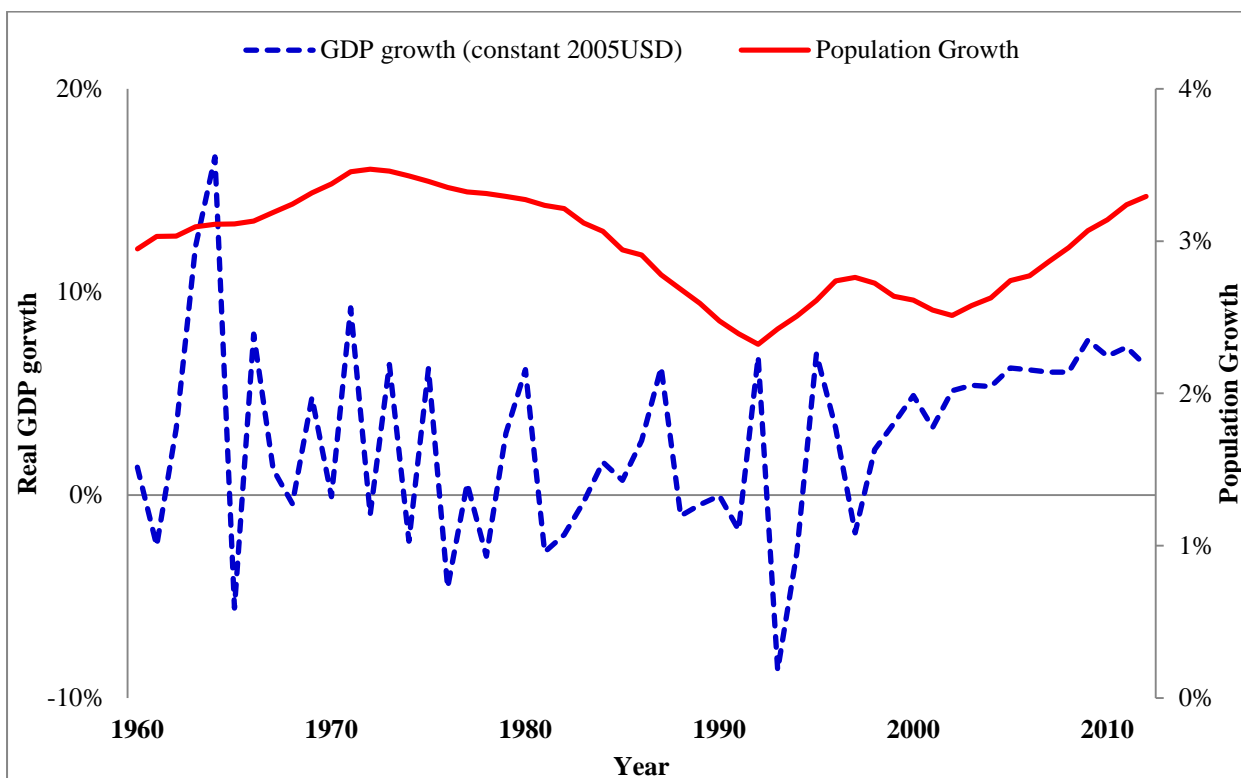


Source: World Bank (2015c)

The primary vertical axis represents a scale for real GDP in millions of USD while the secondary vertical axis is a scale for population in thousands. As illustrated in Figure 3.1, real GDP increased from US\$2.9 billion in 1960 to US\$15.3 billion in 2013. Population, on the other hand, rose from 3.1 million people in 1960 to 14.5 million people in 2013 (World Bank 2015c).

Figure 3.2 compares the annual growth rates of real GDP at 2005 US\$ constant prices and population growth.

Figure 3.2: Trends in Real GDP and Population Growth in Zambia: 1960-2013



Source: World Bank (2015c)

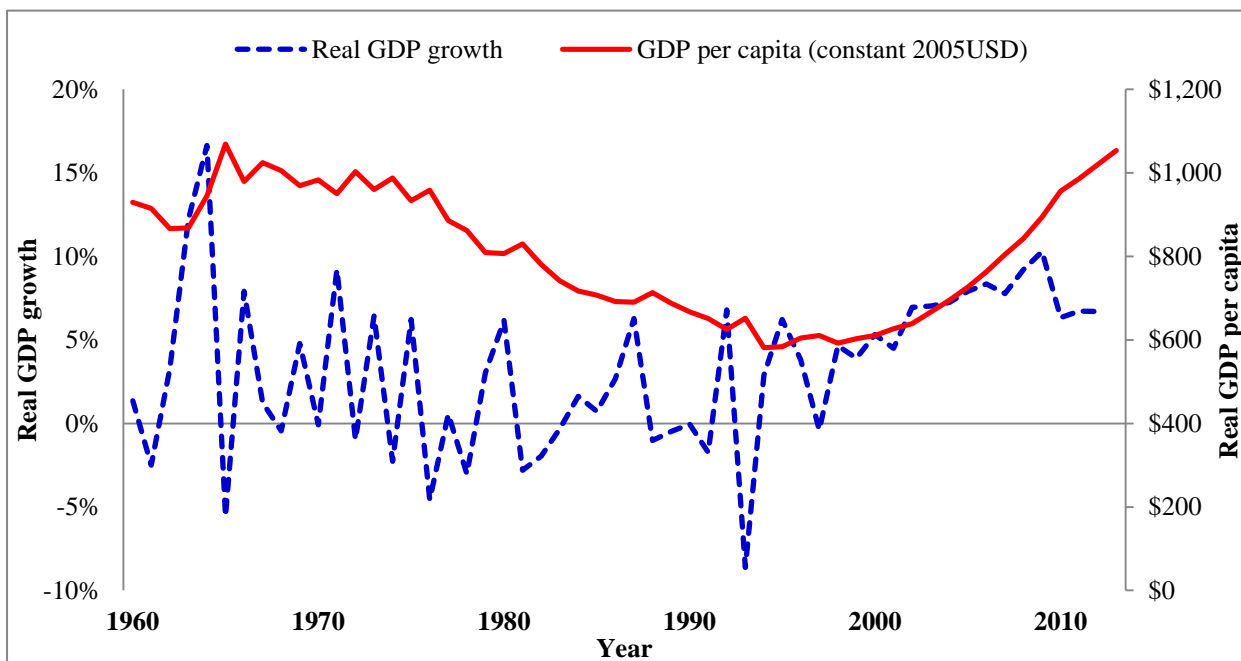
The left-hand axis represents growth trends of real GDP growth while the secondary axis represents the population growth rate. On average, real GDP and population grew at almost the same level. While real GDP grew at an average annual rate of 3.3% p.a., population grew at an annual rate of 3.0% p.a. during the period from 1960 to 2013 (World Bank 2015c). Also emerging is a pattern of a positive co-movement between real GDP and population growth in Zambia. This relationship, as studied previously by many scholars, is not straightforward and varies between countries (Thornton 2001; Warr 2004). Between the period 1960 and 2013, there was a positive correlation between real GDP and population growth. Between 1960 and 1980, the Zambian

economy grew at an average rate of 2.7% p.a. while its population increased at an annual average growth of 3.3% p.a. (World Bank 2015c).

The period 1981-2000 was characterised by economic hardships and a mineral recession where growth in real GDP grew at an average rate of 1.4% p.a. and the rate of population growth remained the same – that is, averaging 3.2% p.a. (World Bank 2015c). However, during the period from 2000 onwards, the Zambian economy experienced buoyant growth where the economy grew at an average rate of 7.3% p.a. and at the same time the population growth rate averaged 2.8% p.a. during the period 2001-2013 (World Bank 2015c).

Figure 3.3 illustrates trends in real GDP per capita at 2005 US\$ constant prices during the same period, 1960-2013.

Figure 3.3: Trends in Real GDP per capita and Economic Growth in Zambia: 1960-2013



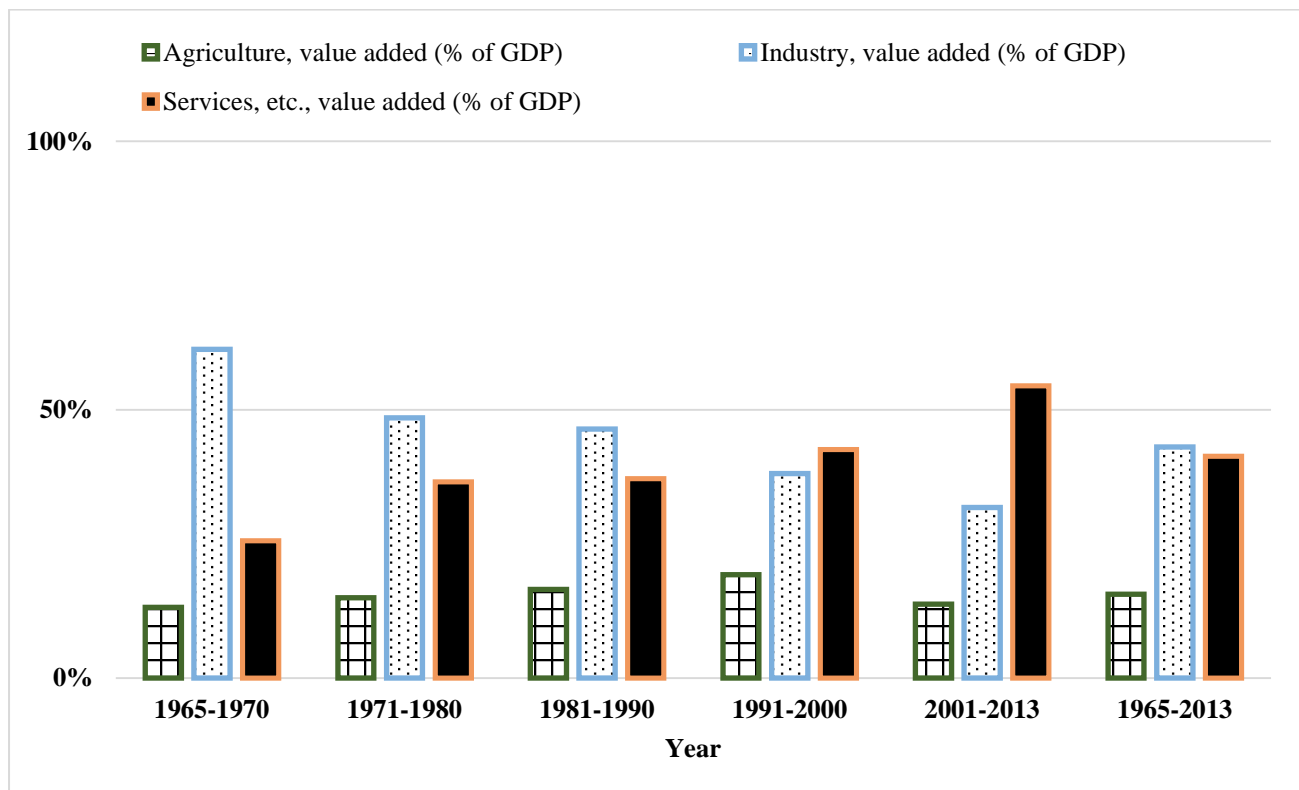
Source: World Bank (2015c)

The left-hand axis represents per capita income expressed in US dollars while the secondary axis represents the real GDP growth rate. On average, real GDP per capita increased from US\$930 in 1960 to US\$1,054 in 2013, ranking Zambia as a lower-middle income economy. During the period 1960-1974, the Zambian economy experienced an average real GDP per capita of US\$964. From 1975-2000, real GDP per capita at 2005 constant prices declined significantly from US\$934 in 1975 to US\$611 per capita in 2000 as the economy was affected by external shocks from falling

copper prices and rising prices for petroleum products (World Bank, 2015c). From 2001 to 2013, real GDP per capita started improving, sustainably rising from US\$611 in 2000 to US\$1,054 in 2013, largely due to a mineral boom driven by increasing copper prices (World Bank 2015c).

The Zambian economy, throughout the study period, has been driven by the industrial sector which has been dominated by mining. Figure 3.4 illustrates the contribution of real GDP per sector in Zambia during the period 1965-2013.

Figure 3.4: Real GDP Contribution by Sector in Zambia: 1965-2013

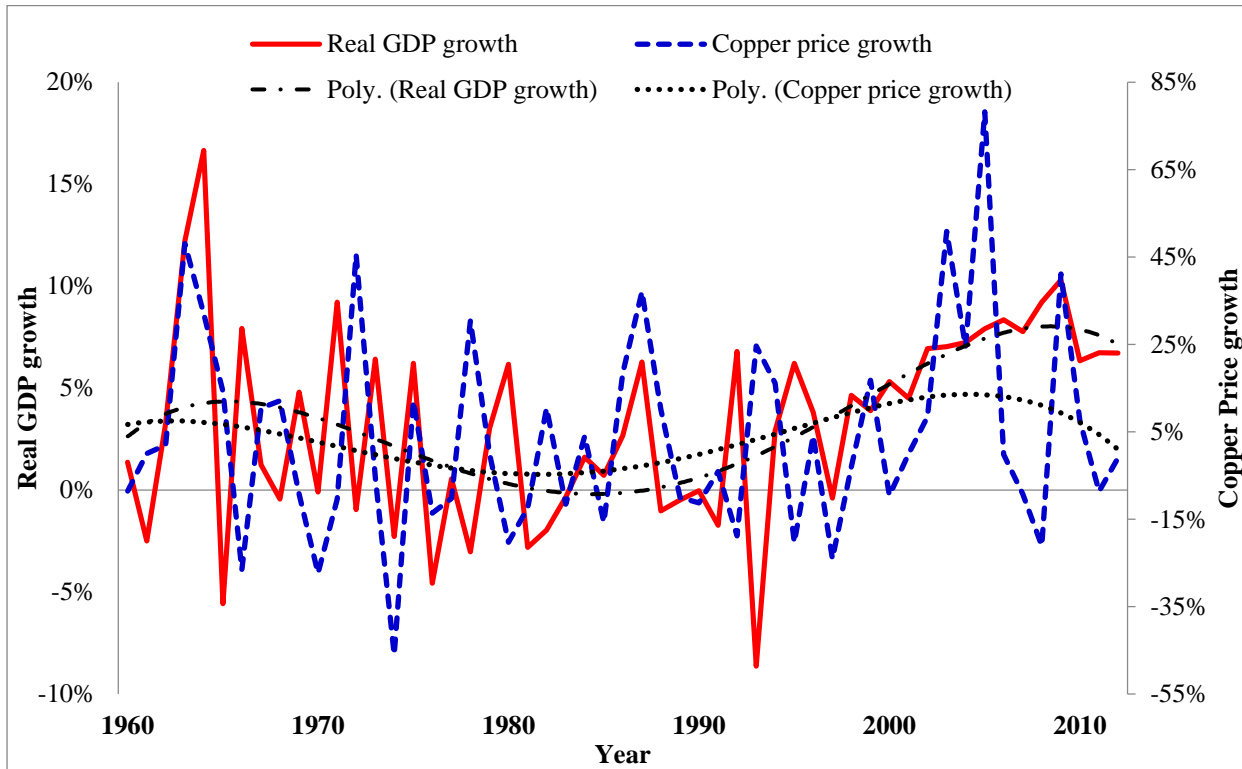


Source: World Bank (2015c)

The industrial value-added portion is the largest contributor to real GDP, averaging 43.1% of real GDP p.a. This is followed by the services sector, with an average of 41.3% of real GDP p.a. and 15.6% of real GDP p.a. from the agricultural sector (World Bank 2015c). During the period 1965-1970, industry’s value-added contribution averaged 61.3% of real GDP: however this trend declined over time by almost half, averaging 31.8% of real GDP p.a. during the period 2001-2013. The services sector, on the other hand, improved significantly, averaging 25.6% of real GDP during the period 1965-1970 to an average of 54.5% of real GDP during the period 2001-2013 (World Bank 2015c). The contribution of the agricultural sector has remained fairly constant, averaging 15.6% of real GDP (World Bank 2015c).

Copper mining is the backbone of the Zambian economy. Figure 3.5 illustrates the relationship between real GDP growth and concomitant growth in real copper prices in Zambia during the period 1960-2013.

Figure 3.5: Trends in Real GDP and Growth in Real Copper Prices in Zambia: 1960-2013



Source: World Bank (2015a, 2015c)

The primary vertical axis represents a scale for real GDP growth; while the secondary vertical axis is a scale for the growth in copper prices. During the period 1960-2013, copper prices grew at an average rate of 3.8% p.a. Between 1960 and 1980, the growth in copper prices averaged 2.5% p.a.; while real GDP grew at an average rate of 2.7% p.a. During the period 1981-2000, copper prices declined at an average rate of 0.5% p.a. At the same time, real GDP growth also declined, averaging 1.4% p.a. During the period 2001-2013, copper prices improved significantly, averaging 12.4% p.a. (World Bank 2015a). The real GDP also improved considerably, averaging 7.3% p.a. during this period (World Bank 2015c). Using the 72-rule, the Zambian economy with an average growth rate of 3.3% p.a. doubles its real GDP every 22 years: however, at the same time, the population doubles every 24 years. The Zambian economy could, therefore, be regarded as an economy that has grown extensively – largely driven by the increased production of copper, rather than any increase in productivity.

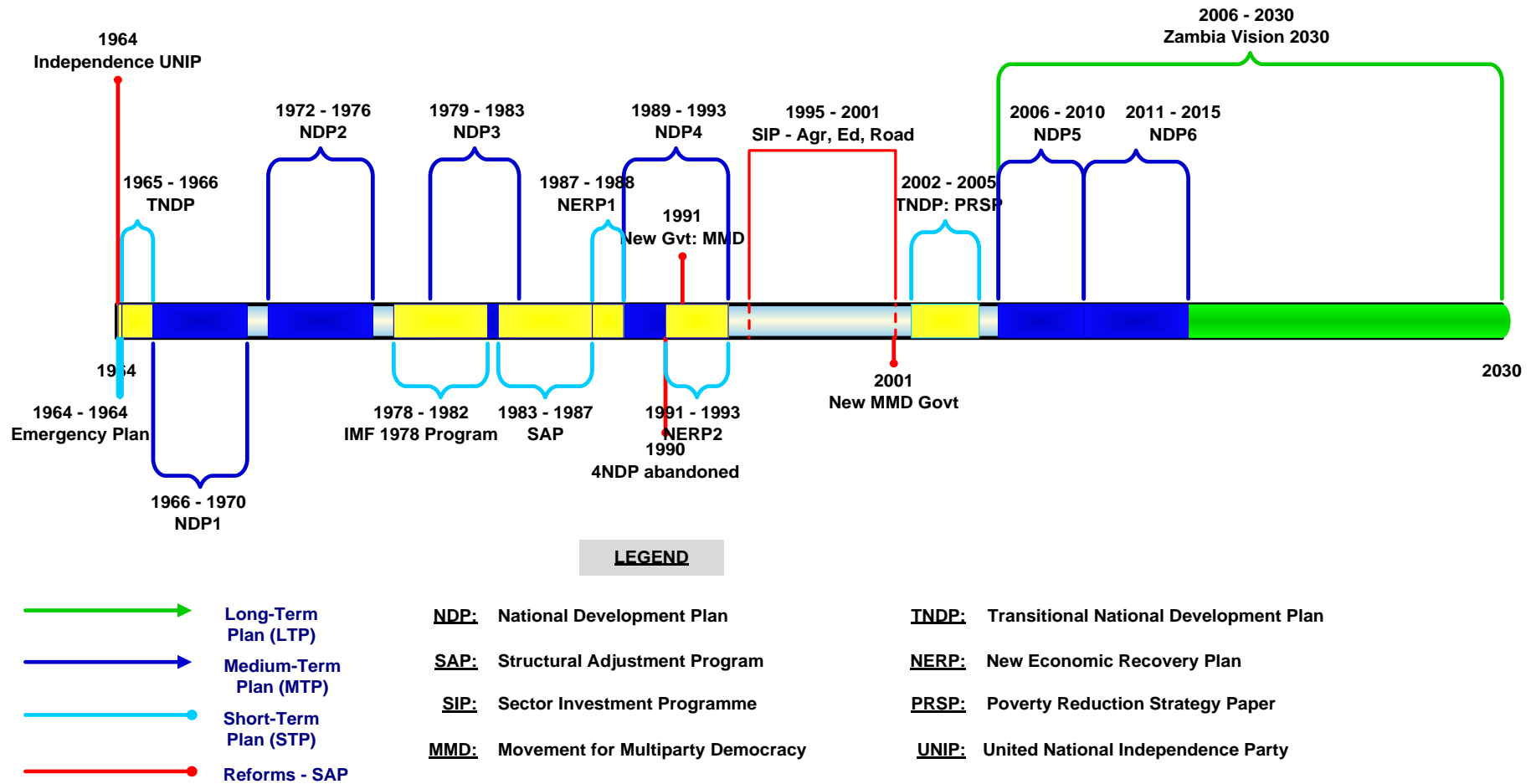
3.3 Economic Development Policies and Reforms in Zambia

Since Zambia attained its independence in October 1964, the government of Zambia has been guided by medium-term national development plans and these have been supported by reforms in the form of short-term or transitional national development plans. Since 1964, the government of Zambia has produced six (6) five-year term National Development Plans namely: First National Development Plan (NDP1): 1966-1970; Second National Development Plan (NDP2): 1972-1976; Third National Development Plan (NDP3): 1979-1983; Fourth National Development Plan (NDP4): 1989-1993; Fifth National Development Plan (NDP5): 2006-2010; and the Sixth National Development Plan (NDP6): 2011-2015 (Republic of Zambia, 1966, 1972, 1979, 1989, 2006b, 2011).

The national development plans were also supported by Transitional National Development Plans (TNDP) that were implemented for a period of fewer than three years. The TNDPs implemented since 1964 included the following: The Emergency Development Plan (Republic of Zambia 1964); The TNDP 1965-1966; the IMF 1978 Programme; the Structural Adjustment Programme: 1983-1987; The TNDP: first New Economic Recovery Programme: 1987-1988; the TNDP: second New Economic Recovery Programme: 1991-1993; and the TNDP: Poverty Reduction Strategy Paper (PRSP): 2002-2005 (Republic of Zambia 1964, 1965, 2002; World Bank 1993). During the periods 1995-2001, the government of Zambia abandoned the formulation of National Development Plans and focused on Sector Investment Programmes targeting the agricultural, education and road sectors. However in 2006, the government of Zambia moved away from medium-term planning to long-term development planning where the first long-term development plan – the Vision 2030 – was launched (Republic of Zambia 2006a). The medium-term strategies thereafter continued, driven by the Vision 2030.

Figure 3.6 provides a chronology or history of development policies and reforms that were implemented and of the political and economic events in Zambia covering the period 1964-2030.

Figure 3.6: Zambia Development Plans, Reforms and Political Events: 1964-2030



Source: the chronology of events was combined by the author using the six National Development Plans, transitional plans, and political milestones experienced in Zambia as follows: Medium-Term Plans: First National Development Plan (NDP1): 1966-1970; Second National Development Plan (NDP2): 1972-1976; Third National Development Plan (NDP3): 1979-1983; Fourth National Development Plan (NDP4): 1989-1993; Fifth National Development Plan (NDP5): 2006-2010; and the Six National Development Plan (NDP6): 2011-2015. Short-term plans: the Emergency Plan 1964-1965; the TNDP 1965-1966; the IMF 1978 programme; the Structural Adjustment Programme: 1983-1987; The TNDP: first New Economic Recovery Programme: 1987-1988; the TNDP: second New Economic Recovery Programme: 1991-1993; and the TNDP: Poverty Reduction Strategy Paper (PRSP): 2002-2005. Long-Term Plan: the Zambia Vision 2030.

In 1924, Zambia (then called Northern Rhodesia) was under the colonial rule of the British government. The mining of copper became the modern sector of the economy driven largely by transnational interests led by companies from Britain, North America and South Africa. In order to ensure the supply of cheap labour to mining industries the traditional sectors such as agricultural, social (education and health) and other economic sectors (e.g., manufacturing) were left underdeveloped (Andersson *et al.* 2000). When Zambia attained independence in October 1964, the Zambian authorities inherited a dual economy. The first economic sector was the mining sector which was driven by modern technological advances and capital-intensive equipment used to mine copper (Republic of Zambia 1967). The copper mining industry has been the mainstay of the Zambian economy contributing approximately 75% of all foreign exchange earnings and is the main contributor to government revenues. The second economic sector that the government inherited was based on agriculture and comprised of a mix of commercial agriculture and smallholder agriculture. The latter is largely labour-intensive using mostly traditional technologies (Republic of Zambia 2013).

Both commercial and smallholder agriculture contributes about 15% of real GDP. Manufacturing contributes about 10% of GDP and makes a similar contribution towards exports (Republic of Zambia 2013). All development plans since independence have, therefore, focused on improving copper mining and on traditional sectors such as agriculture which employ about 85% of the labour force (Republic of Zambia 2013).

At independence, the dual economy that the government of Zambia inherited was highly capital intensive and could not absorb the available employment that the economy desperately needed in order to enable more equitable distribution of wealth among Zambians. Smallholder agriculture, which was expected to be the solution, was underdeveloped due to the agricultural policies that the colonial government orchestrated to promote commercial agriculture (Auty 1991). This led to a deficit in human capital development: where in 1965 it was recorded that only 100 Zambians had university degrees and about a mere 7,500 had secondary school qualifications. To help alleviate this problem of human capital deficit, over 30,000 expatriates had held professional, technical, administrative and managerial positions in government and the private sector (Republic of Zambia 1967; World Bank 1977b). The major problems that the government of Zambia faced at independence, therefore, revolved around the shortage of manpower and the need to address the problem of a segregated education system that favoured the provision of good quality education to expatriates and not to the local populace (Andersson *et al.* 2000). In 1974 the adult

literacy rate was 43% and the mining dependence had influenced the migration of labour from rural to urban communities. During this period, about 35% of Zambians lived in urban areas compared to 20% in 1963 (World Bank 1977a). The following sections (3.3.1 - 3.3.10) discuss the national policies that were implemented during the study period as illustrated in figure 3.6.

3.3.1 The Emergency Development Plan of 1964-1965

At independence, the government of Zambia implemented the Emergency Development Plan whose main objective was to increase the number of educational facilities needed to support a local education system which had been neglected during the Colonial rule (Republic of Zambia 1967). At independence, about 378,417 pupils were enrolled in primary schools and only 13,853 students in secondary schools against a population of 3.1 million Zambians (World Bank 2015c). The distribution of the education budget focused more on upgrading schools in urban areas while the development of schools in rural areas was left in the hands of rural communities through self-help projects that provided labour to build the schools. Government's assistance was mainly through the provision of assorted building materials such as cement and iron sheets, together with appointment of teachers and provision of teaching materials and school related furniture (World Bank 1977b). The Emergency Development Plan, therefore, established a framework for the development and implementation of the other National Development Plans by the government of Zambia.

3.3.2 The Transitional National Development Plan of 1965-1966

The developments in the education system continued to be implemented in the Transitional National Development Plan that ran through the period 1965-1966. The aim of the government during this period of transition was to establish appropriate institutions that would effectively plan and implement for educational needs. Within this period, the government of Zambia introduced an Education Planning Unit within the Ministry of Education whose main responsibility was to continue increasing education facilities at Primary and Secondary levels throughout the country (Republic of Zambia 1965). At tertiary level, the University of Zambia was established in 1966 with an initial enrolment of 312 students. A secondary teacher training institution was also established with an initial enrolment of 56 students (Republic of Zambia 1967). Primary school enrolment had increased to 473,432 and secondary school enrolment to 16,843 students. However, the education infrastructure provided especially in rural areas was still inadequate amidst growing demand for education provision (World Bank 1977b).

3.3.3 The First National Development Plan of 1966-1970

A more comprehensive and development oriented National Development Plan (NDP) was launched in July 1966 to carry out an ambitious plan that was based on five objectives, which are to: increase diversification efforts in agriculture and manufacturing in order to reduce mineral dependence of copper; reduce disparities between urban and rural areas; create more jobs and job opportunities for Zambians by increasing opportunities in education so as to reduce Zambia's dependence on expatriates; expand housing, health and social welfare services; and develop the transportation and communication network (Republic of Zambia 1967).

The First NDP had a number of goals to achieve. The planned increase in real GDP aimed to achieve an annual growth rate of 11.7% p.a. during the period 1965-1970. Overall, the economy achieved an annual growth rate of 11.0% p.a. during the same period. Second, the NDP1 aimed at increasing the share of investment at a rate of 20% p.a. Instead the actual rate of investment growth achieved averaged 21.7% p.a. during the same period. Third, the manufacturing sector grew considerably establishing new industries and increasing manufacturing output by 17% p.a. during the period 1965-1969 (World Bank 2015c). However, in other quarters such as agriculture the performance was not impressive. During the NDP1 period, the agricultural sector grew at an annual average rate of 3.3% p.a. against a planned target of 9.0% p.a. (Republic of Zambia 1971, pp. 2-3). The mining sector enjoyed favourable copper prices that increased from an average of US\$3,261 p.a. during the period 1960-1964 to an average of US\$6,303 p.a. during the period 1965-1970 (World Bank 2015a). This encouraged an increased production of copper and during the period 1966-1970, the Zambian economy recorded a trade surplus averaging 37.4% p.a. (Republic of Zambia 1971, p. 7). The education system also expanded considerably at all levels, registering a growth of 48.2% at primary level, 128% at secondary level, and 279% at tertiary level between 1966 and 1970 (Republic of Zambia 1971, pp. 24-26).

The implementation of such an ambitious programme was also supported by a nationalization strategy that sought to increase state ownership with an equity stake of 51% on all foreign privately owned enterprises. The nationalization concept was driven by the Mulungushi Reforms of April 1968 that were guided by the ideology of self-reliance where the government had nationalised all mining companies as well as a number of foreign-owned firms in manufacturing, retail and wholesale and transport (Republic of Zambia 1971; Saasa 1987). To fulfil such objectives, the government of Zambia also implemented an industrial strategy that aimed at establishing import-substitution companies in areas such as agro-processing, livestock products

and textiles. It is estimated that during the period, 1965-1972, about 55% of growth in manufacturing was a result of establishing import-substitution companies (Gulhati and Sekhar 1982). This led to a reduction in government revenue and subsequently reduction in government expenditure on education provided unsatisfactory especially with the advent of universal primary education bringing about an increased demand for education facilities. By the end of the implementation of the First NDP, a number of projects that still required implementation overflowed to the Second National Development Plan (Republic of Zambia 1971).

3.3.4 The Second National Development Plan of 1972-1976

The Second NDP was launched in January 1972 and continued the task of implementing the objectives set out in the First NDP of 1966-1970. The target during this period was to achieve an annual real GDP growth rate of 6.8% p.a.; an increase in investment share at a rate of 6.4% p.a.; a population growth rate of 2.9% p.a.; and an increase in exports estimated at 15.6% p.a. The NDP2 also emphasized the need to diversify the economy with more emphasis on increasing the role of manufacturing in the economy: the target therefore was to increase its contribution to real GDP from 9.4% in 1971 to 13.0% in 1976 (Republic of Zambia 1971). In addition, increasing human resources allocations was equally important as there was a shortage of trained personnel in all sectors of the economy (Republic of Zambia 1971). However, the implementation of the Plan was disrupted in 1974 when the Zambian economy faced two external price shocks that resulted in a sharp decline in Zambia's terms of trade. The price of crude oil rose sharply by 220% from US\$9 per barrel in 1973 to US\$29 per barrel in 1974. In addition, copper prices fell by almost half from US\$5,427 per metric ton in 1974 to US\$2,931 per metric ton in 1975 (World Bank 2015a). These two external price shocks exposed the fragility of the Zambian economy especially towards its mineral dependence on copper (Auty 1991). The poor performance of the economy affected the implementation of the Second NDP thus resulting in a continued decline of government allocations towards social services as a result of the twin price shocks.

The performance of the Zambian economy, however, was not impressive during the period 1972-1976. Real GDP growth averaged 3.7% p.a. against a target of 6.8% p.a. However, the growth of the investment share in real GDP grew at an average rate of 7.1% p.a. versus a growth target of 6.4% p.a., while the growth of exports averaged 5.9% p.a. against a target of 15.6% p.a., and population grew at an average rate of 3.4% p.a. against a target of 2.9%. The mining sector continued to show its dominance while the manufacturing sector's contribution was below target going as far as 12.0% in 1974 (World Bank 2015c). In the education sector, the Second NDP had

two main objectives: to provide sufficient expansion of primary schools in line with population growth; and to provide sufficient secondary schools that would absorb at least 80% of primary school pupils (Republic of Zambia 1972). By 1974, primary school enrolment had risen to 858,191 pupils while secondary school enrolment increased to 70,812 students (UNESCO, 2015).

This affected the expansion of schools and to alleviate the problem created by inadequate school infrastructure, the government of Zambia introduced double-shifts. This created a significant burden to already disgruntled teachers, thereby reducing the quality of education in public schools (Dall 1989). The problem was further exacerbated when the government of Zambia introduced triple four-hour shifts in order to meet the growing educational demand during the extension period of the Second NDP, 1976-1979. By 1979, primary school enrolment had increased to 996,597 pupils and secondary school enrolment to 97,373 students (World Bank 2015c). Overall, such developments compromised the quality of education provided to the Zambian people thereby resulting in low literacy levels and a new labour force who could barely read and write graduating from secondary schools (Dall 1989).

3.3.5 The Third National Development Plan of 1979-1983

Towards the end of the 1970s, the Zambian economy faced an economic crisis as a result of a global recession that affected the recovery of copper prices. This had a huge impact on the country's foreign exchange reserves despite the mineral boom during the period 1964-1974. However, it was the fall in copper prices from 1975 onwards that had a really deleterious impact on domestic economic growth (Republic of Zambia 1979). As a result between 1977 and 1978, the Zambian economy shrank at a rate of -2.0% p.a. (World Bank 2015c). This forced the Zambian authorities to tighten its fiscal policy by reducing recurrent expenditures and subsidies, and tightening monetary policy through devaluation of the local currency at a rate of 7.5% p.a. during the period 1976-1978 (World Bank 2015c). The economic crisis, therefore, compelled the Zambian authorities to seek assistance from bilateral and multilateral institutions such as the World Bank and IMF (Republic of Zambia 1979).

The Third NDP (NDP3), also recognised the partial achievement of goals during the past NDPs. The objectives put forth in the NDP3 were, therefore, a continuation of the previous NDPs: this included a significant role for the public sector in the development process; economic diversification to reduce dependency on copper, thereby targeting industry, agriculture and other sectors of the economy; employment generation and adoption of labour-intensive technologies;

rural development; and improved education and training (Republic of Zambia 1979). Based on these objectives, goals included the following: the economy was expected to grow at an annual average rate of 4.8% p.a. in real terms; an investment share average of 29% of real GDP was to be achieved; the contribution of the manufacturing sector was to increase to 19.7% of real GDP by 1983; and a reduction in the government consumption share in real GDP to 20% by 1983 was required, among others (Republic of Zambia 1979, p. 35-36). However, the continued economic problems that the economy faced were exacerbated by the 1979 oil shock that increased prices by 115% and continuing declines in copper prices since 1974 meant a constant decline in government revenues to support investments in social sectors (Republic of Zambia 1979; World Bank 2015a).

The performance of the Zambian economy during this period was therefore dismal: during the 1979-1983 period, it grew at an annual average rate of 0.3% p.a. against a target of 4.8% in real terms (World Bank 2015c). The investment share in real GDP fell sharply by almost half its value in 1978, declining at an annual average rate of -4.0% p.a. during the period 1979-1983. On average, investment share averaged 17.5% of real GDP against a target of 29% (World Bank 2015c). In the monetary sector, inflation continued to rise, reaching an average of 20% in 1980. The exchange rate continued to be on a fixed exchange rate regime and devalued occasionally which increased from ZK0.79/US\$ in 1979 to ZK1.26/US\$ in 1983, depreciating at an annual average rate of 10.2% p.a. (World Bank 2015c). A new fixed exchange rate regime was introduced in 1983 where the Zambian Kwacha was allowed to devalue based on a crawling peg system of exchange rate determination. The new system allowed the Zambian Kwacha to be devalued at an annual rate of 12% in 1983 and later increased to 30% p.a. in 1984 (Aron and Elbadawi 1992). In fact, Zambia experienced negative growth rates in 1979 (-3.0%), 1982 (-2.8%) and 1983 (-2.0%) driven by declining copper prices that fell at an average rate of -5.6% p.a. during the period 1980-1983. GDP per capita also fell at a cumulative rate of -14.5%, declining at an annual average rate of -2.9% p.a. during the 1979-1983 period (World Bank 2015a, 2015c).

The formulation and implementation of a series of National Development Plans was halted in 1983 when the government of Zambia sought for foreign assistance from both bilateral and multilateral institutions. In 1983, the government of Zambia signed a comprehensive structural adjustment programme with the International Monetary Fund that ran until 1987 when the government abandoned the programme. This was replaced by the New Economic Recovery Programme that was implemented during the period 1987-1988.

3.3.6 *The Fourth National Development Plan of 1989-1993*

In 1989, the government developed the Fourth National Development Plan to cover the period 1989-1993 but this was abandoned yet again in 1990 in order to revive the IMF programme (Andersson *et al.* 2000). Multiparty elections were held in 1991 and a new government led by the Movement for Multiparty Democracy was ushered into power. As one of the principles aimed at recovery of the economy, the new government proceeded with the implementation of market-oriented reforms where the Fourth National Development Plan was replaced with the Second New Economic Recovery Programme financed by the World Bank and implemented during the period 1991-1993 (World Bank 1993).

In this programme, the main macroeconomic targets aimed to: achieve an annual real GDP growth rate of 3.0% p.a.; reduce the rate of inflation to at least 10% or less by 1993; and increase the contribution of non-traditional exports by 20% and then further increase them annually by 10% p.a. (World Bank 1993). The performance of the economy, however, did not improve and continued to worsen during the implementation period of the Fourth NDP and the recovery programme. During the period 1989-1993, the economy grew at an annual average rate of only 0.7% p.a.: hyperinflation ensued, averaging 135.4% p.a. which resulted in a nominal exchange rate growth that averaged 125.8% p.a. (World Bank 2015c).

The period 1994-2001 was marked by yet another period without any comprehensive development strategies being implemented. During this period, the government of Zambia continued to carry out a number of macroeconomic reforms and moved away from national development plans to sector-specific investment programmes targeting the agricultural, education and transport sectors (African Development Bank 1996). The aim of such an approach was to reduce the transaction costs that came as a result of having parallel management structures established through donor-supported projects. Furthermore, past government plans had not allocated significant resources towards these sectors and improving coordination amongst the different donor partners supporting these sectors was considered to be of paramount importance. Some of the notable sector investment programmes that were implemented during this period include the Agriculture Sector Investment Programme of 1995; the Roads Sector Investment Programme of 1997; and the Basic Education Sub-Sector Investment Programme of 1999-2002 (World Bank 2004b).

3.3.7 The Poverty Reduction Strategy Paper of 2002-2005

In 2000, the Zambian authorities embarked on a Transitional National Development Plan that was aimed at reducing poverty in support of the new Millennium Development Goals. Dubbed the Poverty Reduction Strategy Paper of 2002-2005, the central theme of this plan was to embrace the concept of broad-based economic growth by ensuring income redistribution. In order for this objective to be achieved, economic diversification away from mineral dependence was crucial: hence the agriculture, industry, tourism, education, health, water and sanitation, transport and communication, energy and cross-cutting issues (gender, HIV and AIDS and the environment) sectors were all to be targeted (Republic of Zambia 2002). The key macroeconomic variables that were targeted to help the government of Zambia achieve its development objectives included achieving an annual GDP growth target of 4.2% p.a. during the period 2002-2005; increasing investments in new sectors and strengthening the role of the private sector in the economy; and also reducing inflation from an average of 21.7% in 2001 to an average of 4.8% by 2005. This also meant achieving stability in the foreign exchange market as well as reducing interest rates which were key to increasing investment opportunities (Republic of Zambia 2002).

The main tools that were used by the Poverty Reduction Strategy Paper included the following: promoting investment, both domestic and foreign; promoting the productivity of the poor and their assets; creating favourable conditions for the poor to benefit from the external sector and from international trade; ensuring sound fiscal, monetary and financial policies; and introducing structural reforms (Republic of Zambia 2002). The overall performance of the economy during the implementation of the PRSP was satisfactory as the economy grew at an annual average rate of 6.4% p.a. thereby surpassing the projected growth rate of 4.2% p.a. made at the initiation of the plan. Investment increased considerably, growing at an average rate of 21.5% p.a. during the period 2002-2005 and averaging 37% of real GDP in 2004 (World Bank 2015c). However, inflation still remained high, averaging 20.0% p.a., but showing signs of declining from an average of 22.2% in 2002 to 18.3% in 2005 (World Bank 2015c).

3.3.8 The Zambia Vision of 2006-2030

For the first time in the history of Zambia, a long-term development perspective was launched in December 2006. The development of the vision was done through a participatory consultative process that covered all provinces and districts in Zambia. The goal of this Vision plan is to transform Zambia from a low-income to a middle-income economy by the year 2030. In order to achieve this goal, the economy was projected to grow at an average rate of 6% p.a. during the

period 2006-2010; 8% p.a. during the 2011-2015 period; 9% p.a. during the 2016-2020 period; and 10% p.a. during the 2021-2030 period (Republic of Zambia 2006a). The key macroeconomic drivers to facilitate this process include the accumulation of physical capital by creating a conducive environment for both domestic and foreign direct investments; the stabilizing of the economy through stable inflation averaging 5% p.a.; maintenance of low levels of interest rates and exchange rate variations which are prerequisites for investment; the ensuring of equitable investment opportunities that would contribute to favourable redistribution of income and thereby reduce national poverty to less than 20% of the population; and increasing the development of human capital through education and skills development and improved healthcare (Republic of Zambia 2006a).

The Vision 2030's success appears to be well on track. The performance recorded by the medium-term strategies implemented thereafter have recorded considerable success where the economy grew at an average rate of 8.7% p.a. during the period of the Fifth NDP, 2006-2010, and an average of 6.6% p.a. during the first three years of the Sixth NDP, 2011-2013. Overall, the Zambian economy has grown at an average rate of 7.9% p.a. during the period 2006-2013: this had exceeded the average growth rate forecasted in the Vision 2030 of an average of 7% p.a. for the period 2006-2015 (Republic of Zambia 2006a; World Bank 2015c).

3.3.9 The Fifth National Development Plan of 2006-2010

The Fifth NDP was launched in December 2006 at the same time as the Vision 2030 plan. The Fifth NDP's (NDP5) objective was to promote inclusive broad-based economic growth with a focus on redistribution, job creation, infrastructure and human capital development. The development and expansion of the agricultural sector was isolated as the main engine of income expansion in order to improve the livelihoods of most Zambians. Other equally important sectors that were identified included mining, tourism, education and skills development, manufacturing, commerce and trade, science and technology, and energy and health (Republic of Zambia 2006b).

At the macroeconomic level, the NDP5 focused on five key macroeconomic policies that included accelerating pro-poor economic growth with a target rate of 7.0% p.a.; reducing inflation to a single digit; ensuring financial and exchange rate stability; sustaining a viable balance of payments position; and keeping debt sustainability and management to below 10% of GDP (Republic of Zambia 2006b, p. 26). Furthermore, the NDP5 also singled out the continued shortage of skills and the need to promote quality-based human capital development.

The performance of the economy during the implementation of the Fifth NDP was satisfactorily achieved – even beyond the projected annual average real GDP growth rate of 6% p.a. set out in the Vision 2030. The actual recorded growth rate during this period was an annual average of 6.4% p.a. against a target of 7.0% p.a. However, the inflation rate target was not achieved as the period recorded an average rate of 10.8% p.a. which was above the target of 5% set out in the Vision 2030 (World Bank 2015c). The exchange rate, on the other hand, depreciated at an average rate of 3% p.a. although in some years such as 2006, 2008 and 2010, it appreciated against the dollar (World Bank 2015c). Though per capita income at 2005 constant prices increased from US\$638 in 2006 to US\$731 in 2010, the national poverty headcount recorded an average of 62% of Zambians living below the poverty line in 2010 (World Bank 2015c). The situation was especially severe in rural areas where about 77% of the rural population lived below the poverty line against 27.5% in the urban areas (Republic of Zambia 2011).

3.3.10 The Sixth National Development Plan of 2011-2015

Based on the successes and failures of the Fifth NDP, the government of Zambia launched the sixth NDP in January 2011 to cover the period 2011-2015. Realizing the problems of achieving equitable income redistribution that had not been achieved during the previous NDPs, the goal of the sixth NDP (NDP6) targeted combining both sustainable economic growth and poverty reduction. This was expected to be achieved through increased investment in infrastructure, human capital development, economic diversification and promotion of rural development (Republic of Zambia 2011). The NDP6 also aimed to achieve an economic growth target of 6-7% p.a.; an inflation level of 5% by 2015; exchange rate stability; and maintaining of an overall fiscal deficit of less than 27% of GDP by 2015.

The economic growth performance during the first three years of implementing this plan has been satisfactory and in line with the aspirations set out in the Vision 2030 of achieving an average growth rate of 8% p.a.; and in the NDP6 of achieving an average growth rate of 6-7% p.a. During the period 2011-2013, the Zambian economy registered an average growth rate of 6.8% p.a. and the inflation rate for the first time registered a single-digit inflation rate at an average rate of 6.7% p.a. during the same period (World Bank 2015c). The exchange rate continued to depreciate against the dollar, however, at an average rate of 4% p.a. while at the same time appreciating against other currencies within the Southern Africa region (World Bank 2015c).

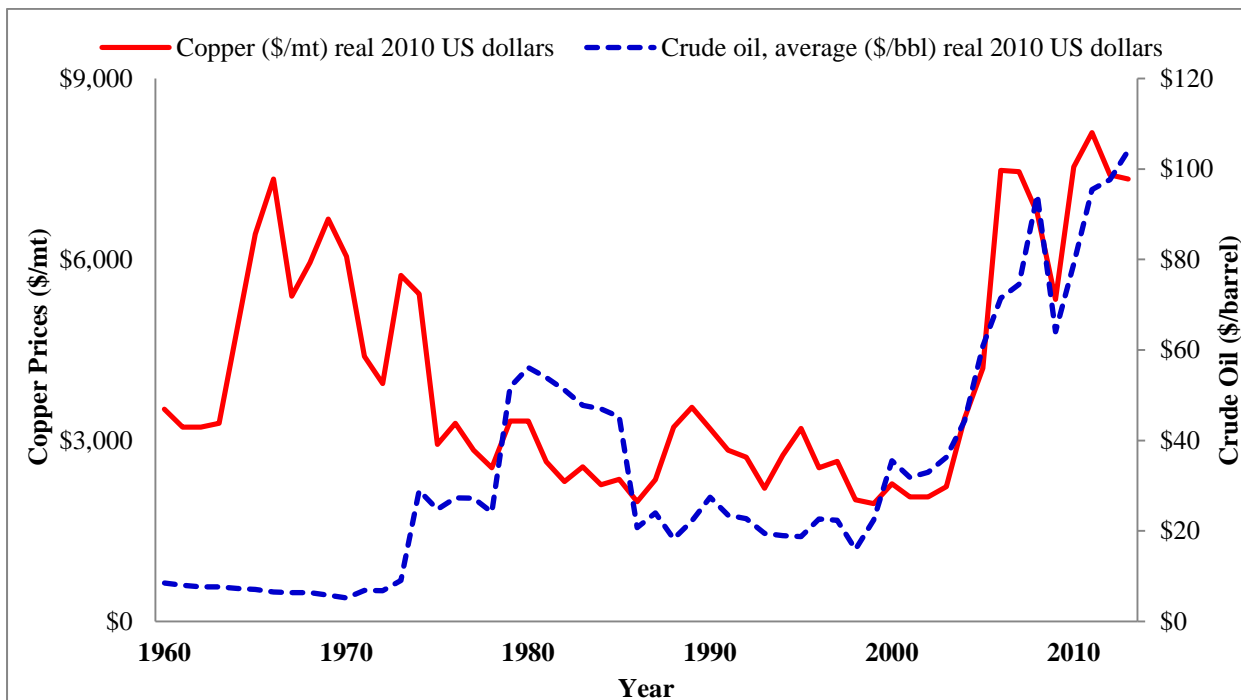
3.4 Economic Reforms in Zambia

The institutional and economic reforms that the Zambian economy has undergone since independence are described in this section and are based on two states, namely: a command economy that was driven by administrative and economic controls; and a market-oriented economy where the economy was liberalised in order to minimise or eliminate any controls on economic performance and macroeconomic drivers of economic growth. Sections 3.4.1 and 3.4.2 discuss the performance of the Zambian economy and identify key macroeconomic drivers of economic growth accompanying these two economic systems.

3.4.1 The Command Economy: 1964-1991

The economy of Zambia, during the period 1964-1991, was driven by the mining sector, led by copper production. Figure 3.7 illustrates the movement of real copper and crude oil prices during the period 1960-2013.

Figure 3.7: World Copper and Crude Oil Price Movements: 1960-2013



Source: World Bank (2015a)

The left hand side vertical axis presents copper prices in metric tonnes and the right hand side vertical axis present crude oil prices per barrel. During the period 1964-1974, the Zambian economy benefited from favourable international copper prices that averaged US\$5,653 per

metric ton p.a. growing at an average rate of 7.6% p.a. together with relatively low crude oil prices that averaged US\$6.71 p.a. during the same period. The economy also experienced economic growth rates that averaged 4.7% p.a., a real GDP per capita averaging US\$989 and an investment share level that averaged 29.3% of real GDP (World Bank 2015a, 2015c).

In April 1968, based on socialist principles and the philosophy of humanism which aimed to increase Zambian participation in the economy, the government of Zambia announced the nationalization of major companies and the associated industries which included textiles, chemicals, construction, and manufacturing: in addition rural industries such as canning and cotton ginnery were also included. In 1969, new reforms were introduced covering the mining sector with government owning majority shares of up to 51% in all copper mines. In 1970, the nationalization reforms were extended into retail and trading and in 1972 the government declared that only genuine Zambian organisations and individuals could only participate in these sectors (Republic of Zambia 1971). Furthermore, any businesses that were foreign-owned were limited to prescribed designated areas in ten major urban centres (Republic of Zambia 1971, p. 28). In 1971, the two main foreign mining firms; the Anglo-American Corporation and the Rhodesia Selection Trust, were publicly owned with a majority share of 51%, thereby creating two parastatals – the Nchanga Consolidated Copper Mines and Roan Consolidated Mines, respectively (Republic of Zambia 1971). In 1982, these two mining companies were consolidated and became to be known as the Zambia Consolidated Copper Mines (Auty 1991). This nationalization concept also trickled down to other sectors of the economy such as manufacturing, transportation, retail and wholesale, distribution and to a lesser extent, financial institutions (Saasa 1987).

The 1968, Mulungushi reforms that the government of Zambia instituted were, however, met by a number of problems, especially in the 1970s. Successful economic progress was halted in 1974 when the Zambian economy was hit by two international shocks. The first shock resulted from falling copper prices during the 1974-1975 period where copper prices fell by half at 51.4% in just two years: between 1974 and 1986 they had fallen cumulatively by a total of 78.3%. The second shock resulted from two crude oil price shocks when in 1973 the crude oil price per barrel rose by 221% followed by another shock in 1979 when the price rose by 115% (World Bank 2015a). These copper and oil price shocks hit the Zambian economy severely: consequently between 1974 and 1991 the economy grew at an average rate of 1.0% p.a. and real GDP per capita almost halved from US\$1,070 per capita in 1965 (middle-income economy) to US\$651 per capita in 1991 (low-income economy). The Mulungushi reforms also contributed significantly to the

downward fall in gross domestic savings from 50.9% of real GDP in 1969 to an all-time low of 0.3% of real GDP in 1992 (World Bank 2015c).

The economic performance during the period 1964-1974 had also come with affluence which increased Zambia's trade deficit to an average of -8.5% of real GDP p.a. between 1966 and 1974 (Coclough, 1988). In order to solve the trade deficit problem, the Zambian authorities introduced a system of import licensing and foreign exchange allocation in 1975 (Auty 1991). The new trade policy helped reduce the trade deficit from -6.0% of GDP in 1975 to a trade surplus for the 1976-1991 period averaging 4.2% of real GDP p.a., thereby helping to make Zambia a net exporter (World Bank 2015c). However, this also contributed to exchange rate misalignments as the exchange rate was managed through a number of devaluations introduced in 1976. The exchange rate controls thus led to the creation of parallel markets for foreign exchange as a result of the arbitrage (Aron and Elbadawi 1992).

The falling copper prices reduced the contribution of copper towards government revenues thereby leading to large fiscal deficits. The mining sectors' contribution towards government revenues fell from 71% in 1965 to 13% in 1975. Though efforts were made by the government to increase taxes, the government revenues continued to dwindle which increased government borrowing thereby increasing the public debt (Andersson *et al.* 2000). Such avenues of financing the fiscal deficit were inflationary and this led to an increase in inflation from an average of 8% in 1975 to an average of 16% p.a. during the period 1976-1980 (Andersson *et al.* 2000). To contain the effect of such inflationary pressures, the Zambian authorities engaged a number of price controls and introduced consumer and producer subsidies on a number of basic commodities throughout the 1970s which increased the government's dependence on foreign aid (Blitzer 1979). In 1980, 25% of the government budget was allocated to the provision of subsidies: subventions to state-owned enterprises increased and in total government subsidies and subventions accounted for 80% of total government revenues (Andersson *et al.* 2000).

The structural problems that the Zambian economy faced during the 1970s led the government to seek financial assistance from the International Monetary Fund in 1978. Dubbed the Action Programme (AP), the agreement aimed at providing budgetary support to assist the government in reducing the balance of payment deficit in order to control inflation. In 1983, the AP was expanded to include a comprehensive structural adjustment programme which came in with conditionalities where the government was expected to introduce interventions aimed at stabilizing the economy (Ndulo and Sakala 1987). These included abolishing price controls,

devaluation of the local currency, eliminating government control on interest rates, and terminating government expenditure on subsidies as well as subventions to parastatals and increasing producer prices in order to boost agriculture production in order to reduce the dependence on copper (Ndulo and Sakala 1987).

The massive switch to accommodate these institutional reforms brought economic hardships during the 1980s. The removal of food subsidies led to massive increases in the prices of basic foodstuffs. This was the result of government devaluations that averaged 51.3% p.a. during the 1981-1990 period (World Bank 2015c). Copper prices, on the other hand, continued to decline: during the period 1980-1986 they dropped by 46% (World Bank 2015a). Inflation increased considerably at an annual average of 49.6% p.a. during the period 1981-1990. Gross domestic savings declined considerably from 19.3% of real GDP in 1980 to 3.8% of real GDP in 1989 (World Bank 2015c).

The transition from a command economy driven by administrative controls to one driven by market forces was problematic as most influential members of the ruling government still wanted to control the economy (Andersson and Kayizzi-Mugerwa 1989). This eventually led the government to abandon the IMF supported structural adjustment programme in May 1987 and a new programme called the New Economic Recovery Programme (NERP) was introduced, running from 1987 to 1988. The NERP was a complete departure from the structural adjustment reforms that had aimed a return to the principles of a command economy driven by the Mulungushi reforms (Andersson *et al.* 2000). This was also motivated by a temporary rise in copper prices experienced during the period 1987-1989 which gave the government the confidence to anticipate economic recovery. The 1987 NERP, therefore, advocated a return to the old policies, such as a fixed exchange rate regime, price controls on strategic commodities, fixed interest rates and a debt service ceiling of not more than 10% of total export earnings (Andersson *et al.* 2000).

Unfortunately, the NERP was not successful as major bilateral and multilateral donors had frozen their development assistance (Auty 1991). The depreciation of the exchange rate averaged 25.4% p.a. and inflation continued to rise significantly averaging 74% p.a. during the period 1987-1989 (World Bank 2015c). The government, therefore, had no choice but to shift its policy stance and therefore reintroduced the structural adjustment programme but with tighter fiscal and monetary policies. The privatisation of parastatals was introduced in order to stabilise the economy (Andersson *et al.* 2000). The new programme, however, was short-lived as the IMF programme

was yet again abandoned in 1991 as the government of Zambia did not honour its pledges to eliminate maize and fertiliser subsidies, privatise the mining sector and control the growth of money supply (Andersson *et al.* 2000). By this time the one-party state was no longer in favour and in 1991, fresh elections were conducted.

In summary, during its command-driven economic period, Zambia experienced two growth episodes: one during the period 1964-1974 and the other during the period 1975-1991. The former (coined the mineral boom period) was characterised by favourable economic growth patterns averaging 4.5% p.a. and affluence due to increased government expenditure: this led to trade and current account deficits, thereby making the Zambian economy become a net borrower. The second growth episode represented slow growth or mineral recession that averaged 1.0% p.a.: this period was characterised by an unstable economic environment with high inflation, exchange rate misalignments and low domestic investment (World Bank 2015c).

The accumulation of physical capital and human capital development were identified as the two most important traditional macroeconomic drivers of economic growth in Zambia during these periods. Gross domestic savings declined from an average of 40.1% of GDP p.a. during the period 1960-1970 to an average of 13.8% of GDP p.a. during the period 1981-1990 (World Bank 2015c). This was the outcome of restrictive reforms that had nationalised most of the foreign-owned companies, especially in the copper industry thereby resulting in a decline in gross domestic savings from an all-time high of 50.9% of GDP in 1969 to 0.3% of GDP in 1992 (World Bank 2015c). Human capital development was the second important macroeconomic driver of economic growth. The National Development Plans that were implemented during this period also emphasized on human capital development by improving the education systems in the country. Enrolments at all levels of education increased significantly during the period 1964-1991 (Republic of Zambia 2011).

Additional macroeconomic drivers during this period included international trade, exchange rate and inflation. International trade represented the third key macroeconomic driver of economic growth in Zambia where during the period 1964-1974, the Zambian economy benefited significantly from favourable copper prices. However, when copper prices on the international market dropped significantly in 1974, the Zambian economy faced lower growth rates that averaging 1.0% p.a. during the period 1975-1991 (World Bank 2015c). The exchange rate policy during the period 1964-1991 followed a fixed exchange rate regime (Mungule 2004). During the period 1964-1974, the exchange rate appreciated against the US Dollar from ZK0.71/US\$ in 1974

to ZK0.65/US\$ in 1974. However, by 1991, the exchange rate had closed at an average of ZK64.64 to the US Dollar as a result of currency devaluations initiated by the Zambian government. Inflation also affected the Zambian economy negatively especially during the 1980s (World Bank 2015c). In 1974, inflation averaged 8% p.a. but had increased significantly to a hyperinflation level in 1989, averaging 123.4% p.a. (World Bank 2015c).

3.4.2 An Economy driven by Market Fundamentals: 1991 Onwards

On 31 October 1991, Zambia went through its first multiparty elections since independence and a new government was ushered into power. Via a second New Economic Recovery Programme (NERP2) that was agreed upon with the IMF in 1992 (World Bank 1993), the new government quickly reintroduced the stabilization reforms that the UNIP government had failed to implement for over two decades. To support such radical market-oriented reforms, the government reduced its expenditures considerably during the period 1991-2000. In 1993, the government of Zambia eliminated all government subsidies from its budget as well as reducing the real wage for civil servants (Adam *et al.* 1993a).

In the financial sector, the advent of financial liberalization under the NERP2 assisted the government to reduce the growth of money supply in the Zambian economy. In June 1991, the Zambian government introduced a freely floating exchange rate regime which was further supported by the establishment of foreign exchange bureaus in October 1992 and by the elimination of all exchange rate controls on both capital and current accounts by 1994 (Mungule 2004). In September 1992, interest rates became more market determined and a new banking legislation was enacted in 1994 (Adam *et al.* 1993b). The privatisation of state-owned enterprises especially in the mining industry was also an important milestone so as to liberalise the goods sector – and in 1999 the Zambia Consolidated Copper Mines (ZCCM) Limited was privatised. After reaching the Highly Indebted Poor Countries (HIPC) completion point in April 2005, the government of Zambia continued its privatisation drive, especially the commercialization of the power utility – Zambia Electricity Supply Commission (ZESCO) – and the Zambia National Commercial Bank (ZNCB). In the latter case, the government of Zambia sold 49% of its shares after reaching its HIPC completion point (Bull *et al.* 2006).

The cancellation of debt in 2005 also helped reduce the current account deficit that declined from -19.1% of real GDP in 2001 to as low as -3.7% of real GDP in 2013. However, the trade balance continued to increase considerably and in 2013 the trade deficit recorded an average of -22.0% of

real GDP from -3.2% of real GDP in 1999. Both inflation and the exchange rate stabilised during the period 2001-2013, with growth averages of 13.5% and 5.2% p.a., respectively. The depreciation of the nominal exchange rate declined considerably from 162.5% in 1993 to a single depreciation rate of 4.8% in 2013. Similarly, the average annual inflation rate declined significantly from 183.3% in 1993 to a single-digit inflation rate of 7.0% in 2013. All these developments led to a sustained economic growth rate that averaged 5.9% p.a. during the same period, before reaching a maximum of 10.3% in 2010 (World Bank 2015c).

The reforms initiated from 1991 onwards paid off during the period 2001-2013 where copper prices had significantly increased by 162% in just four years: 2003-2006 (World Bank 2015a). Copper production recovered sharply from as low as 200,000 tonnes in the late 1990s to over 800,000 tonnes in 2012 (Zambia Development Agency, 2013). Both gross domestic savings and net foreign direct investment increased considerably, averaging 22.4% p.a. of real GDP and 7% p.a. of real GDP, respectively, during the period 2001-2013. The Zambian economy also became less dependent on donor inflows with net official development assistance and official aid received declining sharply from an all-time high of 61.4% of real GDP in 1995 to 9.5% of real GDP in 2012 (World Bank 2015c).

The key macroeconomic drivers of economic growth during the period 1991-2013 remained the same as in the command-driven economic system. The investment position started to improve as a result of the liberalization of the market that saw gross national savings increase from 2.7% of GDP in 2001 to 34.4% of GDP in 2010. As a result of increased copper prices during the period 2001-2013, the current account deficit declined from -19.1% of GDP in 2001 to -3.7% of GDP in 2013. Both inflation and the exchange rate stabilised with inflation being reduced significantly from 165.7% p.a. in 1992 and thereafter dropping to an annual increase of 7% p.a. in 2013. The Exchange rate growth also declined significantly from 166.4% in 1992 to 4.8% in 2013 (World Bank 2015c). The education system, on the other hand, continued to decline in terms of quality of education offered as a result of over-enrolment in primary and secondary education and low-enrolment rates in tertiary education (World Bank 2015c).

3.5 The Macroeconomic Drivers of Growth in Zambia

The growth performance of the Zambian economy was largely driven by the following key macroeconomic drivers: the accumulation of physical capital, human capital development, international trade, exchange rate and inflation stability. These macroeconomic drivers were

directly affected by the performance of other drivers such as fiscal and monetary discipline, financial sector liberalization, and privatisation reforms. Sections 3.5.1 to 3.5.5 present the relationship between the identified key macroeconomic drivers and economic growth in Zambia during the period 1960-2013.

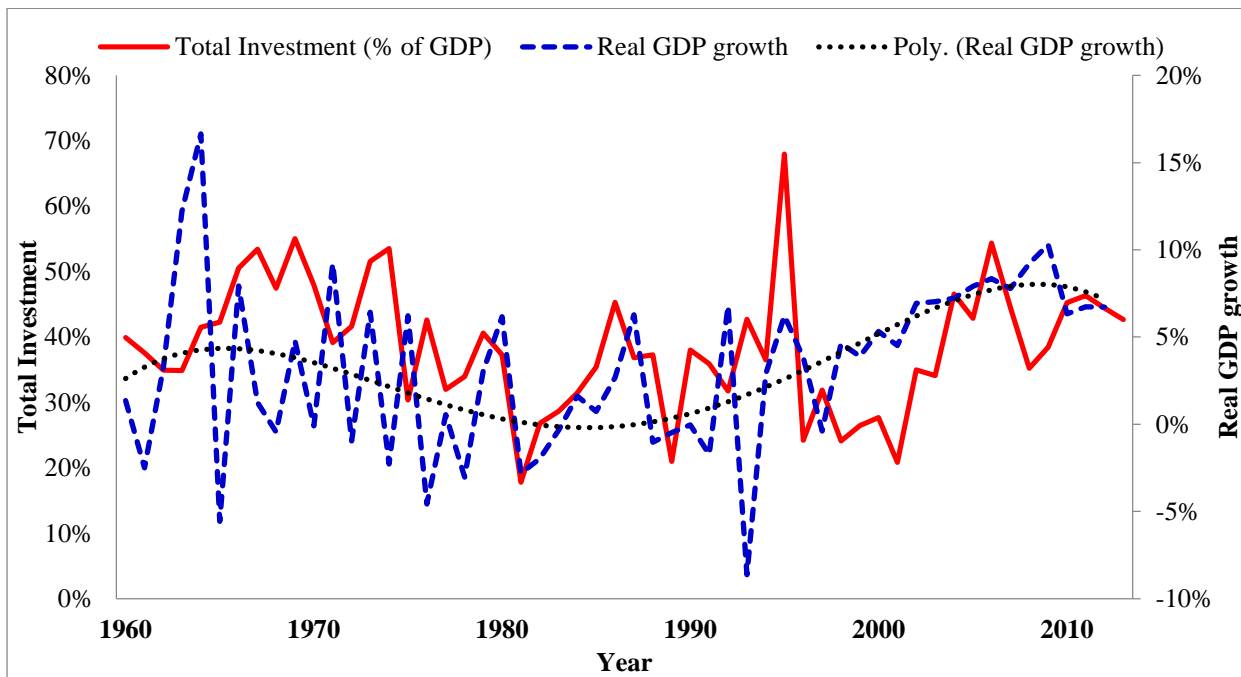
3.5.1 Investment – the Accumulation of Physical Capital

The accumulation of physical capital stock is one of the traditional macroeconomic determinants of economic growth. This has been the major factor behind Zambia's economic growth performance since the 1960s, increasing significantly during periods of mining booms and decelerating during mining recessions. The copper mining industry has been the mainstay of the Zambian economy since independence, contributing approximately 75% of all foreign exchange earnings: it continues to be the main contributor to government revenues (Republic of Zambia 2013).

The second economic sector that the government inherited was based on an agriculture sector that comprised a mix of commercial and smallholder agriculture. The latter is largely labour-intensive, using mostly traditional technologies. Both commercial and smallholder agriculture contributes about 15% of real GDP. Manufacturing contributes about 10% of GDP and makes a similar contribution towards exports. All development plans since independence have, therefore, focused on improving copper mining, together with traditional sectors such as agriculture, which employs about 85% of the labour force (Republic of Zambia 2013).

Figure 3.8 illustrates the relationship between total investment and economic growth in Zambia during the period 1960-2013.

Figure 3.8: Investment and Real GDP Growth in Zambia: 1960-2013



Source: World Bank (2015c)

The primary vertical axis represents the percentage change in gross national investments over time, while the secondary vertical axis represents the growth rate of real GDP. Indeed, the accumulation of total investment in Zambia has been the key macroeconomic driver of economic growth since the 1960s. As illustrated in Figure 3.8, total investment as a share of real GDP averaged 38.6% p.a. during the period 1960-2013 (World Bank 2015c). Overall, the evidence shows a positive co-movement between real GDP growth and the total investment. The overall investment position in Zambia was, therefore, within the recommended levels suggested by Bassanini *et al.* (2001). This is more than 20% of real GDP.

A significant proportion of total investment in Zambia is driven largely by the accumulation of gross domestic savings, which represented an average of 23.2% of real GDP during the period 1960-2013. Gross domestic savings declined from an average of 40.1% of GDP p.a. during the period 1960-1970 to an average of 7.7% of GDP p.a. during the period 1991-2000. This trend, however, was reversed during the period 2001-2013 when gross domestic savings averaged 22.4% of real GDP, followed by net official development assistance and foreign aid. These taken together averaged 12.7% of real GDP p.a. during the period 1960-2013. Foreign direct investment, on the other hand, averaged of 2.8% of real GDP during the same period (World Bank 2015c).

There are three factors that contributed to this decline in total investment. Firstly, the restrictive reforms that nationalised most of the foreign-owned companies especially in the copper industry had resulted in a decline in gross domestic savings from an all-time high of 51% of GDP in 1969 to 0.3% of GDP in 1992 (Saasa 1987; World Bank 2015c). Secondly, there was a decline in copper prices in 1974 by almost half from \$5,427 per metric ton to \$2,931 in 1975, representing a decline of 46% (World Bank 2015a). Thirdly, petroleum prices rose sharply on the international market thereby negatively affecting the Zambian economy in 1973 and 1979 (World Bank 2015a).

In the 1980s, the level of total investment declined further to an average of 31.9% of real GDP. In the 1990s as a result of the government of Zambia undertaking a number of political and economic reforms, the level of total investments improved to an average of 34.9% of real GDP. The performance further picked up between 2001 and 2013 as copper prices improved – due to the privatisation of the mining industry in Zambia, which further improved the level of total investment to an average of 40.8% of real GDP (Bull *et al.* 2006; World Bank 2015c).

In summary, the accumulation of investment has been one of the most important traditional macroeconomic drivers of economic growth in Zambia since 1960.

3.5.2 Human Capital Development

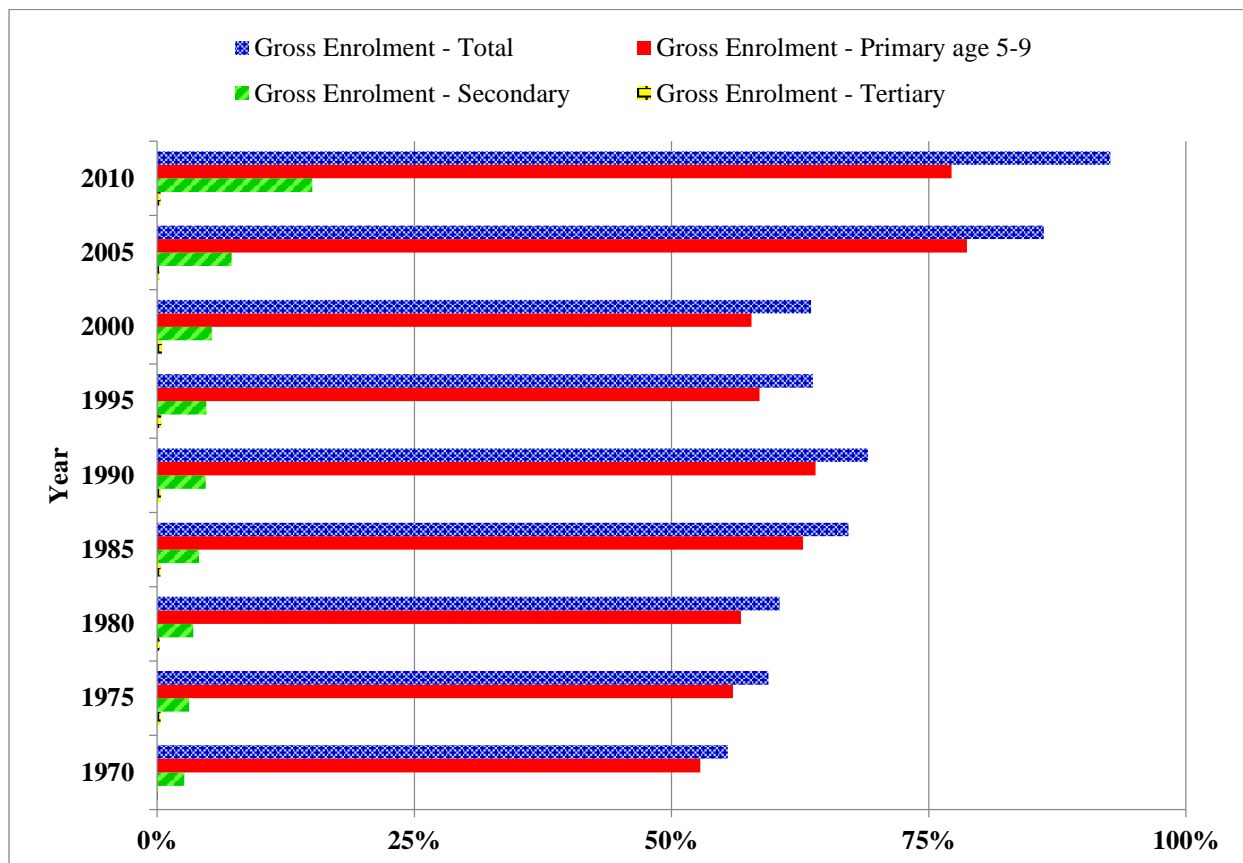
Human-capital development is one of the key macroeconomic drivers of growth identified in Zambia, and also a traditional determinant advocated by neoclassical growth models (Mankiw *et al.* 1992). Human capital development has been explicitly isolated in all National Development Plans implemented in Zambia since independence in 1964. Immediately after independence, the reforms in the Zambian education system commenced with the improving of primary and secondary education infrastructure in both urban and rural areas: later this was extended to professional training at university level, with the establishing of the University of Zambia in 1966 (World Bank 1977b).

Throughout the study period, 1960-2013, the major constraint affecting human capital development has been the quality of education, which was addressed from the mid-1970s. The quality of education in Zambia has been an issue since the advent of Universal Primary Education during the period of the First National Development Plan, 1966-1970, and an education-for-all concept is now being advocated by the Vision 2030 (World Bank 2004b).

As argued by many scholars, human capital development has a major influence on a country's capacity to absorb technology from developed countries. Thus, having a pool of well-educated people is a prerequisite for attaining a higher level of labour productivity (Bassanini *et al.* 2001; Barro and Lee 2013). Most importantly, a nation with higher education attainment would have an impact on social outcomes, such as income distribution and welfare, which are important if poverty levels are to be reduced (Barro and Lee 1994; Cutler *et al.* 2006).

Figure 3.9 illustrates human capital investments represented by the enrolment rates of students at primary, secondary and tertiary levels – expressed as a proportion of the relevant cohort of population. For primary education, population ages 5-14 is used, while for secondary and tertiary levels data on population ages 15-64 has been employed (World Bank 2015c).

Figure 3.9: Gross Enrolment Rates in Education: 1970-2010



Source: UNESCO (2015), Republic of Zambia (2012), World Bank (2015c)

As illustrated in Figure 3.9, the government of Zambia's focus since the 1970s has been on improving basic education. Hence gross enrolment rates at all education levels improved significantly since the 1970s, from an average of 55.5% in 1970 to 92.7% in 2010. The increase

in gross enrolment rates has largely been driven by the enrolment of primary school pupils, which increased by almost 730%, from: 378,417 in 1964 to 3,135,442 in 2013. Gross enrolment rates at secondary level have also significantly improved, from an average of 2.6% in 1970 to 15.1% in 2010. Gross enrolment rates at secondary level have increased sharply, growing at a rate of 11% p.a. since 1970, and from 13,853 to 1,592,366 in 2013. Based on the available data, tertiary education has also substantially increased since the 1970s, with an annual average growth rate of 7% p.a. (UNESCO 2015). Gross enrolment rates have increased from 1,433 students in 1970 to 19,086 students in 2009. In 2010, gross enrolment rates in tertiary education represented 0.3% of the total population aged 15-64 (World Bank 2015c).

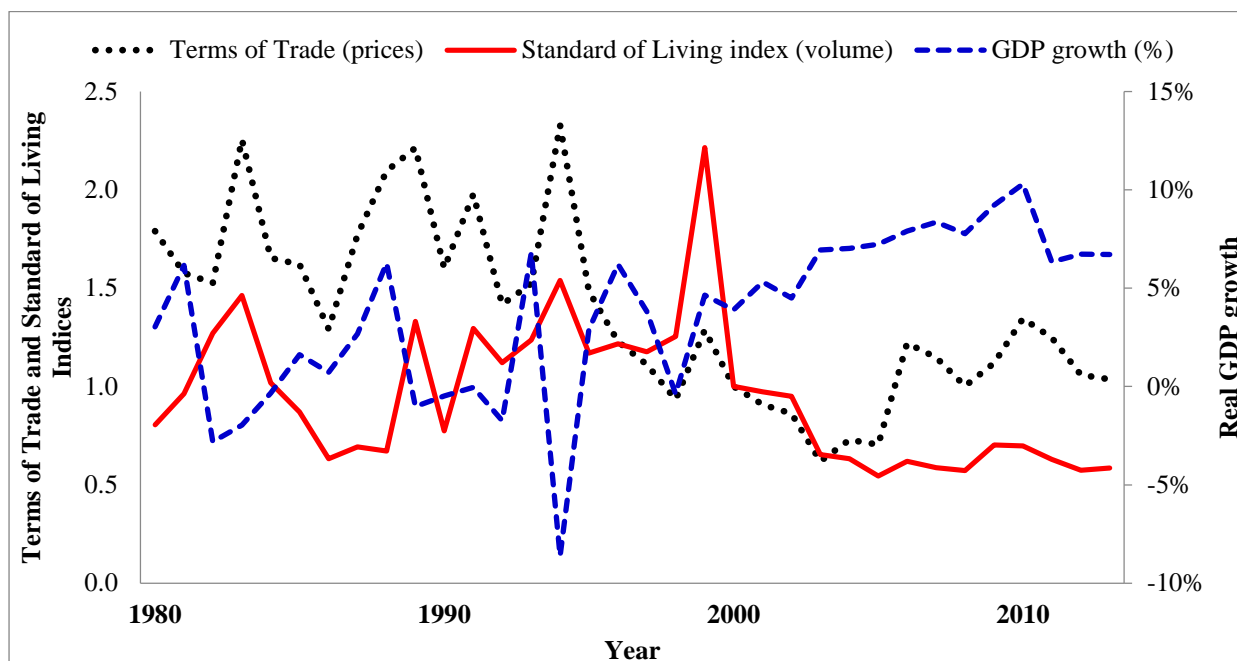
As with many other nations that were colonised in the 1960s, the focus of addressing manpower constraints was well articulated in development plans; but it faced implementation challenges – due to declining government revenues to support developments in this sector (World Bank 2004b).

3.5.3 International Trade

The third important driver of economic growth in Zambia apart from the traditional drivers of growth has been international trade. Many economies in the world, if not all, pursue outward-oriented trade policies as one of their main economic development strategies. These strategies are aimed at developing internal industrial sectors in order to boost the export sector so as to improve a country's balance of payment position. International trade is, therefore, expected to be beneficial to economic growth. Knight *et al.* (1993) have examined the relationship between outward-oriented trade policies and economic growth. Their inclusion of trade policies was based on the premise that the export and import sectors promote a country's openness and facilitate the transfer of technology related to advanced capital goods. Furthermore, trade acts as a catalyst for the diffusion of knowledge and skills. In addition, the export sector is important as it brings about foreign exchange inflows which are used to import the needed capital goods (Knight *et al.* 1993, p. 515).

Figure 3.10 illustrates the relationship between terms of trade, standard of living index and real GDP growth in Zambia.

Figure 3.10: Terms of Trade, Standard of Living and Real GDP Growth in Zambia: 1960-2013



Source: World Bank (2015c)

The primary vertical axis represents the terms of trade index as a ratio of export and import price indices, and the standard of living index expressed as a ratio of export and import volume indices. The secondary vertical axis on the right represents the growth rate of real GDP during the period 1980-2013. As illustrated in Figure 3.10, the terms of trade index in Zambia declined over time from an average of 1.76 during the period 1980-1990; to 1.43 during the 1991-2000 period; and to an average of 1.00 during the period 2001-2013 (World Bank 2015c). The high terms of trade index can be attributed to a nominal exchange rate growth that averaged at 59.1% p.a. during the period 1980-2000; and 5.2% p.a. during the 2001-2013 period (World Bank 2015c).

The standard of living index, on the other hand, registered an average of 0.65 p.a. during the period 1980-1990: it then improved to an average of 1.32 during the period 1991-2000. However, the standard of living index declined to an average of 0.67 during the economic boom period of 2001-2013 (World Bank 2015c). Between 1976 and 1995, the Zambian economy exported more than its imports and the trade balance recorded an average of 4.2% of real GDP p.a. However this trend was reversed during the period 1996-2013 when the Zambian economy registered a negative trade balance averaging -6.0% p.a. (World Bank 2015c).

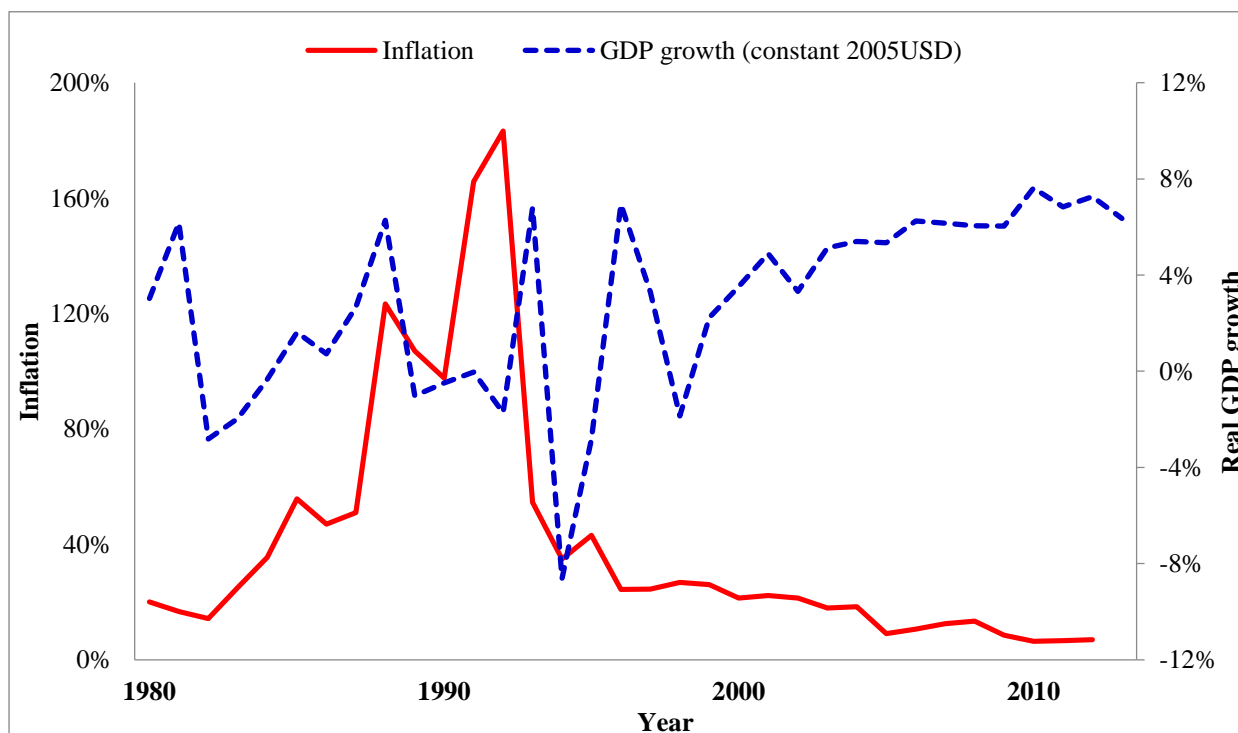
The trends show that while real GDP growth may have been positively associated with improved terms of trade that averaged 1.37 p.a. during the period 1980-2013, the standard of living in Zambia declined, averaging 0.95 p.a. during the same period (World Bank 2015c). In summary, exports and imports are important macroeconomic drivers of economic growth in Zambia.

3.5.4 Inflation

The fourth important driver of economic growth in Zambia was inflation. Domestic inflation acts as a tax on the economy: it also affects the level of business planning in all the sectors (Guerrero 2006). Furthermore it increases domestic prices and therefore affects the level of competitiveness of domestic goods and services relative to foreign goods and services. Consequently, the stability of domestic prices over time should lead to stability in all the major sectors of the economy, and hence stability in the growth rates should follow. Gylfason and Herbertsson (2001) argue that an inflation rate in excess of 10% p.a. is generally detrimental to economic growth. Burdekin *et al.* (2004) also argues that economies that experience inflation rates of more than 20% will experience low growth.

Figure 3.11 presents the relationship between inflation and growth in Zambia during the period 1980-2013.

Figure 3.11: Inflation Movements in Zambia: 1980-2013



Source: World Bank (2015c)

The growth pattern on the left primary vertical axis shows the percentage change of inflation; while the right hand side represents the percentage changes in real GDP. The behaviour of inflation in the Zambian economy can be described in terms of two episodes: the period before 1993, where the inflation rate hit a maximum of 183.3%; and the period after 1993, where average inflation in Zambia began to decline from 183.3% in 1993 to an average of 7.0% in 2012 (World Bank 2015c). In the 1980s and 1990s, inflation was high in Zambia. In the 1980s, inflation grew at an average of 49.6% p.a.; then it further worsened in the 1990s, where it averaged 68.1% p.a. The increase in prices was exacerbated by the poor performance of the economy, due to the low prices of copper and cobalt (World Bank 2015a). However, during the period 2001-2013, the inflation rate dropped significantly to an average of 13.5% p.a., moving from an average of 21.4% in 2001 to 7.0% in 2013 as copper prices increased once again (World Bank 2015c).

The behaviour of inflation in Zambia, particularly prior to the year 2000, was detrimental to economic growth, where prices increased at an average rate of 58.8% p.a.; and were associated with a real GDP growth of 0.9% p.a. between 1981 and 2000. During the period 2001-2013, where the inflation rate declined significantly to an average of 13.5% p.a., economic growth became sustainable, and grew at an average rate of 5.9% p.a. (World Bank 2015c). Price stability, therefore, is an important macroeconomic driver of economic growth, and an important prerequisite for Zambia's economic growth trajectory.

3.5.5 Real Exchange Rate

The fifth important driver of economic growth in Zambia was the real exchange rate. The exchange rate regimes in Zambia are distinguished by two distinct episodes. The first episode was a period characterised by a fixed exchange rate regime that ran from 1960-1991. During this period, the Zambian authorities experimented with a number of fixed exchange rate regimes. The second episode ran from 1991 to date. This is characterised by a fully-floating and market-determined exchange rate regime. During this period, the Zambian economy grew at an average rate of 3.8% p.a. (Aron and Elbadawi 1992; Mungule 2004; World Bank 2015c).

The transition caused a number of economic malaises. For example, real GDP growth during the period 1990-1998 grew at an average rate of only 0.2% p.a. Gross domestic investment fell to an all-time low of 0.3% of real GDP in 1992 and averaged 7.7% of real GDP during the period 1991-2000, from an average of 40.1% during the period 1960-1970 (World Bank 2015c). The Zambian Kwacha also plummeted further during the period 1990-2000, with an average depreciation rate

of 71.6% p.a. However, the real exchange rate showed some signs of stability from 1994 onwards (World Bank 2015c).

Table 3.1 summarises the history of the exchange rate episodes since October 1964.

Table 3.1: Exchange Rate Episodes in Zambia: 1964-2013

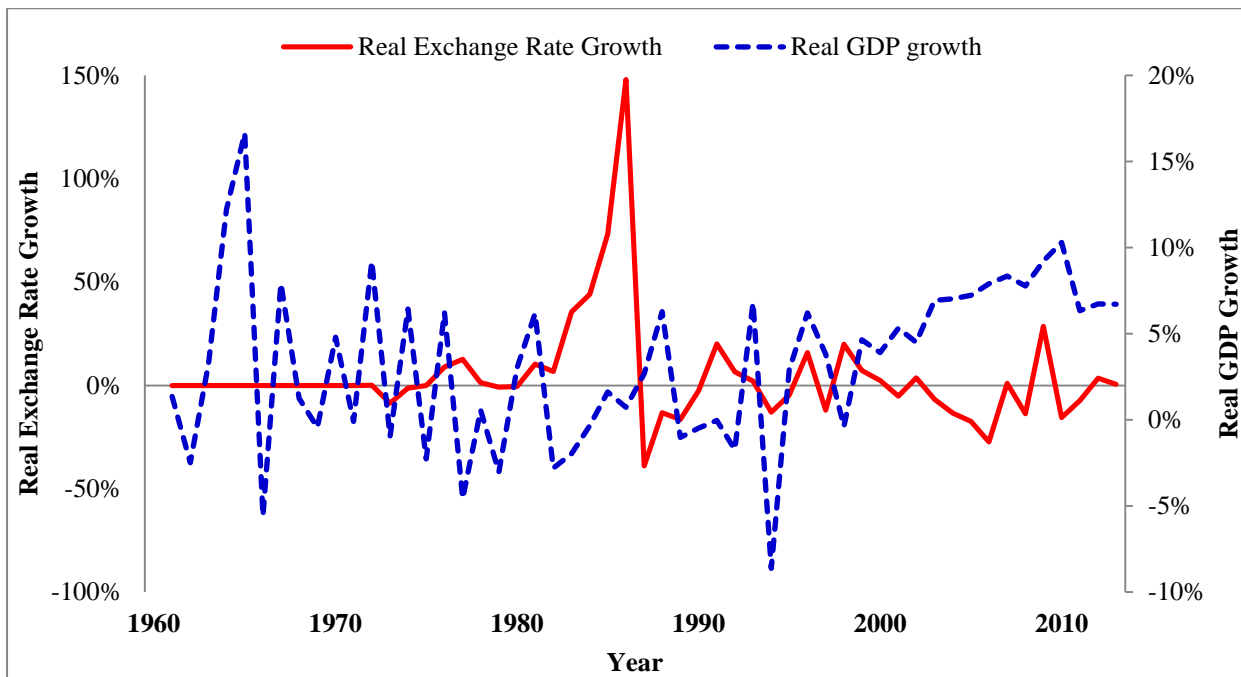
<u>Year</u>	<u>Description/Event</u>
October 1964:	Zambia peg its currency to the Pound at an exchange rate of ZK0.714/£ which was maintained during the period 1960-1972. Zambian authorities use the pound as official exchange rate
January 1968:	Zambian Pound replaced by the Zambian Kwacha and the same exchange rate at ZK0.714/£ is maintained.
December 1971:	Zambian Kwacha pegged to the US dollar at same rate, ZK0.714/\$
February 1973:	Zambian Kwacha appreciates against the dollar to ZK0.643/\$ based on unchanged gold content.
July 1976:	Zambian Kwacha no longer pegged to the US Dollar and operates on a controlled floating basis pegged to the Special Drawing Rights (SDR).
July 1983:	Link to the SDR abandoned, with Zambian Kwacha on a crawling peg based on a basket of currencies of major trading partners. A controlled devaluation of 1% per month introduced in 1983 and increased to 2.5% in 1984.
October 1985:	Zambian authorities adopt a foreign exchange rate auction system arising from dissatisfaction with the downward rate adjustment and inefficiencies in the manual exchange rate allocation system.
August 1986:	Zambian authorities replace existing foreign exchange auction system with a ‘Dutch Auction’ system. However, new system fails to arrest the rate of depreciation of the Zambian Kwacha.
January 1987:	Temporarily suspend the auction system following riots in the Copper belt and Lusaka provinces in December 1986. Rate set at ZK9.00/\$ from ZK14.92/\$ from the 68 th auction in December 1986.
March 1987:	A two-tier auction system (official and market) is introduced where the auction rate was allowed to fluctuate between ZK9.00/\$ and ZK15.00/\$ (upper ceiling).

<u>Year</u>	<u>Description/Event</u>
May 1987:	President Kaunda abolishes the auction system and replace it with a fixed rate at K8.00/\$. Request for foreign exchange made through commercial banks and allocation of foreign exchange and issue of import licences decided through a Foreign Exchange Management Committee (FEMAC).
June 1989:	Zambian Kwacha devalued to ZK16.00/\$
December 1989:	Zambian Kwacha further devalued to ZK24.00/\$
February 1990:	A two-tier currency system reintroduced with an official exchange rate of ZK27.80/\$ and a market exchange rate at ZK40.00/\$
April 1991:	Official and market exchange rates of the two-tier system unified at ZK58.00/\$
June 1991:	Government of Zambia introduces a freely floating exchange rate regime determined by market forces.
October 1992:	Government introduces a system of exchange rate bureaus to determine the market exchange rate.
March 1993:	Most foreign exchange controls on current account transactions abolished. Inter-bank foreign exchange rate system introduced.
1994:	All controls on both capital and current accounts removed. Exchange rate fully determined by market conditions.

Source: Aron and Elbadawi (1992, pp. 6-9); and Mungule (2004, pp. 3-4)

Figure 3.12 illustrates the movements in the real exchange rates and real GDP growth in Zambia during the period 1960-2013.

Figure 3.12: Real Exchange Rate Movements and Real GDP growth in Zambia: 1960-2013



Source: World Bank (2015c)

The growth pattern on the left primary vertical axis shows the percentage change of the real exchange rate; while the right hand vertical axis represents the real GDP growth. Overall, a negative co-movement exists between the real exchange rate and real GDP growth in Zambia. The stability of the real exchange rate in an economy is an important factor as it reveals the relative competitiveness of locally produced goods and services for export (Lebe *et al.* 2009). The real exchange rate also affects the general economic performance of all the sectors in an economy – that is, international trade, balance of payments, the external debt position, and the allocation of resources (Lebe *et al.* 2009).

As such, an overvalued real exchange rate would tend to favour the consumption of imports. This has a detrimental effect on the performance of the export sector. Maintaining a stable real exchange rate regime requires the nominal exchange rate to be allowed to adjust freely, in order to offset any general movements in domestic and foreign relative prices (Balassa 1964; Samuelson 1964). If this is allowed, the real exchange rate stabilises over time: this is an important factor if the economy is to achieve sustainable and uninterrupted levels of economic growth (Ito *et al.* 1999).

3.6 Policy Challenges affecting Economic Growth in Zambia

There are three major challenges that might affect the future economic growth prospects of the Zambian economy that are identified in this section. These include the following: dependence on mineral growth; low human-capital development and income distribution; and the increasing consumption of foreign goods and services. These challenges are discussed in sections 3.6.1 to 3.6.3.

3.6.1 Dependence on Mineral Growth

The first challenge relates to an economic system that has depended significantly on one commodity – copper – throughout the entire period of study. Zambia is ranked as the seventh biggest producer of copper in the world; but it has always been a price taker. As such, the performance of the Zambian economy has been driven by movements in world copper prices (Auty 1991). The high copper prices experienced during the 1964-1974 period were considered as a norm by Zambian authorities, when the copper prices averaged US\$5,653 per metric ton at real 2010 dollar prices. The same prices were experienced during the mineral boom of 2001-2013, where copper prices recorded an average of US\$5,487 per metric ton (World Bank 2015a).

The period of 1975-2000 was characterised by a mineral recession in Zambia, where world copper prices declined significantly (that is, by almost half), averaging US\$2,687 per metric ton at 2010 dollar prices. The economy during this period grew at an average rate of 0.9% p.a., with a *per capita* income that declined from US\$988 in 1974 to US\$554 in 2000 (World Bank 2015a, 2015c). The mineral dependence in Zambia has created a “*Dutch disease*”, in which other equally important traditional sectors, such as agriculture and manufacturing, with the potential of contributing significantly to trade, have not been developed to their full potential.

It is argued that such mineral dependency is hard to sustain during periods of economic recession; and since the traditional sectors are also dependent on the growth performance of the mining industry, the performance of the agricultural and manufacturing sectors of the Zambian economy would tend to decline (Auty 1991). History has a tendency to repeat itself: therefore it is important for the Zambian authorities to intensify the diversification of an economy that can contribute towards exports that are independent of the effects of mineral dependence.

3.6.2 *Low Human Capital Development and Income Distribution*

The second challenge facing the Zambian economy that relates to the future performance of export diversification – is the level of human capital development (Republic of Zambia 2011). The Zambian economy did not invest significantly in improving technical skills and higher learning. Investment in human capital development plays an important role in the economic growth process – especially when it comes to investments at higher levels of education. The diffusion of knowledge, as well as technology, depends on the level of education that exists in an economy, where the threshold is at the levels of higher learning (Bassanini *et al.* 2001; Barro and Lee 2013). For the Zambian economy to be able to diversify its economy to a point where the value addition from manufacturing and agricultural sectors are independent of mining business cycles, there is a need to invest in higher learning and research, as well as in development related to science and technology.

The importance of human capital development also relates to the distribution of wealth relative to the present population in Zambia. The Zambian economy is still in the low middle-income category with a *per capita* income of US\$810 as of 2013 at 2005 dollar prices (World Bank 2015c). However, the majority of Zambians live below the poverty line, with about 60.5% of the population estimated to fall below the poverty line. In 2010, the level of poverty was estimated to be three times higher in rural than in urban areas. Rural poverty was estimated at 77.9% compared to urban areas at 27.5% (Republic of Zambia 2012).

The differences in the poverty levels is associated with the distribution of the population, where with 40% of Zambians living in urban areas located along the mining belts and cities, where incomes are higher than in rural areas. In the rural areas, the major source of income is agriculture, which, as of 2011, contributed only 16% of real GDP at 2005 dollar prices: moreover this also constitutes the main source of employment for the majority of the rural population (Republic of Zambia 2013).

Furthermore, income distribution depends on levels of literacy in an economy. In 2010, the literacy rates for the urban and rural population in Zambia were 83.8% and 60.5%, respectively (Republic of Zambia 2012). There is a positive relationship between higher levels of educational attainment and income distribution (Breierova and Duflo 2004; Cutler *et al.* 2006). In other words, the higher the level of human capital development, the higher the productivity of labour. This also

implies the availability of skilled workers with the ability to absorb technological advances and knowledge attained from more advanced economies (Bassanini *et al.* 2001; Barro and Lee 2013).

Therefore, in order to overcome income disparities sustainably, greater investment in the skills offered via higher learning is of paramount importance for the future growth of the Zambian economy.

3.6.3 Increasing Consumption of Foreign Goods and Services

The third challenge the Zambian economy is facing relates to the growing demand for foreign goods and services. The period 1975-1995 that was characterised by a mining recession was a period when the Zambian economy registered a trade surplus that averaged 3.7% p.a. and a trade ratio of 141.5% (World Bank 2015c). Overall, the Zambian economy indicated that it was a net exporter. The current account balance, on the other hand, recorded an average deficit of -5.4% of real GDP p.a. at 2005 dollar prices, which was largely linked to excessive government borrowing from international financial institutions (Adam *et al.* 1993a; World Bank 2015c). However the situation changes during periods of mineral booms. Between 1964 and 1974, the Zambian economy registered a trade deficit that averaged -6.3% of GDP p.a. at 2005 dollar prices, and an average trade ratio of 79.1% p.a. During the period 2001-2013, the trade deficit increased further from -13.8% of real GDP in 2001 to -22.0% of real GDP in 2013 while the trade ratio registered an average of 79.1%. The current account balance, on the other hand, registered an average deficit of -5.3% of real GDP p.a. during the same period (World Bank 2015c). The trend, however, has been declining – from a current account deficit of -19.1% of real GDP in 2001 to a surplus in 2010 of 7.1% of real GDP (World Bank 2015c).

Overall, the evidence shows that Zambia was a net importer during periods of mineral booms, but a net exporter during periods of mineral recessions. However, the current account balance registered lower deficits during mineral booms than during mineral recessions – thereby making the economy to be a net borrower on the international market (Auty 1991). This is unsustainable; and the Zambian historical trajectory shows that rather than adopting structural changes, the Zambian authorities have resorted to increased foreign borrowing during lean periods (Kayizzi-Mugerwa 1991). This situation also affects advances in diversification efforts, thereby increasing the risk of the economy returning back to a state of economic instability, characterised by rising inflation and exchange-rate depreciations.

3.7 Conclusion

The Zambian economy has undergone major policy changes since the country attained independence in October 1964. Two economic systems that have contributed significantly to the performance of economic growth in the country have generally existed at various times. The first economic system that affected the performance of economic growth was a command economy that ran from 1964-1991 and that was driven by nationalist ideologies. This period was characterised by frequent policy reversals related to administrative controls of the economy. The genesis of such administrative controls arose from the Mulungushi Reforms of April 1968, where the government of Zambia declared its intention to nationalise almost all privately owned foreign firms (Andersson *et al.* 2000). The performance of the economy during this period varied and can be described in two phases. The first period was a golden age for Zambia that ran from 1964-1974 where the economy grew at an average annual growth rate of 4.7% p.a. with an average per capita income of US\$989 p.a. at 2005 constant United States Dollar prices. The second period from 1975-1991 represented a period of economic hardships where the Zambian economy was affected by unsuccessful nationalist policies adopted from the Mulungushi Reforms of 1968 and that were exacerbated by declining copper prices throughout the entire period and also by oil shocks that hit the economy hard in 1974 and 1979. During this period, the economy grew at an average rate of 0.6% p.a. and per capita income declined from US\$988 in 1974 to US\$651 in 1991 (Andersson *et al.* 2000; World Bank 2015c).

The second economic system that affected the performance of the Zambian economy was a market-oriented economy that commenced during the period 1991 to date. When a new government was ushered into power in 1991, major economic reforms ensued, whereby almost all controls were removed on prices and on exchange rate determination. The government also reduced its expenditure significantly by cancelling all subsidies on basic commodities such as food and fertilisers (Adam *et al.* 1993a). Furthermore, towards the end of the 1990s, the government privatised and commercialised loss-making state-owned enterprises, particularly those in the copper mining industry and the banking sector (Bull *et al.* 2006). For two decades – from 1991 to 2013 - the economy experienced a J-Curve effect: its first period, from 1974 to 2000, was characterised by continued economic hardships. These were on a par with those faced during the command economy era with declining copper prices: the exchange rate depreciated sharply, leading to hyperinflation while the foreign sector continued to worsen. During this period, the Zambian economy grew at an average rate of 0.9% p.a. with a per capita income that declined

from US\$988 in 1974 to US\$554 in the year 2000 (World Bank 2015c). On the other hand the second period of the J-Curve, 2001-2013, was characterised by sustained economic growth. During this period, the key contributing factor was the rise in copper prices that grew at an average rate of 15.5% p.a. during the period 2003-2013 (World Bank 2015a). Major macroeconomic drivers such as inflation and the real exchange rate stabilised and the economy grew at an average rate of 5.9% p.a. At 2005- constant US Dollar prices, the per capita income also increased sharply from US\$554 in 2000 to US\$810 in 2013. Gross domestic investment also sharply increased from 2.7% of GDP in 2000 to 29.2% of GDP in 2013 (World Bank 2015c).

Five major macroeconomic drivers of economic growth in Zambia have been discussed in this chapter. They have been identified through examining the economic policies and reforms that the Zambian authorities implemented during the study period 1960-2013. The most significant macroeconomic drivers of economic growth in Zambia during the period of study include the accumulation of physical capital that averaged 35.1% of real GDP at 2005 constant prices; human capital development; international trade; inflation; and the real exchange rate. The performances of these macroeconomic drivers have been heavily influenced by the various macroeconomic reforms that the Zambian authorities implemented, such as the Mulungushi Reforms of April 1968, the structural adjustment programmes of the 1980s and the market liberalization reforms of the 1990s and 2000s. Some of the notable reforms that Zambia has implemented include control of government expenditure through the removal of food and fertiliser subsidies and subventions to state-owned enterprises; price decontrols; and trade and financial liberalization and privatisation / commercialization of state-owned enterprises in the goods sector.

The study has also identified three main policy challenges that may have a bearing on the future performance of the Zambian economy. These include dependence on minerals driven by copper; low investment in human capital development that focuses more on basic and primary education and less on higher education; and an increasing appetite for foreign goods and services especially during economic booms, thereby making the Zambian economy a net consumer in the goods sector and eventually a net borrower on the international market. Based on the structures of neoclassical growth theories, the study has identified international trade and macroeconomic stability variables such as inflation and real exchange rate as important macroeconomic drivers of economic growth, in addition to the traditional drivers of investment and human capital development. It can, therefore, be concluded that such important macroeconomic drivers need to be included when estimating any growth patterns in Zambia.

CHAPTER 4

THE MACROECONOMIC DRIVERS OF GROWTH IN SOUTH AFRICA

4.1 Introduction

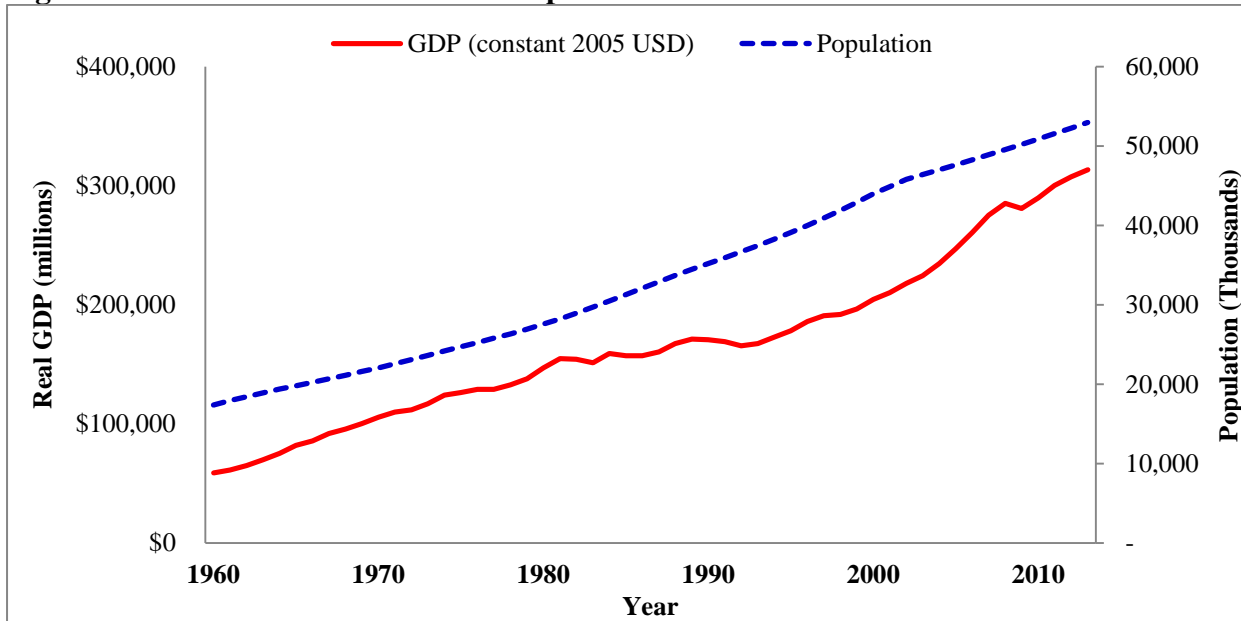
This chapter examines the key macroeconomic drivers of economic growth in South Africa during the period from 1960 to 2013. These drivers are examined within the context of two political regimes that existed – the apartheid regime that ran through the period 1948-1993 and the democratic transition period covering the period 1994-2013. The rest of the chapter is ordered as follows; Section 4.2 discusses economic trends based on available data during the period 1960-2013, focusing on trends in real GDP and its composition, per capita income and population growth. Section 4.3 reviews a chronology of important economic and political events that influenced South Africa's economic growth performance; and in the process the proximate sources of economic growth are isolated. Section 4.4 examines the behaviour of the identified key macroeconomic drivers of economic growth based on available data for the period 1960-2013. Section 4.5 discusses the main policy challenges affecting the South African economy. Section 4.6 concludes the chapter.

4.2 Trends in Economic Growth

In 2013, the South African economy recorded real GDP of US\$313.5 billion ; rising from US\$59.1 billion in 1960 and growing at an average annual growth rate of 3.2% p.a. With an estimated population of 52.9 million in 2013, per capita income averaged US\$5,916 at 2005 constant prices; ranking South Africa as an upper-middle income economy. Population has increased from 17.3 million in 1960 to 52.9 million in 2013; representing an annual growth rate of 2.1% p.a. (World Bank 2015c).

Figure 4.1 presents trends in real GDP and population in South Africa during the period 1960-2013.

Figure 4.1: Trends in Real GDP and Population in South Africa: 1960-2013

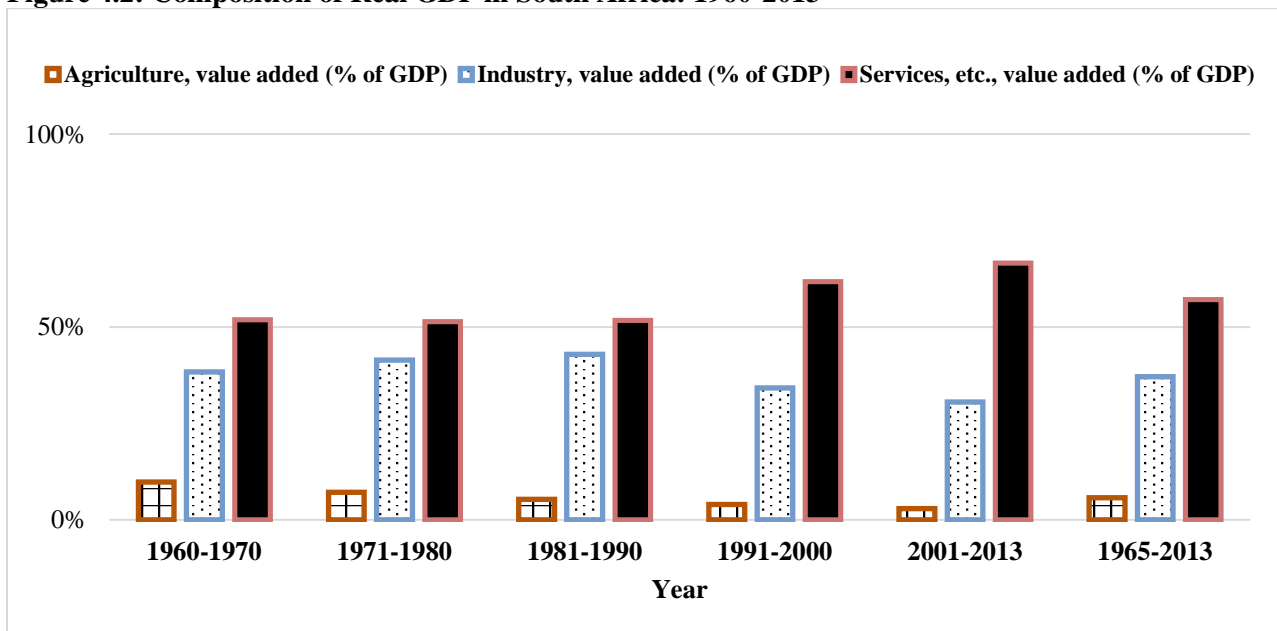


Source: World Bank (2015c)

The primary vertical axis represents a scale for real GDP in millions of United States Dollars (US\$) while the secondary vertical axis is a scale for population in thousands. The data shows a positive co-movement between the accumulation of real GDP and growth in population.

Figure 4.2 illustrates the trends in value addition from the primary, secondary and tertiary sectors as a proportion of GDP.

Figure 4.2: Composition of Real GDP in South Africa: 1960-2013

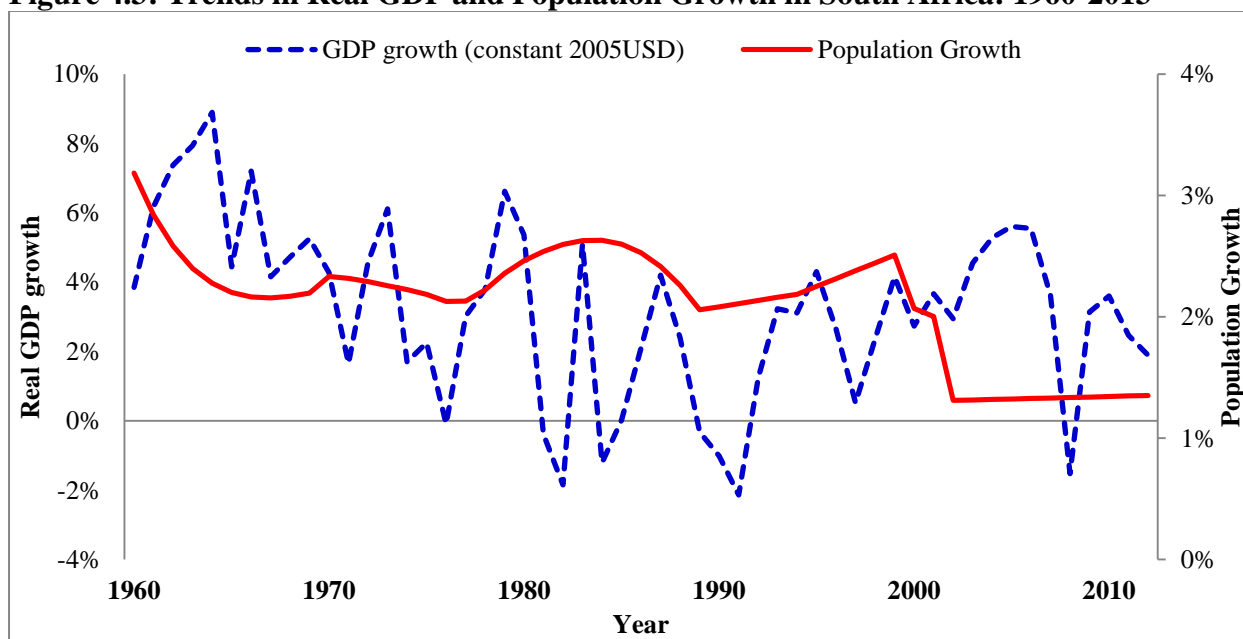


Source: World Bank (2015c)

The South African economy is characterised as a service-driven economy dominated by the tertiary sector. The primary sector has been declining since the 1960s at an average rate of -2.4% p.a.; from 11.2% of GDP in 1960 to 2.4% of GDP in 2013. The secondary sector experienced some growth during the period 1960-1990 where the contribution of industry to GDP rose from an average of 38.3% of real GDP in the 1960s to an average of 42.9% of GDP in the 1990s. However, the trend reversed from the 1990s onwards where the contribution of the secondary sector declined at an average of 34.2% of real GDP in the 1990s and further down to an average of 30.5% of real GDP during the period 2001-2013. The growth in the tertiary sector, on the other hand, recorded considerable growth from 45.4% of GDP in 1980 to 67.8% of GDP in 2013; growing at an average rate of 1.3% p.a. (World Bank 2015c).

Figure 4.3 illustrates the annual growth rates of real GDP in South Africa and population growth.

Figure 4.3: Trends in Real GDP and Population Growth in South Africa: 1960-2013



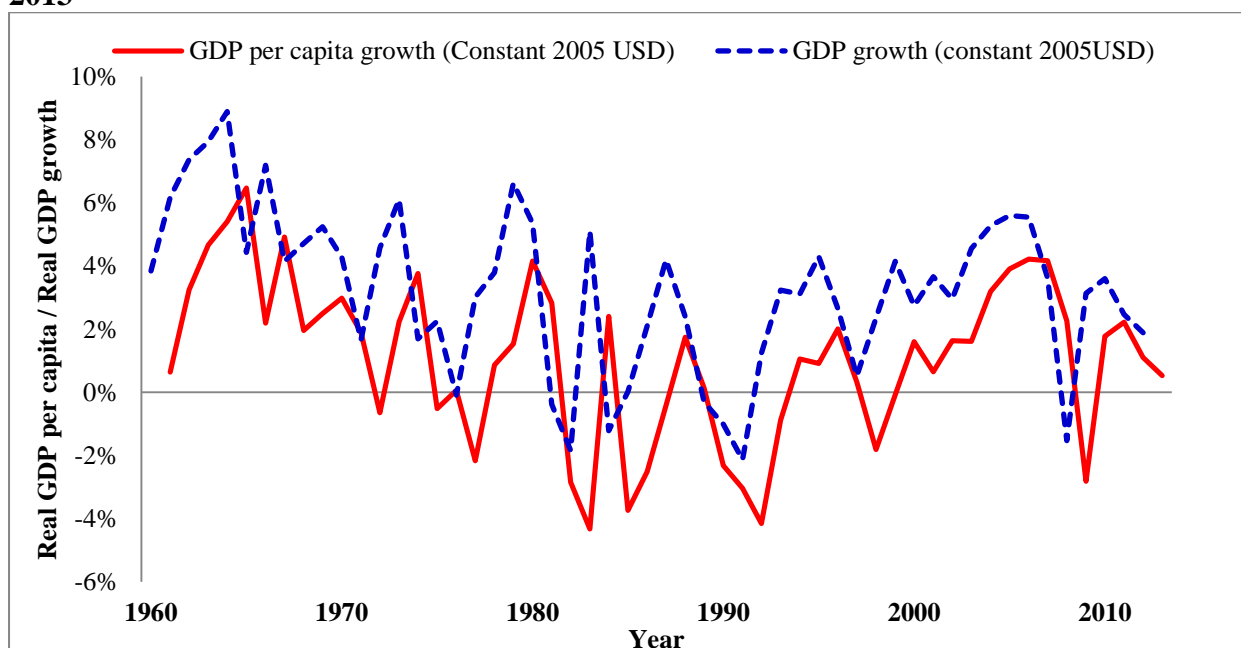
Source: World Bank (2015c)

The left-hand axis represents trends of real GDP growth while the secondary axis on the right represents the population growth rate. As illustrated in Figure 4.3, the relationship between real GDP and population growth reveals an inverse correlation in some periods and a positive co-movement in other periods. This is not surprising as it has been shown previously by many scholars that the relationship between real GDP and population growth is not straightforward and varies between countries (Thornton 2001; Warr 2004). The growth in real GDP during the apartheid era, 1960-1993, was erratic and South Africa experienced declining growth rates. The

1960s is regarded as the golden decade for South Africa within the study period, where real GDP grew at an average rate of 6% p.a.; reaching its highest peak in 1965 where the economy grew at an average rate of 8.9%. In the 1970s, real GDP growth declined sharply compared to the 1960s averaging 3.4% p.a.; this was accentuated in the 1980s where the South African economy registered the lowest growth rates during the study period averaging 1.5% p.a.; in some cases registering negative growth rates. Improvements in real GDP growth occurred during the post-apartheid era, 1994-2013. During the period 1994-2000, the South African economy grew at an average rate of 2.9% p.a.; and further improved to an average growth rate of 3.3% p.a. during the period 2001-2013. Population growth trends have also declined overtime. Though population increased from 17.4 million in 1960 to 52.9 million in 2013; growing at an average rate of 2.1% p.a., population growth rates have been declining. In the 1960s, the average population growth rate recorded was 2.4% p.a. but during the period 2001-2013, it averaged 1.4% p.a. (World Bank, 2015c). The significant decline of population growth in South Africa during this period has been attributed to low fertility rates that declined by over 40%. The high prevalence of human immunodeficiency virus and acquired immunodeficiency syndrome – HIV and AIDS has also been a contributing factor (see Shapiro 2015; Statistics South Africa 2015; among others).

Figure 4.4 illustrates trends in real GDP and per capita income at 2005 constant dollar prices during the period, 1960-2013.

Figure 4.4: Trends in Real GDP per capita and Economic Growth in South Africa: 1960-2013



Source: World Bank (2015c)

As illustrated in Figure 4.4, there is a positive correlation emerging between real GDP growth and per capita income growth. On average, real per capita income at 2005 constant dollar prices increased steadily from US\$3,395 per capita in 1960 to US\$5,916 per capita in 2013. The growth of per capita income has not been impressive. During the study period, 1960-2013, per capita income grew at an average rate of 1.1% p.a. During the apartheid era, 1960-1993; per capita income grew at an average rate of 0.9% p.a.; this declined from an average of 3.5% p.a. in the 1960s to 1.1% in the 1970s before reaching its lowest peak in the 1980s where real per capita income growth declined at an average rate of -0.9% p.a. The trend continued in the 1990s where real per capita income declined at an average rate of -0.4% p.a. During the period, 2001-2013, the trend was reversed, where per capita income improved significantly and grew at an average rate of 1.9% p.a. (World Bank 2015c).

The evidence examined in Figures 4.1 – 4.4 show that economic performance in South Africa has not been impressive throughout the study period. But what has driven this weak performance? The next section, therefore, examine the potential causes of such weak performance in South Africa's economic growth trajectory.

4.3 Economic Development Policies and Reforms in South Africa

4.3.1 The Apartheid Regime: 1948-1993

South Africa has a rich history of political and economic events that influenced economic growth trends dating back to the early 1900s. At the end of the Second World War in the 1940s, the South African economy was faced with a number of economic problems. There was a high degree of urbanisation caused by an influx of the working class population that settled in the cities and townships where industries and mines were located. By 1960, 46.6% of the total population in South Africa lived in urban areas and this resulted into rising costs of commodities, job competition, housing shortages, and increased migration. Conversely, farms in the rural areas were faced with shortages of cheap labour to work as tenants. These have been regarded as the twin problems that led to the birth of apartheid in South Africa (Lowenberg 1989, 1997; Evans 1997).

The structure of the South African economy was thus defined. More emphasis was placed on the promotion of industries such as manufacturing, and mining. The success of the South African economy relied on the availability of cheap labour. However, the goal during the apartheid regime was to ensure that restrictions were imposed on the movement labour into the very same locations

that were the backbone of the South African economy – manufacturing, mining and agriculture. (Lowenberg 1989). As Lowenberg puts it, the restriction was more of protecting wages for unskilled foreign workers facing competition from domestic workers who were willing to work for lower wages (Lowenberg 1989, p. 58).

In 1948, two commissions were instituted; one by the Prime Minister at that time, Jan Smut, through the Fagan Commission; and the other by D. F. Malan through the Sauer Commission. Unlike the Fagan Commission that took a liberal approach to addressing the twin problems, the Sauer Commission advocated for a strong interventionist and authoritarian approach. The recommendations put forward by the Sauer Commission were to reverse the growing urbanisation, and reduce dependence on domestic labour (Evans 1997). The control of migration into and out of urban areas was also strongly recommended. Domestic workers living in urban areas were treated as temporary workers and whenever their employment contracts expired in the cities they were forced to return to their designated homelands (Evans 1997).

The recommendations made by the Sauer Commission were effectively implemented in 1948. A number of apartheid laws were passed in the 1950s that would eventually control economic activities and movements of domestic labour. Some of the notable bills that were passed into law include: the Population Registration Act, No. 30 of 1950; Group Areas Act, No. 41 of 1950; Bantu Education Act, No. 47 of 1953; Prevention of Illegal Squatting Act, No. 47 of 1953; and the Promotion of Bantu Self-Government Act of 1959 (Apartheid Museum 2006).

The Population Registration Act of 1950 classified people living in South Africa into four racial groups. The racial categorization determined where each race was supposed to be located as well as what kind of labour activities they were expected to carry out. The Group Areas Act of 1950 enforced racial separation in cities and townships. Areas that were inhabited by mixed races were abolished and inhabitants that were found in areas designated for a particular race were moved out to their designated locations. Through the Prevention of Illegal Squatting Act of 1953, all areas occupied by illegal inhabitants were demolished (Apartheid Museum 2006).

With the Group Areas Act in force, the South African government eventually passed into law the Promotion of Bantu Self-Government Act of 1959 that enabled the local populace to govern themselves (Butler 1998, p. 19-23). The South African government's vision on human capital development is first seen in the passing of the Bantu Education Act of 1953, where the domestic workforce was designated to be trained as unskilled labour. However, with an expanding

manufacturing/industrial sector, this created demand for skilled labour and the existing apartheid education policies that the government had enacted created skills shortages (Lowenberg 1997). To circumvent this problem, the government in 1973 allowed domestic workers to apply for skilled jobs (Levy 1999). Though this was the case, Bayoumi (1990) found that the education levels for domestic workers in 1985 were still very low even though they were the majority population in South Africa. He reports that about 95% of South Africans had basic level education; 3.5% had completed secondary education and only 1.6% had a higher education qualification (Bayoumi 1990, p. 7).

Eventually, mercantilist laws rather than building an economic environment that would create economic opportunities, led to a system of constrained human capital development and inefficient and ineffective resource allocation and mobilization (Lowenberg 1997). To protest against the injustice of these repressive laws, a Freedom Charter was published in June 1955 proclaiming the aspirations of non-whites. The Charter called for a democratic South Africa that would promote equal rights, human rights, labour rights, land reform and nationalization of industries to benefit all South Africans (African National Congress 1955). However, the implementation of such aspirations did not materialise until in 1994 when South Africa gained independence and implemented the Reconstruction and Development Programme (Republic of South Africa 1994).

The 1960s were crucial years for the South African economy as they signify the advent of economic sanctions imposed by the international community to stop the South African government from implementing apartheid policies. In August 1963, the United Nations General Assembly passed its first resolution to impose a voluntary arms embargo on South Africa. However, the implementation was not fully enforced as only a few states adhered to the resolution (Kreutz 2005). In November 1977, the United Nations Security Council passed a unanimous resolution No. 418 that imposed a firm and mandatory arms embargo on South Africa. The overall impact of this resolution was the increased military spending as the South African government resorted to producing some of the military equipment locally (McMillan 1992).

Perhaps the most effective sanctions that were imposed on the South African economy were trade and financial sanctions of the 1980s. These were in the form of disinvestment and divestment. The former led to the imposition of restrictions on new foreign capital invested in South Africa. During the period 1948-1984, the South African economy was attractive to foreign capital lending which meant that the economy was heavily dependent on the willingness of foreigners to invest in South Africa (Levy 1999). Between 1981 and 1984, the South African economy registered a

current account deficit with an annual average rate of -3.3% of GDP p.a. at 2005 constant dollar prices (World Bank 2015c). Divestment, on the other hand, led to international or global campaigns to discourage nations, institutions and individuals from doing business with South Africa or companies affiliated with it by purchasing or using its products (Brewer 1989; Levy 1999). In June 1986, the United States of America (USA) Congress passed a Comprehensive Anti-Apartheid Act that imposed punitive trade and financial sanctions on the South African government. According to the Act, any new USA trade and investments in South Africa, direct American flights to South Africa as well as South African Airways flights to any USA airports were banned (Levy 1999).

Similar sanctions were imposed by the European Community that banned the importation of gold coins, iron and steel from South Africa. It is estimated that the lost in value of South African exports of gold coins, iron and steel to the European Community was US\$700 million. By 1993, all sanctions imposed on South Africa were removed when the government agreed to abolish the apartheid system and hold general elections (Riding 1991; Kreutz 2005). The apartheid regulatory economic regime can be summarised as a period characterised by political and economic suppression. This created an economic environment filled with uncertainties as a result of the political unrest and economic instability brought about by the punitive sanctions imposed on the economy since the 1960s. During this period, five key macroeconomic variables that were affected by the apartheid system were: investment (both domestic and foreign) which was affected by capital flight; human capital development suppressed by racial discrimination and repressive education laws that were enacted even though demand for skilled labour was rising; exchange rate instability especially in the late-1970s when the South African government imposed a dual exchange rate system and exchange controls on debt repayment; inflation that moved from a single digit to double digits between the period 1973 and 1992; and trade restrictions imposed by arms embargos, trade and financial sanctions of the late 1970s and mid-1980s (Bayoumi 1990; Lowenberg 1997; Levy 1999).

As discussed in the next section, the apartheid regime created a number of economic distortions by affecting key macroeconomic drivers of economic growth such as investment, human capital development, exchange rate policies, inflation targeting, and a vulnerable balance of payment position. These macroeconomic drivers are fundamental to any economy's growth trajectory and were grossly affected by the apartheid regulatory economic system, the imposition of sanctions by the international community and increasing domestic unrests. These were factors that

contributed to the abandonment of the apartheid regulatory economic system as its costs outweighed its benefits (Lowenberg 1997).

4.3.2 *Post-Apartheid Period: 1994-2013*

On April 27, 1994, South Africa held its first general elections. During this period, the South African economy had inherited an inequitable and impoverished society with a number of socioeconomic problems from the apartheid regime. The economy lacked a number of socioeconomic services for the majority of South Africans such as education, housing, access to clean water, electrification, healthcare, public works and land reform. Realizing the extent of the problems, the newly elected government adopted a Reconstruction and Development Programme (RaDP) whose first priority was to overcome poverty and deprivation faced by many South Africans (Republic of South Africa 1994). Through the RaDP, the approach towards achieving prosperity was to combine both growth and development. Though facing an economic meltdown, the South African economy had well-developed sectors in mining and manufacturing, commerce and industry and financial services. The level of inequalities was, nevertheless, high driven by unequal opportunities in business ownership, employment and skills. These factors were exacerbated by existence of repressive labour laws and education policies (Republic of South Africa 1994).

The sectors that were expected to move the economy forward largely came from two fronts: the private sector and the government (public sector). While the private sector was expected to take a leading role in the growth process by developing further industrial and manufacturing investments, the government's or public sector's role was to lead in the process of reconstruction, redistribution of wealth and social development. The latter would eventually achieve its objectives by developing infrastructure programmes such as the provision of electricity and water, better housing for the majority of non-white South Africans, telecommunication, transportation, health and education (Republic of South Africa 1994). Such an approach was, therefore, expected to open up new economic activities by exploiting the untapped human capital potential that was suppressed for almost five decades during the apartheid era. The new approach was also expected to contribute significantly towards increased output, economic activity and export capacity (Republic of South Africa 1994).

The consequences of the deterioration at the macro- and micro-economic level were low level of investments in human capital development and research, high production costs, low productivity

and high demand for skilled labour. The key objectives of the RaDP were, therefore, to ensure that basic needs were met, to enhance human capital development, to build on the existing economic infrastructure that was inherited from the apartheid era and promote democracy and equality of rights (Republic of South Africa 1994). In 1996, the government embarked on a Growth, Employment and Redistribution (GEAR) Macroeconomic Strategy that replaced the RaDP. The GEAR further identified the key macroeconomic drivers of the South African economy to facilitate an economic growth target of 6% p.a. to be achieved within four years and at the same time create 400,000 new jobs each year. These objectives were to be achieved through: the promotion of both domestic and foreign investment; human capital development to support new investment and output; control of inflation; stabilization of the real effective exchange rate; and promotion of trade through export growth with a focus on non-gold exports (Kearney and Odusola 2011).

These drivers were supported by fundamental economic reforms targeting sound monetary policy, public budgeting and reduction of fiscal deficits to reduce debt service obligations; relaxation of exchange rate controls; tariff reforms; tax incentives, effective (good) governance; and security. The mix of identified macroeconomic drivers and their reforms, therefore, formed part of an integrated strategy that would promote and support South Africa's economic growth path and create the needed employment to reduce income inequalities (Republic of South Africa 1996b).

Concerning the accumulation of physical capital, De Wet (1995) isolated the main problem that the South African economy faced, which was more a supply-side constraint than a lack of aggregate domestic demand. Domestic productivity was at its lowest and could not meet aggregate domestic demand. In addition, South Africa had lost its international competitiveness that led to capital flight and a decline in the investment ratio (De Wet 1995). The balance of payments position started to decline in 1995 and has been deteriorating ever since except for 2001 and 2002 when the South African economy registered current account surpluses (World Bank 2015c).

The importance of human capital development was also at the centrepiece of the integrated strategy and central to the long term economic performance and income redistribution. Education reforms targeting decentralization of school governance; quality education; teacher education; and private sector involvement in the provision of higher education were put on the agenda of transformation (Republic of South Africa 1996b). In 1996, the South African constitution advocated for compulsory basic education for all. This provision paved way for the replacement of the repressive Bantu Education Act of 1959 with the South African Schools Act of 1996. The

new education law focused on redressing the weak education system that was inherited from the apartheid regime with an aim of providing a uniform education system for all South Africans (Republic of South Africa 1996a, 1996c).

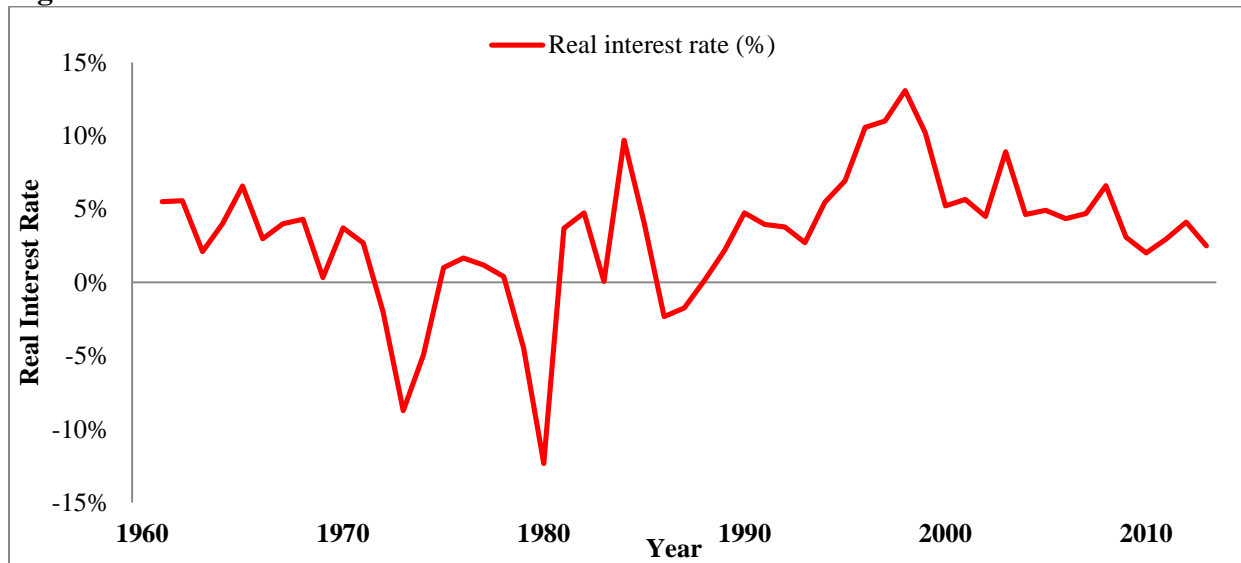
The historical low investments in African education and access to quality education in terms of learner outcomes remained low, which compounded skill shortages in the South African economy. During the post-apartheid period, while the supply of unskilled labour increased as a result of labour market reforms, the demand for unskilled labour declined (Banerjee *et al.* 2007). Based on Quarterly Labour Force Survey statistics for the period 2008-2014, about 64% of the population expected to be engaged in labour force had less than secondary-level qualification (Republic of South Africa 2014). The low provision of formal education especially at the highest level and the low quality of education have been the major factors leading to the neglect of human capital development in South Africa (Fedderke 2005).

A fiscal policy stance that would contribute towards an effective and sustainable economic growth path was also designed. The emphasis was to ensure that the overall fiscal deficit was reduced to manageable levels. During the fiscal year 1992/93, the fiscal deficit averaged 7.9% of GDP. In 1993, the fiscal deficit had worsened to 8.5% of GDP. However, in the subsequent years, the fiscal deficit started to decline averaging 6.8% of GDP in 1994 and further declining to 5.8% of GDP in 1995 (De Wet 1995). The target was for government to reduce the overall fiscal deficit towards a sustainable long-term target of 3.0% of GDP that would ensure government savings perceived as crucial for the implementation of social or public investments such as domestic and industrial grid electricity; industrial and agricultural water supply; good roads and harbours; urban housing; telecommunications; education and health facilities (De Wet 1995). Though the target was met during the period 2000-2013, averaging 2.0% of GDP, government borrowing increased during the global financial crisis of 2009 where the South African government budget deficit averaged 4.5% of GDP from 2009 to 2013 (International Monetary Fund 2014).

Monetary policy reform was also targeted with financial stability and inflation targeting as the main objectives. At the heart of financial stability was the target of maintaining positive real interest rates to encourage national saving and investment, reduce inflation and minimise exchange rate fluctuations (Republic of South Africa 1996b). During the period 1991-2013, the South African Reserve Bank (SARB) managed to keep positive real interest rates that averaged 5.9% p.a. compared to the apartheid period where real interest rates averaged 1.5% p.a. (World Bank 2015c).

Figure 4.5 shows trends in real interest rate during the period 1960-2013.

Figure 4.5: Trends in Real Interest Rates in South Africa: 1960-2013



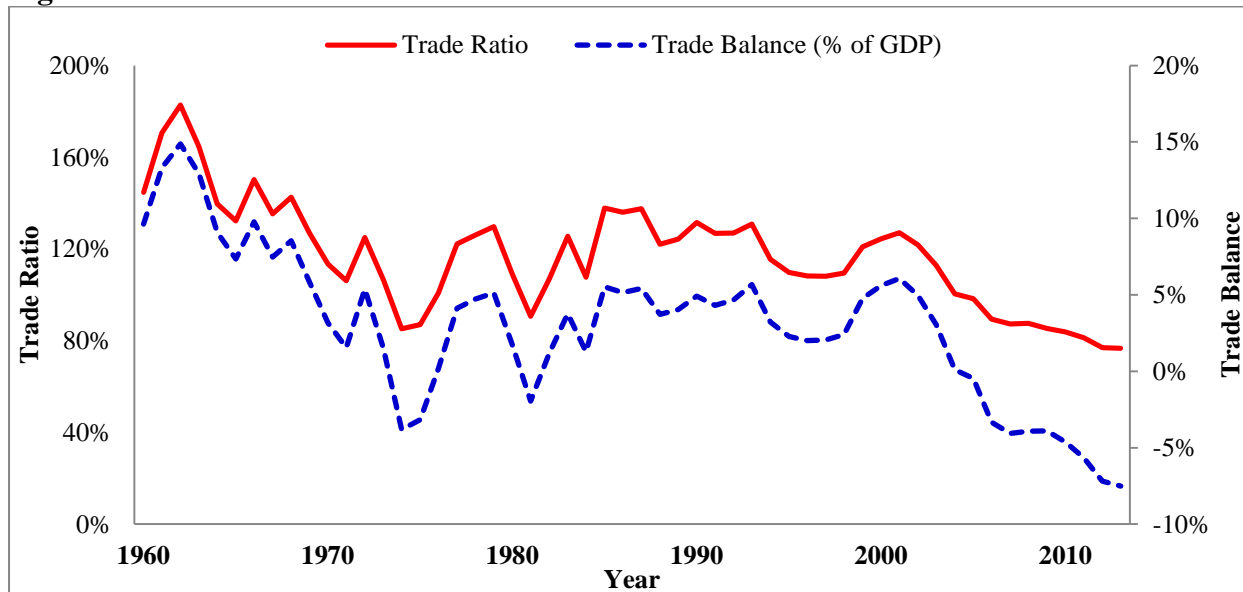
Source: World Bank (2015c)

Exchange rate policy reform was another driver at the hub of monetary policy if South Africa was to increase domestic productivity by ensuring a sustained expansion of exports in order to boost trade and employment (Republic of South Africa 1996b). During the period 1991-2002, the South African Rand depreciated at an average annual rate of 12.6% (World Bank 2015c). Government authorities attributed this dramatic loss of value of the local currency to speculation reflecting some level of uncertainty about the proposed policy reforms. The emphasis was, therefore, to ensure the stability of the long term real effective exchange rate growth as a prerequisite for export growth and income redistribution (Republic of South Africa 1996b).

Trade liberalization was, therefore, identified as a key source of economic growth and employment creation. Trade reform focused on the removal of trade restrictions such as import surcharges abolished in October 1995; the rationalization of tariff structures; and the redistribution and expansion of preferential trade arrangements with bilateral countries and regional integration institutions (Republic of South Africa 1996b). Though South Africa had taken significant steps towards trade reform, key trade indicators continued to deteriorate. One case in mind is the trade ratio where the trend declined over time from an average of 145.7% during the 1960s to an average of 94.5% during the period 2001-2013 (World Bank 2015c). On a similar note, the trade balance also deteriorated over time from a trade surplus in the 1960s that averaged 9.3% of GDP p.a. to a trade deficit of -2.0% of GDP p.a. during the period 2001-2013 (World Bank 2015c). This shows a deterioration in export competitiveness of the South African economy.

Figure 4.6 shows trends in the trade ratio and trade balance.

Figure 4.6: Trends in Trade Balance and Trade Ratio in South Africa: 1960-2013



Source: World Bank (2015c)

The left-hand axis represents the trade ratio as proportion between exports and imports while the secondary axis on the right represents trade balance as a proportion of GDP. On average, both trends have been declining over time signifying a deterioration of terms of trade in South Africa. Economic growth performance during the post-apartheid period was based on a reconstruction and redistribution process of the economic structure inherited from the apartheid regime. The success of the GEAR, however, was mixed. Though the government, during the GEAR implementation period, managed to reduce government budget deficits from 8.5% of GDP in 1993 to less than 3% of GDP by 2002, the employment target was not met (Gelb 2003). Du Plessis and Smit (2006) attributes the poor performance of the latter due to strong real wage growth in the South African labour market.

To address this problem, in 2006 the government of South Africa embarked on another strategy called the Accelerated Shared Growth Initiative for South Africa (ASGISA). The aim of the 2006 strategy was to achieve redistribution outcomes by ensuring that the economy grew at an average rate of 4.5% p.a. during the period 2005-2009 and an average of 6.0% p.a. during the period 2010-2014. These goals would ensure that unemployment and poverty levels were halved by the year 2014 (Republic of South Africa 2006a). The implementation of the ASGISA was supported by bi-annual Medium Term Strategic Frameworks (Republic of South Africa 2006a). The growth target needed to achieve the government's redistribution campaign was only met during the period

2005-2007 where the South African economy grew at an average rate of 5.5% p.a. However, growth stagnated during the period 2008-2010 where the South African economy grew at an average rate of 1.7% p.a. The low growth trajectory was partly caused by the global financial crisis that affected economies who depended on tertiary sectors (World Bank 2015c). As of 2008, the tertiary sector contributed about 65% of GDP with well-developed finance and insurance, real estate and business sector (Kearney and Odusola 2011; World Bank 2015c).

In 2010, as a result of such economic vulnerability, the South African government embarked on a “*New Growth Path*” with the aim of reinvigorating the primary and secondary sectors of the South African economy. The New Growth Path specifically targets six key sectors: infrastructure services by government – transportation, energy and water, communications and housing; mining value chain; green economy; agriculture value chain; manufacturing; and tourism. These sectors are expected to create at least five million jobs which would reduce unemployment rate from 25% to 15% by the year 2020 (Republic of South Africa 2010a). To consolidate its development plans, the South African government embarked on a new long-term strategy called the National Development Plan of 2030 that focuses on inclusive growth, eliminating poverty and reducing inequality. The National Development Plan is expected to create 11 million jobs and the economy is expected to grow at a rate of more than 5% p.a. (National Planning Commission 2012).

Nevertheless, the macroeconomic drivers that were identified, just like many other countries in the world, focused on the traditional ones such as increasing investment and human capital development. The other additional macroeconomic variables that are important for an economy engaged in foreign trade included drivers such as inflation, and exchange rate stabilization. The next section, therefore, discusses their combined performance during the apartheid and post-apartheid period and their relationship to South Africa’s historical economic growth trajectory.

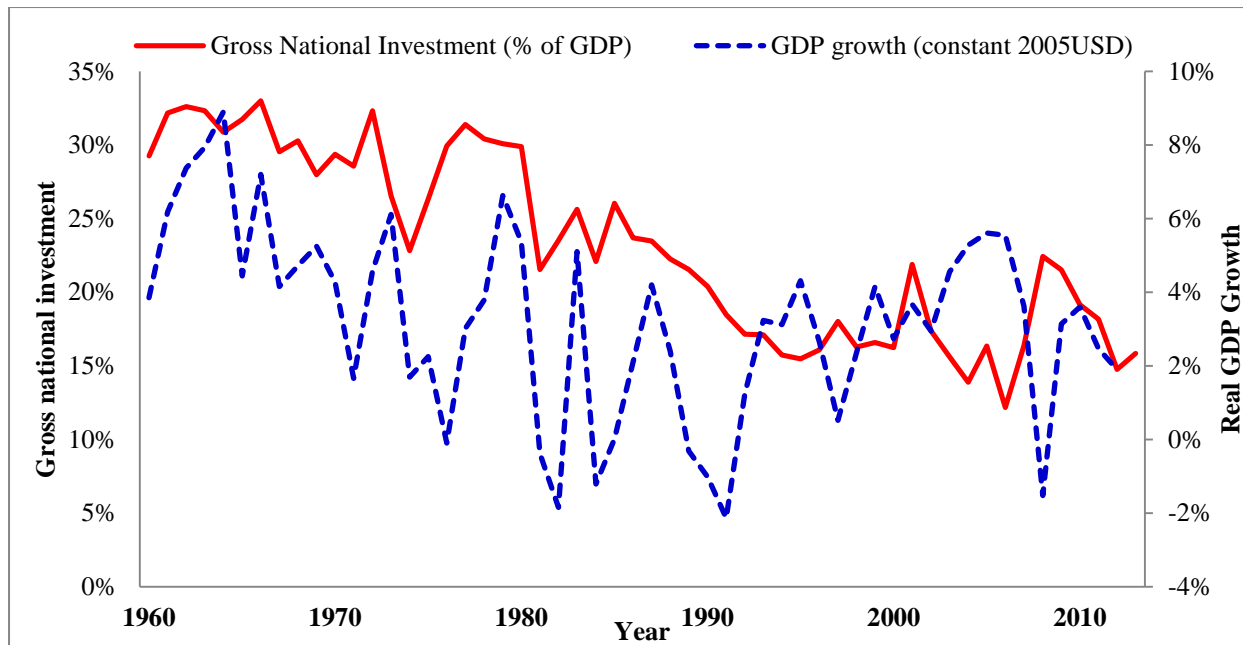
4.4 The Macroeconomic Drivers of Growth in South Africa

4.4.1 Accumulation of Physical Capital

Investment is a fundamental determinant that is crucial to the development of any economy in the world. Growth accounting decompositions from the standard neoclassical growth theory (Solow 1956), the endogenous growth theory (Romer 1986) and the new growth empirical studies (Checherita-Westphal and Rother 2012) all support the significance of accumulation of physical capital. The investment ratio has been one of the most important drivers of economic growth in the South African economy (Fedderke 2005).

Figure 4.7 illustrates the relationship between gross national investments and economic growth in South Africa during the period 1960-2013.

Figure 4.7: Gross National Investment and Real GDP Growth in South Africa: 1960-2013



Source: World Bank (2015c)

The primary vertical axis represents the percentage change in gross national investments over time while the secondary vertical axis represents the growth rate of real GDP. Overall, the evidence shows a positive relationship between real GDP growth and the growth in the accumulation of physical capital in South Africa during the period 1960-2013. During the apartheid era, gross national investment in South Africa declined from an average of 30.8% of GDP in the 1960s to an average of 23.0% of GDP in the 1980s. By the year 1995, gross national investment recorded its lowest average at 15.5% of GDP. At the same time, real GDP growth declined from an average of 6.0% p.a. during the 1960s to 1.5% p.a. in the 1980s (World Bank 2015c).

After independence or post-apartheid era, real GDP growth recovered slightly as the economy grew at an average rate of 1.8% p.a. during the 1990s. This improved further to an average of 3.3% p.a. during the period 2001-2013 (World Bank 2015c). One of the contributing factors of such poor performance in the 1990s is due to the fact that the South African economy did not recover quickly from the declining trend in gross national investment which further deteriorated during the 1990s averaging 16.7% of GDP. Growth in investment slightly improved during the period 2001-2013 to an average of 17.3% of GDP (World Bank 2015c).

South Africa's experience, overall, shows a declining trend in the accumulation of physical capital during the study period, 1960-2013. This is also supported by a declining economic growth trajectory that reached its lowest level in the 1980s averaging 1.5% p.a. During the 1960s, real GDP growth in South Africa averaged 6.0% p.a. but slightly dropped in the 1970s where the economy recorded an average growth rate of 3.4% p.a. (World Bank 2015c).

As earlier illustrated in Figure 4.2 above, during the 1960s and 1970s the growth in real GDP was attributed to the growth in mining, industry and manufacturing that improved significantly during this period rising from 37.8% of GDP in 1960 to 48.4% of GDP in 1980. However, the trend thereafter declined significantly from its peak in 1980 to 27.6% of GDP in 2013 (World Bank 2015c). The main contributing factor leading to the decline of investment in South Africa was due to, political unrests, resource allocation inefficiencies, disinvestment and divestment campaigns that came about as a result of the punitive sanctions imposed during the apartheid period 1948-1993 (Levy 1999; World Bank 2015c).

Even though the South African economy has a strong tertiary sector largely driven by developments in sub-sectors such as finance and insurance, real estate and business services, and general government services, the sector has not resulted in increased long-term capital stock. The growth in the agricultural sector has declined significantly from 11.2% of GDP in 1960 to 2.4% of GDP in 2013 (World Bank 2015c).

Overall, the slow recovery in the accumulation of physical capital has contributed towards the weak growth performance of the South African economy. Investment, therefore, plays a significant role in the growth accounting process of the South African economy. As Du Plessis and Smit (2006) noted, the level of physical capital accumulation in South Africa is still low by international standards for attainment and sustaining of high real growth rates and employment: as also argued by Bassanini *et al.* (2001), the combined effects of both private and public investments are expected to average at least 20% of GDP at a minimum rate. In the case of South Africa, this is below this threshold.

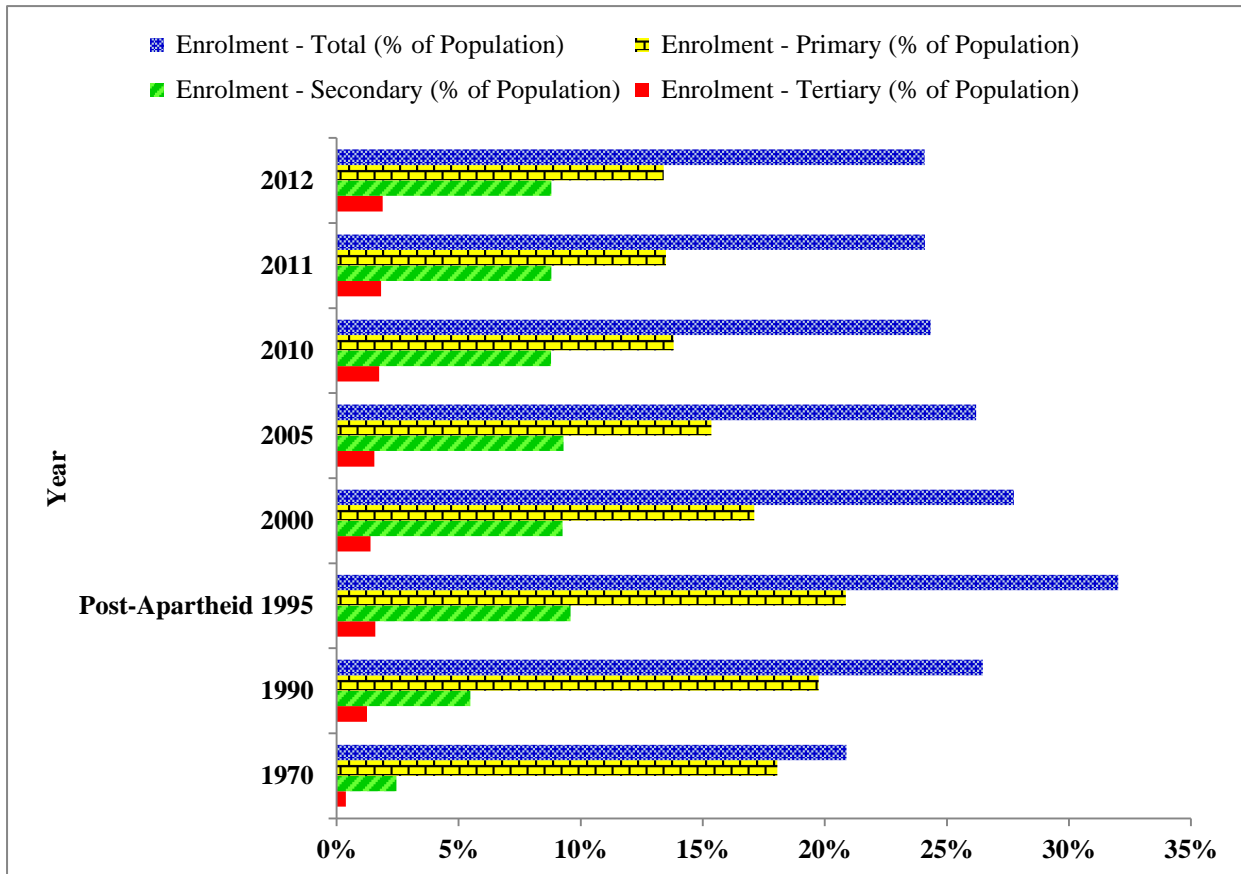
4.4.2 Human Capital Development

In recent growth literature, a strong theoretical linkage has been established between human capital development and economic growth. Both the rate of human capital accumulation and the stock of capital have been used as determinants of long run economic growth in terms of endogenous growth models (Lucas 1988; Romer 1990). Even though the Solow (1956) model

assumes exogenous technology to be the key determinant of long run economic growth, the human capital-augmented Solow model predict that a country that has a high level of human capital accumulation experiences high per capita income (Mankiw *et al.* 1992).

Figure 4.8 illustrates human capital investments represented by enrolment rates of students as a proportion of total population at primary, secondary and tertiary levels in South Africa.

Figure 4.8: Gross Enrolment Rates in Primary and Secondary Education: 1970-2010



Source: UNESCO (2015); Republic of South Africa (2001-2014)

As illustrated in Figure 4.8, education in South Africa, just like many developing countries in Southern Africa, concentrated on the provision of basic education. The trend, however, changed during the post-apartheid period where the oppressive education laws were repealed and the majority of black South Africans started to be enrolled in secondary and tertiary education. Between 1990 and 1995, gross enrolment rates at secondary level almost doubled from 5.5% of total population in 1990 to 9.6% in 1995. By 2012, the gross enrolment rate at the secondary level averaged 8.8% of total population (World Bank 2015c; Republic of South Africa 2001, 2002, 2003, 2004, 2005a, 2005b, 2006b, 2008, 2009, 2010b, 2010c, 2012, 2014).

Even though tertiary education has also substantially increased since the 1970s, South Africa has a small proportion of citizens being enrolled in higher learning institutions each year. As of 2012, about 1.9% of total population were enrolled at tertiary level which is significantly low (Republic of South Africa 2012). In terms of labour force participation, about 11% of the work-force population completed tertiary education in South Africa (Republic of South Africa 2014).

In South Africa, human capital development has been the central focus of South Africa's economic policy since 1994 and an important economic driver of economic growth (Republic of South Africa 1994, 2006a, 2010a). However, during our study period, 1960-2013, human capital has been affected by labour market rigidities and repressive education policies that were implemented during the apartheid era. During this period, the growth in the supply of skilled labour was suppressed by restrictive labour laws such as the Bantu Education Act of 1953 (Evans 1997). Human capital accumulation was also affected by the declining contribution of mining, manufacturing and industry that fell from an average of 48.4% of GDP in 1980 to as low as 27.6% of GDP in 2013. Similarly, the contribution of agriculture also fell considerably from 11.2% of GDP in 1960 to 2.4% of GDP in 2013 (World Bank 2015c). Mining, manufacturing and industries became more capital-intensive as a result of skill shortages and this meant that the demand for labour, therefore, moved from unskilled labour to skill-based (Rodrik 2006; Banerjee *et al.* 2007). Fedderke and Simkins (2012) report massive labour shedding especially in the mining sector that almost halved, resulting in the retrenching mostly unskilled workers.

Labour reforms that were initiated during the post-apartheid period also raised the real cost of labour in production. The strong union participation in wage determination intensified leading to the rise in real wages (Rodrik 2006; Fedderke and Simkins 2012). Overall, the shortage of skilled labour was identified as a binding constraint of productivity in South Africa (Kearney and Odusola 2011). In summary, skills and competencies of human capital have a significant influence on productivity and absorption of technology which are fundamental for economic growth. Thus, a nation with a pool of well-educated people especially with higher learning is a prerequisite for attaining a higher level of labour productivity which is an important factor of economic growth (Barro 1994; Bassanini *et al.* 2001). Most importantly, a nation with higher education attainment has significant impact on socioeconomic outcomes such as fertility as well as increased investment in physical capital (Barro and Lee 2013

). South Africa has been facing declining trends in school enrolments since gaining independence in 1994. This declining trend in human capital accumulation as well as low quality education has

been one of the main contributing factors toward the weak performance of the South African economy (Fedderke 2005).

4.4.3 International Trade

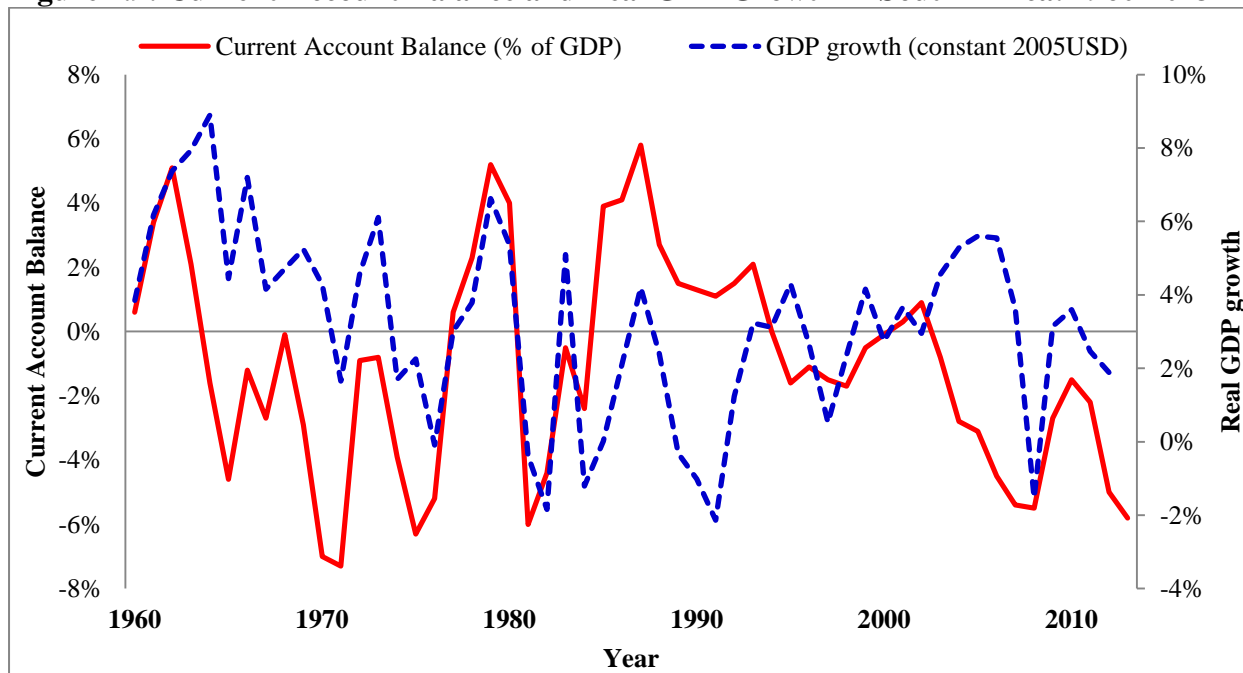
The level of international trade was identified as an important macroeconomic driver of growth in South Africa during the period 1960-2013 (Levy 1999; Kreutz 2005; Kearney and Odulosa 2011). Trade is important to economic growth as it contributes towards the accumulation of physical capital and movements in human capital. Trade is also important to a nation as it brings about industrialization which has been identified as a key concept needed for faster growth in developing economies (Dollar and Kraay 2003). In South Africa trade has been an important macroeconomic driver of economic growth since the 1960s and an important contributor towards the development of its mining, manufacturing and industrial sectors of the economy. The South African government also adopted various forms of trade policies: one related to developing import-substitution industries which took shape in the 1950s and 1960s; and the other related to outward-looking policies of trade which became effective during the post-apartheid period (Strydom 1995, p. 557).

The important relationship between trade and investment affects its contribution towards the accumulation of physical capital. This is important as in this case, trade can lead to increased or reduced consumption of goods and services which would entail a nation being either a net exporter or importer. Numerous scholars have used the sum of imports and exports to GDP as a proxy to investigate the relationship between trade and economic growth. Usually, such a measure would portray a positive relationship between trade and economic growth (see Frankel and Romer 1999). However, such a measure does not indicate whether the economy being studied is that of a country which is a net exporter or importer of goods and services and thus does not establish any linkage between trade and the accumulation of physical capital.

Kandil and Green (2002) argues that a nation's current account balance is an important macroeconomic measure for economies with a liberalised foreign sector. A current account surplus contributes towards a nation's gross domestic savings while a current account deficit erodes a country's level of gross domestic savings. As Lebe *et al.* (2009) puts it, a current account balance is a net balance between the real sector and foreign sectors of an economy. As such, rather than illustrating a positive relationship between trade and economic growth, the relationship becomes negative.

Figure 4.9 illustrates the relationship between the current account balance and real GDP growth in South Africa during the period 1960-2013.

Figure 4.9: Current Account Balance and Real GDP Growth in South Africa: 1960-2013



Source: World Bank (2015c)

The primary vertical axis represents the percentage share of the current account balance in real GDP. The secondary vertical axis represents the growth rate of real GDP. As illustrated in Figure 4.9, the graph reveals an inverse co-movement between South Africa's economic growth rate and the current account balance. During the period 1960-2013, as the South African economy grew at an average rate of 3.2% p.a., the current account balance recorded an annual average deficit of -1.0% of GDP. During the golden period 1960-1976 where the South African economy experienced an annual growth rate of 5.0% p.a.; the current account deficit recorded was -2.0% of GDP p.a. During the period 1977-1993, which is regarded as a period when the South African economy stagnated, the economy recorded an average economic growth rate of 1.6% p.a. At the same time, the current account balance recorded a surplus that averaged 1.3% of GDP p.a. (International Monetary Fund 2014). During the period 1994-2013, the South African economy grew at an average rate of 3.2% p.a. and at the same time, the current account balance registered an annual deficit of -2.2% p.a. (World Bank 2015c).

De Wet (1995) argued that the South African economy was caught up in a low equilibrium growth path due to supply-side constraints brought in due to the external sector. Domestic productivity

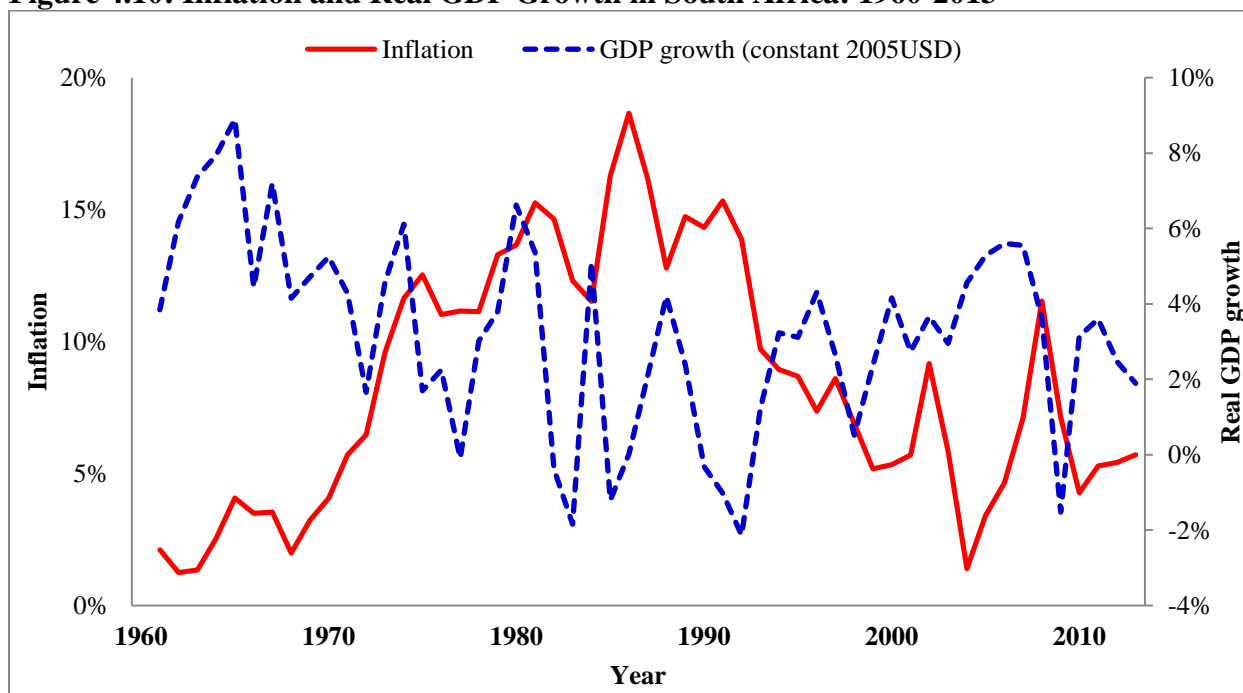
has been relatively low as experienced by worsening balance of payments position especially from 1993 onwards. In addition, South Africa's international competitiveness continued to decline since the 1990s as evidenced by the trade ratio (exports/imports ratio) that averaged 118.1% of GDP in the 1990s to 94.5% of GDP during the period 2001-2013 (World Bank 2015c). This worsening trend has made the South African economy a net consumer of goods and services on the international market (De Wet 1995).

4.4.4 Inflation

The fourth important macroeconomic driver of economic growth in South Africa is inflation. The linkage between inflation and economic growth has been studied extensively by a number of scholars and the evidence show a negative relationship between the two variables. It has been argued that a zero or low inflation rate is an essential condition for an economy to continue benefiting from sustained economic growth (Alexander 1997; Andres and Hernando 1999). It is not surprising that the South African government adopted within its monetary policy a target to control inflation as an important macroeconomic driver of economic growth in the 1990s (Republic of South Africa 1996b, 2006a, 2010a).

Figure 4.10 shows the relationship between inflation and growth in South Africa covering the period 1960-2013.

Figure 4.10: Inflation and Real GDP Growth in South Africa: 1960-2013



Source: World Bank (2015c)

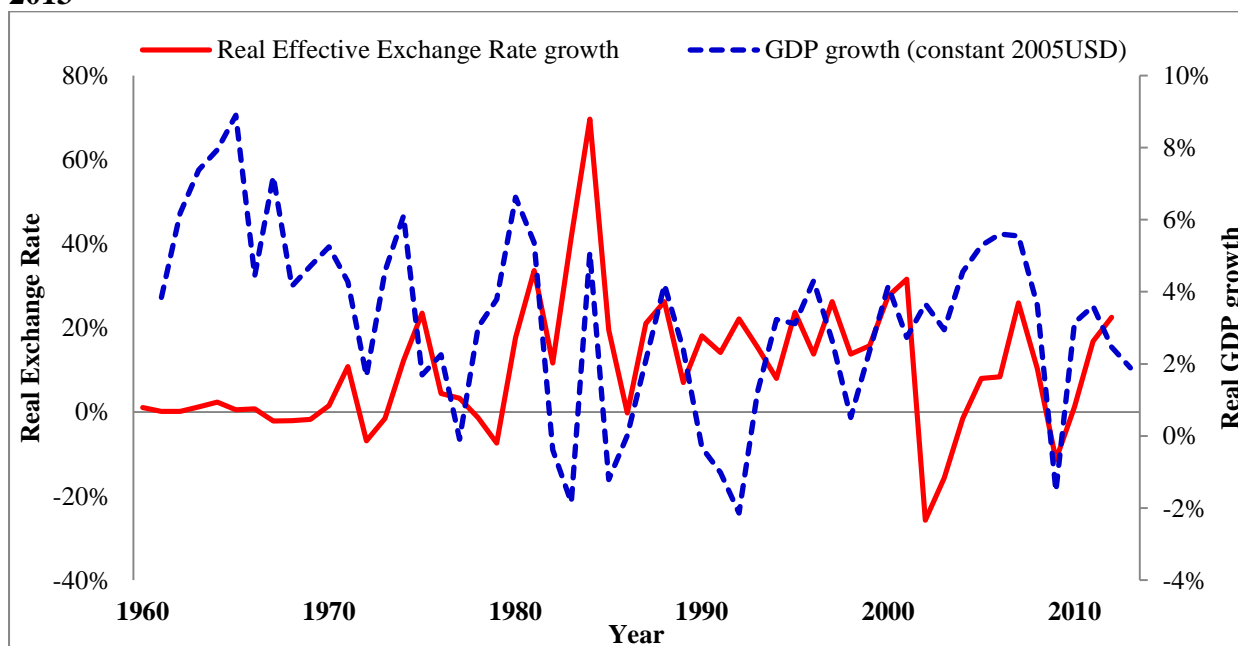
The growth pattern on the primary vertical axis shows the percentage change of inflation while the right hand side represent percentage changes in real GDP. As illustrated in Figure 4.10, there is a negative co-movement between inflation and the level of economic growth in South Africa. During the period 1960-1973, the South African economy experienced low inflation rates that averaged 3.8% p.a. while during the same period, the economy recorded an average economic growth rate of 5.4% p.a. Between 1974 and 1992, the South African economy experienced an annual inflation rate of 13.7% while the economic stagnated growing at an average growth rate of 1.9% p.a. (World Bank 2015c). From 1993-2013, the South African economy recorded a low inflation rate that averaged 6.5% p.a.; while the economy grew at an average rate of 3.1% p.a. (World Bank 2015c).

The evidence does support the argument that the level of inflation, thus, acts as a tax on the economy. A stable inflation rate is, therefore, an important macroeconomic driver of growth in South Africa (Guerrero 2006; Republic of South Africa 2010a).

4.4.5 Real Exchange Rate

The fifth important driver of economic growth in South Africa is the stability of the real exchange rate (Republic of South Africa 2010a). Figure 4.11 illustrates the relationship between real exchange rate and real GDP growth in South Africa during the period 1960-2013.

Figure 4.11: Real Effective Exchange Rate and Real GDP growth in South Africa: 1960-2013



Source: World Bank (2015c)

The growth pattern on the primary vertical axis shows the percentage change of the real exchange rate while the right hand vertical axis represents real GDP growth. As illustrated in Figure 4.11, there is a negative relationship between the growths in real effective exchange rate and real GDP in South Africa. The trends show that during periods of high economic growth, the real effective exchange rate is stable. For instance, during the period 1960-1972, the South African Rand was under a fixed exchange rate regime that was supported by the Bretton Woods monetary agreement. During this period, the Rand parity rate was equivalent to R0.71/US\$ and remained fixed till in December 1971 (Van der Merwe 1996). During the period 1971-1985 the South African Rand was devaluated on a number of occasions in order to address ensuing balance of payment problems. During the early 1970s, the Bretton Woods system on fixed exchange rates was abolished. However, the South African authorities maintained the fixed exchange rate system where the South African Rand was pegged to the United States Dollar.

In 1972, the policy changed and the Rand was pegged to the British Pound. Later in the same year, the policy changed back to the US dollar (Van der Merwe 1996). The first devaluation of the Rand was at a rate of 7.5% which took place in 1972. Between 1972 and 1973, the South African economy experienced a stable foreign exchange sector and based on projected sound economic environment, the government announced an independent managed floating exchange rate system in June 1974. Under this new system, the South African Rand was pegged to a basket of currencies under a crawling-peg system. In June 1975, the South African Rand was re-pegged to the US dollar which ran till May 1979 (Elbadawi and Kahn 2000).

Between 1975 and 1976, the balance of payments position deteriorated where the current account deficit recorded an average of -5.8% p.a. This put pressure on the existing foreign reserves and in 1976 the government devalued that Rand by 17.6% from 0.74/US\$ to 0.87/US\$ (World Bank 2015c). The new value was maintained until 1979 when a dual exchange rate regime was established that introduced a crawling peg commercial rand and a free floating financial rand (Elbadawi and Kahn 2000). The introduction of this new system was made after recommendations adopted from the De Kock Commission interim report (De Kock 1978). In this report, the fixed exchange rate system that pegged the Rand to the US dollar was not conducive to the economic growth process of South Africa (Van der Merwe 1996). The dual exchange rate system was implemented by the South African authorities till January 1983. Between February 1983 and August 1985, based on the recommendations made by the De Kock Commission, the South

African authorities abolished the financial rand and a unitary exchange rate with a managed-float of the Rand was introduced (De Kock 1985; Elbadawi and Kahn 2000).

In 1984, the South African economy faced a new wave of socio-political unrests which led to the imposition of financial and economic sanctions by the United States of America and the European Community (Levy 1999). The punitive sanctions led to disinvestment and divestment campaigns which affected on a larger scale South Africa's ability to meet its international commitments. Foreign credit facilities were withdrawn and the government had to respond by imposing restrictions on debt repayments (Levy 1999). In September 1985, the dual exchange rate regime was reintroduced that combined a managed-float commercial rand and a free-floating financial rand. The South African authorities also reintroduced exchange controls on capital transfers for both residents and non-residents. This system of exchange rate management continued to be in place till February 1995 (Elbadawi and Kahn 2000).

During the early 1990s, the punitive financial and economic sanctions were removed which allowed the South African government to become a borrower from the international capital markets. In March 1995, a unitary exchange rate system was reintroduced and the financial rand was once again abolished. However, some exchange control mechanisms were still applicable especially on foreign investments held by South African residents (Elbadawi and Kahn 2000). During the period 1996-1998, the South African Reserve Bank continued to intervene in the foreign exchange market in order to contain the depreciation of the South African Rand through the forward foreign exchange market (Elbadawi and Kahn 2000).

The unitary exchange rate mechanism with a managed-float Rand was maintained till January 2000. In February 2000, the South African Reserve Bank announced for the first time, a unitary exchange rate policy regime with a freely-floating Rand supported by inflation targeting framework. This system is still being implemented to date and the focus has moved from exchange rate to inflation-targeting to ensure that real interest rates remained positive. This meant that the South African Reserve Bank ceased all its foreign exchange market interventions (Elbadawi and Kahn 2000).

A currency overvaluation or undervaluation has an effect on a country's economic growth path. In 2010, the South African government identified currency instability as being detrimental to its economic growth path (Republic of South Africa 2010a). An overvalued currency is associated with foreign exchange shortages, current account deficits and inflation; all of which have a

negative effect on long-term economic growth. At the same time, though a currency devaluation may be good for promoting exports, it also raised the cost of important imports needed to boost domestic production especially for emerging economies (Rodrik 2008).

In summary, real exchange rate is an important macroeconomic driver of economic growth in the South African economy. The evidence shows that though devaluations and revaluations are essential to stabilise the balance of payments position, instability of real exchange rate growth has been negatively associated with unsustainable economic growth rates in the South African economy during the study period.

4.5 Policy Challenges affecting Economic Growth in South Africa

Four macroeconomic policy challenges were identified, which may continue to have an effect on the future growth of the South African economy. These include: low accumulation of long-term physical capital; low rates of human capital development; worsening current account deficits; and real exchange rate instability. These are discussed in subsection 4.5.1 to 4.5.4.

4.5.1 Low Accumulation of Long-Term Physical Capital

Traditionally, the accumulation of long-term capital stock has been the most important macroeconomic driver of economic growth for any country in the world. Both neoclassical and endogenous growth models have studied this driver extensively (Solow 1956; Romer 1986; Barro and Sala-i-Martin 2004). Bassanini *et al.* (2001) recommend that in terms of international standards, a country that accumulates annually an investment ratio to GDP of not less than 20% experiences higher economic growth rates.

The evidence from South Africa shows that, overall, the rate of investment has been declining over time. In the 1960s, the South African economy experienced high annual economic growth rates that averaged 6.0% p.a.; the highest 8.9% being attained in 1965. Similarly, the investment ratio recorded was an average of 30.8% of GDP p.a. the highest 33.0% of GDP attained in 1966. In the subsequent periods, the South African economy witnessed declining investment ratios and economic growth rates (World Bank 2015c).

In the 1970s, there was a slight decline to the investment ratio that averaged 28.8% of GDP while the economy registered an average economic growth rate of 3.4% p.a.; the highest growth rate being recorded in 1974 at 6.1%. In the 1980s, the situation worsened and is regarded as a period

when the South African economy registered its lowest rate of economic growth averaging 1.5% p.a. In fact, negative economic growth rates were recorded in the years 1982 (-0.4%), 1983 (-1.8%), 1985 (-1.2%) and 1990 (-0.3%) (World Bank 2015c). Similarly, the investment ratio had declined to an average of 23.0% of GDP; reaching the threshold of 20.4% of GDP in 1990 (World Bank 2015c).

The 1990s are regarded as a period when the South African economy was in transition towards recovery. During this period, the South African economy registered a slight improvement in the economic growth rate averaging 1.8% p.a. but it was still caught up in a low growth path. The investment ratio, on the other hand, continued to decline averaging 16.7% of GDP, from 18.5% in 1991 to 16.2% of GDP in the year 2000. The situation improved during the period 2001-2013 where the economy grew at an average rate of 3.3% p.a. (World Bank 2015c). Though the investment ratio marginally improved to an average of 17.3% of GDP p.a. the South African economy registered the lowest investment ratio recorded during the study period of 12.2% of GDP in 2006 (World Bank 2015c). The levels of investment in South Africa are, therefore, below international standards and this is a cause for concern. We isolate two factors that may have contributed towards a low accumulation of long-term capital stock.

The first relates to the declining contribution of the secondary sector to GDP – i.e., mining, manufacturing and industry sectors. During the period of study, the secondary sector in South Africa almost halved from an all-time maximum of 48.4% of GDP in 1980 to as low as 27.6% of GDP in 2013 (World Bank 2015c). During the apartheid period, 1960-1993, the investment ratio was affected by disinvestment and divestment campaigns brought about by punitive financial and economic sanctions imposed by the international community (Levy 1999).

The second factor relates to the development of the tertiary sector that has increased from 45.4% of GDP in 1980 to as high as 70% of GDP in 2013 (World Bank 2015c). South Africa is regarded as having a well-developed financial sector in Africa (Odhiambo 2009). The conditions generated in South Africa especially towards the end of the 1990s created a safe haven for credit booms, where the South African Reserve Bank floated its local currency to operate freely while at the same time adopting an inflation-targeting framework. The latter led to achieving low inflation but resulted in high positive real interest rates (Van der Merwe 2004). Between 1994 and 1999, the South African economy experienced high positive real interest rates that averaged 9.5% p.a. During the period 2000-2013, real interest rates remained positive averaging 4.6% p.a. (World Bank 2015c).

While many industrial economies such as the United States of America and other developed economies in Europe reduced their interest rates to almost zero, emerging economies like South Africa did not reciprocate the same way. This creates interest differentials that attract short-term rather than long-term capital inflows. The accumulation of short-term capital inflows (or hot money flows) puts pressure on the local currency which becomes overvalued thereby making local exports to be less competitive. As a result, the economy fails to attract the relevant long-term capital needed to sustain long run economic growth (Löffler *et al.* 2012; McKinnon and Liu 2013).

The monetary policy on inflation-targeting pursued by the South African Reserve Bank adopted in 2000 has contributed significantly to high positive real interest rates in the economy (Van der Merwe 2004). These high real interest rates, therefore, attract speculative (or hot money) short-term investments which put pressure on domestic inflation and overvaluation of the local currency. Given such a situation Central Banks are forced to intervene in a flexible exchange rate regime by buying dollars on the open market to curb appreciation of the local currency thereby violating central bank independence (Löffler *et al.* 2012). The inflation-targeting policy, therefore, needs to be put under review to determine its effectiveness to attract the necessary long-term investments needed for sustainable economic growth in the South African economy.

4.5.2 Low Human Capital Development and Income Distribution

The second challenge affecting economic growth in South Africa has been the low level of skills and knowledge of the South African citizens and real wage rigidity. Human capital development plays an important role and has been one of the key determinant in economic growth models (Romer 1986; Mankiw *et al.* 1992). Labour productivity is associated with economic growth and depends heavily on the stock of well-educated people (Barro and Lee 2013).

According to the Quarterly Labour Force Survey (QLFS) (Statistics South Africa 2014), it is estimated that 64.5% of the total labour force in South Africa has less than a secondary-level qualification; 24.6% has a secondary-level qualification; and 10.4% has a higher or tertiary level qualification. For those who are employed, 25.4% are skilled labour; 46.8% are semi-skilled; and 27.8% are unskilled (Statistics South Africa 2014). South Africa is, therefore, one of the countries in Southern Africa with the lowest education levels for skilled workers, with only a small proportion of the workforce having attained higher-level qualifications. These issues collectively

have an impact on labour productivity and the ability to absorb new technology (Barro and Lee 2013).

Another challenge related to human capital development relates to real wage rigidity. South Africa has one of the most influential labour unions in the world. Its stance has continued to perpetuate labour market distortions inherited from the apartheid regime via its wage bargaining policies and demands for the granting of more rights to unskilled workers (Maasdorp 2002, p. 12). As such appropriate wage levels are not determined by firms while the level of involuntary unemployment has remained above the natural rate of unemployment in the South African economy. Economists describe this situation as an economy facing an insider-outsider wage bargaining dilemma where employees who are members of a union benefit from high real wages that are not directly linked with labour productivity (Snowdon and Vane 2005). This has resulted in an increase in the real cost of labour in South Africa not consistent with labour productivity while involuntary unemployment has consistently remained high at an average rate of 25.4% in 2014 (Fedderke and Simkins 2012; Statistics South Africa 2014).

In summary, in order for South Africa to increase labour productivity and hence economic growth, there is need to improve skill-levels of its citizens at the tertiary level. Furthermore, the influence of labour unions is recommended to be moderated if involuntary unemployment is to be reduced.

4.5.3 Increasing Current Account Deficits

The third challenge facing the South African economy relates to increasing current account deficits. A country that experiences a current account surplus is a net lender to the world. As such openness to trade is additive in such a case and contributes towards improving a country's foreign reserves that are crucial in stabilizing its balance of payment position. The surplus generated from a current account balance act as a source of additional capital inflows needed to increase long-term investment and hence contribute towards the long run economic growth of a country. Conversely, a current account deficit erodes a country's foreign reserves, worsens its balance of payments position and causes it to become a net borrower on the international market. A current account deficit, therefore, is a source of capital outflows which is detrimental towards the accumulation of long-term capital and hence a sustainable economic growth trajectory of a country (Kandil and Greene 2002).

During the study period, 1960-2013, overall the South African economy registered a current account deficit that averaged -1.0% of GDP p.a. It worsened during the post-apartheid period,

1994-2013, averaging -2.3% of GDP p.a., more so than the apartheid period, 1960-1993 that averaged -0.3% of GDP (World Bank 2015c). The South African economy is, thus, a net lender and facing a net capital outflow position. One of the major contributing factors to a net capital outflow position has been South Africa's deteriorating terms of trade. The trade balance has significantly declined from a surplus of 9.3% of GDP p.a. during the 1960s to a deficit of -2.0% of GDP p.a. during the period 2001-2013 (World Bank 2015c). The South African economy has, therefore, moved from the country being a net exporter to that of a net importer on the international market. The other contributing factor has been real wage rigidities brought about by strong trade unions that have raised the real cost of labour. This has led to underutilization of existing capacity and increased the proportion of involuntary unemployment in the country, currently at 25.4% of the workforce (Fedderke and Simkins 2012; Statistics South Africa 2014).

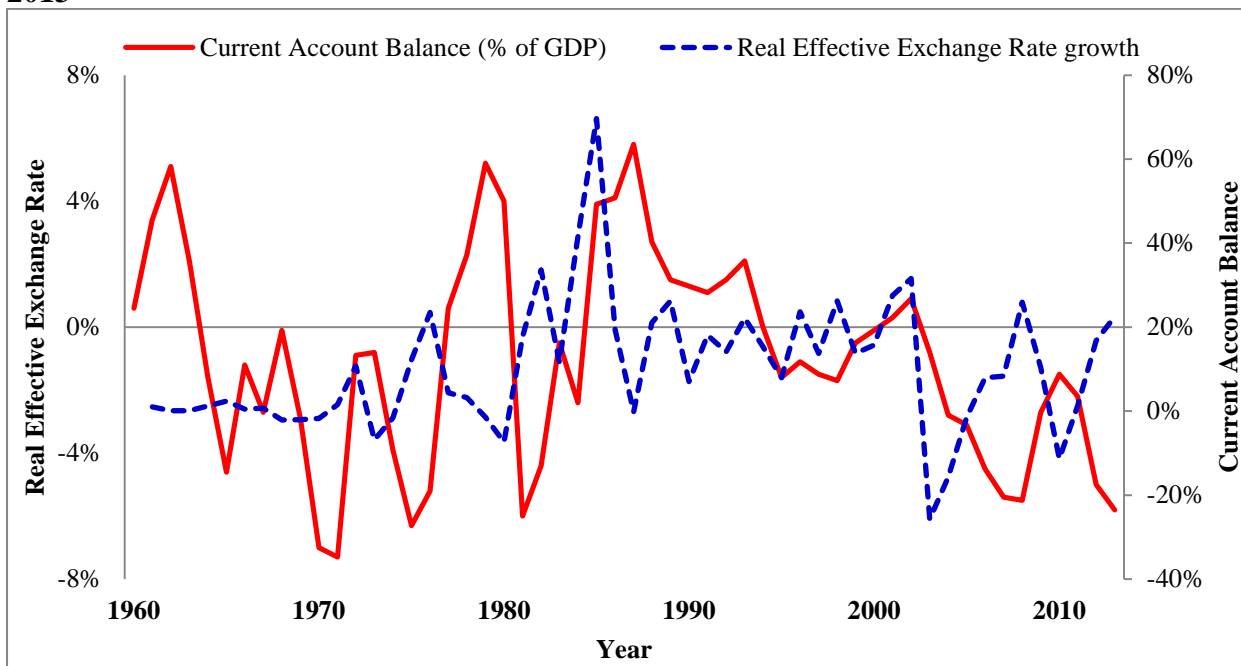
It is, therefore, recommended that South African authorities adopt strategies to promote export expansion and reduce the structural and production bottlenecks that are restricting the growth in exports.

4.5.4 Real Exchange Rate Instability

The fourth challenge affecting the South African economy during the study period relates to the volatility of the real exchange rate. Real Exchange Rate growth, just like inflation, act as a tax on the economy. Excessive overvaluation or undervaluation of the local currency has been associated with low economic growth rates (Rodrik 2008). Overvaluations are associated with large current account deficits which lead to balance of payment crises which are detrimental to the economic growth process (Easterly 2005). Elbadawi *et al.* (2011) in fact argues that any substantial real exchange rate misalignment that a country may face is costly to the economy. As such stability of the real exchange rate is, therefore, an important macroeconomic objective that a nation should adopt.

Figure 4.12 illustrates the relationship between real exchange rate growth and current account balance in South Africa during the period 1960-2013.

Figure 4.12: Trends in Real Effective Exchange Rate and Current Account Balance: 1960-2013



Source: World Bank (2015c)

The growth pattern on the primary vertical axis shows the percentage change of the real exchange rate growth while the right hand vertical axis represent the current account balance as a proportion of GDP. As illustrated in Figure 4.12, the evidence from South Africa shows a positive co-movement between the current account balance and real exchange rate growth (World Bank 2015c). The South African economy has experienced three exchange rate regimes. The first covered the period 1960-1979 where a fixed-exchange rate regime was implemented. During this period, real exchange rate growth averaged 1.0% p.a. (World Bank 2015c). During the second period, 1980-2000, the South African authorities implemented a managed-float exchange rate regime; the exchange rate growth averaged 11.3% p.a. (World Bank 2015c). During the third period, 2001-2013, they introduced a free-floating exchange rate regime with an inflation-targeting monetary policy framework. During this period, the real exchange rate appreciated annually averaging -2.1% p.a. (Van der Merwe 2004; World Bank 2015c).

Though it is argued that currency depreciations may create economic incentives to boost local exports, wide depreciation margins also raise the cost of imports and doing business (Elbadawi *et al.* 2011). Since developing and emerging economies like South Africa depend on foreign capital to develop their local industries, wide margins of exchange rate depreciation may eventually hurt

rather than boost the economy. The evidence shows that real exchange rate growth in South Africa has been unstable and is associated with lower levels of investment accumulation and hence low economic growth. It is, therefore, recommended that policies that target the stabilization of exchange rate growth should be pursued by South African authorities.

4.6 Conclusion

The chapter has examined the important macroeconomic drivers of economic growth in South Africa covering the period from 1960 to 2013. The study has identified the most important macroeconomic drivers that contributed towards the economic performance of the South African economy as: The accumulation of physical capital; human capital development; current account deficits; inflation; and the real exchange rate. The performance of these macroeconomic drivers has been influenced by events that occurred under two political regimes – apartheid regime that ran from 1960-1993 and the post-apartheid regime from 1994 to present day.

The apartheid regime was characterised by political unrests, labour market restrictions and imposition of punitive sanctions by the international community. The performance of the economy during this period was not impressive and declined from an average of 6.0% p.a. during the 1960s to an average of 1.5% p.a. during the 1980s. Investment ratios also declined significantly from an all-time high of 33.0% of GDP in 1965 to 15.5% of GDP in 1994. The South African economy also experienced high inflation rates averaging 9.7% p.a. between 1960 and 1993; with the highest rates experienced between 1974 and 1992 that averaged 13.7% p.a. (World Bank 2015c).

During the post-apartheid regime that commenced in 1994 to date, the country's focus was on reconstruction and development with an aim of reducing the inequalities that were inherited from the apartheid regime. During this period, the economy grew at an average rate of 3.2% p.a.; though lower than projected target of 6.0% p.a. documented in the various economic policies developed during the same period. Investment ratios have also marginally improved averaging 17.0% of GDP p.a., which is still below the international standard of at least 20% of GDP (World Bank 2015c).

The study has identified four main policy challenges that affected economic performance in South Africa during the study period. These include low accumulation of physical capital; low rates of human capital development; increasing current account deficits and real exchange rate instability.

For sustainable long-term growth, it is important for the South African authorities to address these challenges as they are detrimental to the sustenance of the long-term economic growth trajectory. In addition, the evidence provided shows that when modelling economic growth in South Africa, it is important to include additional variables such as current account deficits, inflation and real exchange rate. This is in addition to the traditional determinants such as the accumulation of physical and human capital that have been extensively studied in the economic growth literature.

CHAPTER 5

THEORETICAL AND EMPIRICAL LITERATURE REVIEW

5.1 Introduction

This chapter reviews both the theoretical and empirical literature on the relationship between economic growth and its key macroeconomic determinants. The chapter is divided into four sections. Section 5.2 reviews the theoretical literature, focusing on some theoretical foundations and criticisms regarding the relationship between economic growth and its key macroeconomic determinants developed by Classical and Neoclassical Economists. Section 5.3 reviews the related empirical evidence while Section 5.4 concludes the chapter.

5.2 Theories of Economic Growth

5.2.1 *Classical Theories of Economic Growth*

5.2.1.1 *Adam Smith and the Labour Theory of Value*

The Classical theories of economic growth started with two main critiques of political economies that existed in the 18th Century. The first was steered by the Scottish enlightenment led by David Hume (1711-1776), Adam Smith (1723-1790) and David Ricardo (1772-1823); and the other critique came via the French mercantilist followers led by Jean Baptiste Say (1767-1832) and Destutt de Tracy (1754-1836). Thomas Malthus (1766-1834) is another equally influential contributor to classical growth theories. In 1776, Adam Smith authored a book called '*An inquiry into the Nature and Causes of Wealth of Nations*': his economic growth theory measured the output of any nation by the amount of labour required to produce that output. Coined the "labour theory of value", Smith's argument was that the real measure of any exchangeable value of output was a result of labour production costs (Smith 1776). His theory of any economy's growth trajectory was therefore a simple equation where:

$$Y = f(L) \tag{5.1}$$

The inherent weakness of this model of output growth was that it misrepresented the reality of the industrial revolution during his time. His philosophy or synthesis missed important arguments propagated by David Hume, who mooted the importance of money and trade through commerce and industry and also the importance of migration from areas with high production costs to the lowest cost base (Mills 2002). In addition, the labour theory of value missed important factors

such as land: for example Richard Cantillon (1697-1734) had argued that the price and intrinsic value of any good or service was, in general, a measure of the land and labour inputs that were part of its production process (Cantillon, 1730). In essence, combining the Cantillon and Smithian ideas, the growth of output was a function of both land (N) and labour (L).

$$Y = f(N, L) \quad (5.2)$$

5.2.1.2 *Mercantilism and the Praxeological Ideology of Deduction*

Jean Baptiste Say (1767-1832) expounded the Cantillon and Smithian economic growth model by coining the triad of classical factors of economic growth, namely: Land (or natural agents), labour, and capital as the most important inputs or factors of production (Rothbard 1995b, p. 22). In extending the Cantillon and Smithian growth equation, the new function was presented as:

$$Y = f(N, L, K) \quad (5.3)$$

Where: Y = Total Output
 N = Land or Natural Agents
 L = Labour
 K = Capital Stock

The principles laid out by Jean Baptiste Say originated from de Tracy's praxeological ideology of deduction where he presented a logic depicting the important role that labour plays in increasing productivity. In de Tracy's argument, labour was at the centre of the production process where land or natural agents were employed to create physical capital. The newfound investment or technology was then combined with the same labour and land to increase production and productivity (Rothbard 1995b, p. 22). De Tracy also argued that distortions arising from government involvement and its use of taxes were wasteful and unproductive and negatively affected the production and productivity of goods and services. In addition, de Tracy argued that the manipulation of the currency through debasements created an incidence of inflation that was also detrimental to production and growth. De Tracy emphasised the role of an entrepreneur as an alternative to government involvement in the production of wealth (Rothbard 1995b, p. 5-6).

The classical production function was, therefore, expounded by the Mercantilists to include government and inflation as important determinants of economic growth:

$$Y = f(N, L, K, G, I) \quad (5.4)$$

Where: G = Government factors (expenditure, taxes, etc.)

I = Inflation or debasement of currency

5.2.1.3 *David Ricardo and the Land Theory of Value*

David Ricardo (1772-1823) is regarded as one of the classical economists: he attempted to explain the relationship between output growth and its factors using a different approach focusing on the distribution of output within macroeconomic classes such as landlords who demanded rent from their land, labourers whose value was determined by wages, and capitalists who expected profit from the capital they invested. In the Ricardian system, total output was distributed as a share of rent to landlords, R ; share of income to capitalists, P ; and a share of wages to workers, W (Rothbard 1995b, p. 82). The Ricardian growth equation, therefore, could be represented as

$$Y = f(R, W, P) \quad (5.5)$$

Unlike Adam Smith's approach, in the Ricardian system, the growth in output was seen as a function of the land theory of value where the plausible explanation for dissimilarities in output growth was attributed to differences in the fertility of land. In his theory, Ricardo argued that economic agents would always start using the land with the highest fertility before cultivating areas with the least fertility. The practicability of Ricardo's theory of output accumulation was vehemently questioned as it did not reflect the progress made by economies that went through the industrial revolution, especially with regard to advances made in increasing the productivity of agricultural land, the discovery of new lands, and the use of new agricultural techniques. Furthermore, the fixing of wages in his analysis was not in line with the realities on the ground (Rothbard 1995b, p. 83).

Another significant contribution by David Ricardo also came through the law of comparative advantage that advocated for the production of goods and services where a nation determines what it is best at producing (Rothbard 1995b, pp. 94-95). However, the principle governing how this is linked to economic growth has not been fully studied or specified.

5.2.1.4 Thomas Malthus – Population and Growth

Apart from the triad of classical factors, other prominent Classical Economists made significant contributions in identifying factors that drive economic growth. Thomas Malthus (1798) studied the relationship between output and population growth. Malthus argued that if left unchecked, population grows at a geometric ratio whilst output grows in terms of an arithmetical proportion. Thus, population growth is seen as detrimental to achieving sustainable growth in per capita income (Malthus 1798, p. 5). The classical observation by Malthus was based on the realization that though increases in production, prior and during the Industrial Revolution were associated with higher fertility and increases in population, the Malthus law stipulated that this phenomenon would be short-lived. Hence, population growth is negatively associated with economic growth.

The classical growth function in equation (5.4) can therefore be extended to include population growth as follows:

$$Y = f(N, L, K, G, I, P) \quad (5.6)$$

Where: P = Population Growth

Two main contributions on the role that population dynamics play in the economic growth process have blossomed since Malthus' exponential theory on population growth. The first contribution came in the 1950s via Lewis' (1954) dual economy that gave rise to the population demographic transition model, postulating that population mortality and fertility rates decline over time when an economy experiences the stages of development. The overall result is that demographic changes that increase the working-age population expected to boost per capita income growth (Golley and Wei 2015).

The second contribution came in the late 1990s where a new theory on population growth emerged, spearheaded by Boserup (1996). She argued that population growth may exhibit a positive association with economic growth as increases in population stimulate innovation, invention and diffusion of technology, thereby leading to increases in output production and productivity.

5.2.1.5 Criticisms of Classical Growth Theories

The Classical growth literature identified at least six (6) main determinants of growth, namely: Land, labour, physical capital, government factors, inflation and population growth. The Classical postulate, however, lacked some intrinsic logic in explaining how production factors contributed towards production and productivity. Overall, the classical analysis of growth focused on the analysis of absolute values. The central argument of the Smithian labour theory of value was centred on the concept that the economic value of a good was a function of the total amount of labour required to produce the good. The Ricardian land theory of value also did not provide a convincing argument on how wealth was accumulated. To circumvent this problem, the labour theory of value was replaced by a theory based on the marginal utility concept which is associated with the birth of neoclassical economics theory whose central tenet is that the price of a good is determined by the interplay of both supply and demand (Rothbard 1995b).

The marginal revolution also provided a way whereby factors of production such as labour and capital could be included in the marginal analysis and allowed to be allocated to sectors where they could be productive and yield optimal returns. However, the marginal revolution, though creating the microeconomic foundations for the macroeconomic growth models developed in the 1950s, did not contribute to the development of economic growth theory until the early 20th Century. The next three sections discuss the growth models that benefited from the marginal revolution, namely: exogenous growth models, endogenous growth models, and other growth theories.

5.2.2 Exogenous Theories of Economic Growth

This section commences with the exogenous economic growth models that benefited from the marginal revolution, first led by Evsey Domar (1946) and Robert Solow (1956). What is presented in this section consists of outlines of the ideas of the main contributors who have been extensively studied in the economic growth literature. An important prediction of the exogenous growth theories is that the long-run growth rate is determined by the rate of change in technology. Policies that affect the rate savings and accumulation of physical capital are assumed to exhibit level effects and not growth effects (Solow 1956).

5.2.2.1 The Domar (1946) Multiplier-Effect Economic Growth Model

The first neoclassical mathematical proposition on the process of economic growth that benefited from the marginal revolution was propounded by Evsey Domar, in his 1946 paper on ‘*Capital Expansion, Rate of Growth and Employment*’. Domar looked at the relationship between capital accumulation and full employment. The axiom put forward by Domar was that an economy will be in equilibrium when its productive capacity is equal to its national income. Domar adopted a classical doctrine where the labour force and its productivity were key to the economic growth paradigm. His postulate was based on the assumption that the growth rate of national income was a combined effect of the growth of labour and its productivity (Domar 1946).

The approach adopted by Domar was based on the general equilibrium theory where demand meets supply. He developed his model in a closed economic setting and disregarded the possibility of having external economies or diseconomies. From the supply side, the rate of growth of output was a function of the productive capacity-capital ratio of the following order with respect to time (Domar 1946, p. 138):

$$\frac{dP}{dt} = I\sigma \quad (5.7)$$

Where: I = Investment per year
 σ = Productive capacity
 $\frac{dP}{dt}$ = Rate of growth of the production function with respect to time

From the demand side, Domar defined the rate of growth of national income as a function of the rate of growth of investment over time through the multiplier driven by the reciprocal of the marginal propensity to save, s . The demand function was, therefore, represented as (Domar 1946, p. 138):

$$\frac{dY}{dt} = \frac{dI}{dt} \cdot \frac{1}{s} \quad (5.8)$$

Where: Y = National Income
 s = Marginal propensity to save
 $\frac{dI}{dt}$ = Rate of growth of investment with respect to time

$$\frac{dY}{dt} = \text{Rate of growth of national income with respect to time}$$

Domar's general equilibrium position was, therefore, where supply meets demand (Domar 1946, p. 138):

$$\frac{dY}{dt} = \frac{dP}{dt} \quad (5.9)$$

$$\frac{dI}{dt} \cdot \frac{1}{s} = I\sigma \quad (5.10)$$

By rearranging and directly integrating both sides of equation (5.10) with respect to time, Domar obtained the following equilibrium growth path for a closed economy (Domar 1946, p. 138):

$$I(t) = I_0 e^{s\sigma t} \quad (5.11)$$

In Domar's world, for the economy to remain in equilibrium, this required that the actual rate of investment, denoted r , should grow at the same rate as the required equilibrium rate of $s\sigma$. From equation (5.11), differentiating with respect to time we get (Domar 1946, p. 138):

$$\frac{dI}{dt} = s\sigma I_0 e^{s\sigma t} \quad (5.12)$$

From equation (5.8), it follows that (Domar 1946, p. 138)

$$\frac{dY}{dt} = \sigma I_0 e^{s\sigma t} \quad (13)$$

Domar then equated the actual investment rate to the productive capacity, $r = \sigma$. Then the equation (5.13) became (Domar 1946, p. 138):

$$\frac{dY}{dt} = r I_0 e^{s\sigma t} \quad (5.14)$$

For Domar's equilibrium to hold (Domar 1946, p. 138),

$$\frac{dY/dt}{dP/dt} = \frac{r I_0 e^{s\sigma t}}{s\sigma I_0 e^{s\sigma t}} \quad (5.15)$$

The fundamental Domar growth model equation is therefore (Domar 1946, p. 138):

$$\frac{dY/dt}{dP/dt} = \frac{r}{s\sigma} \quad (5.16)$$

Domar's proposition restated is thus as follows: for an economy to remain in a state of full employment, the actual rate of growth of investment should equal the productive multiplier, $r = s\sigma$. The main source of growth in the Domar growth model is therefore comprised of the accumulated physical capital. However, Domar's approach provided solutions that were paradoxical. For situations where $r > s\sigma$, suggests a *demand-creating effect* that implies a shortage of productive capacity. For the equilibrium to hold, this meant that the rate of actual investment should fall towards the productive multiplier. However, from a firm's perspective, demand is greater than the existing productive capacity. The behaviour of firms would make them increase their productive capacity rather than reduce the level of investment. Similarly, for cases where $r < s\sigma$, implies a *capacity-generating effect* or some productive capacity lying idle. In Domar's equilibrium, this meant an increase in investment. But from a firm's perspective, this would entail a reduction in capacity which would further decrease the actual rate of investment. Overall, Domar's economic growth path was divergent and led to a failure to attain full employment if the solution deviated from the knife-edge equilibrium path (Solow 1956).

5.2.2.2 *Solow (1956) Exogenous Economic Growth Model*

In 1956, Robert Solow developed an alternative economic growth model to address the weaknesses of the Domar growth proposition. The Domar economic growth framework had three major problems. The first related to the instability of the equilibrium growth path presented by Domar which meant that once the system diverted from its '*knife-edge*' equilibrium path it would continue being in a disequilibrium position. The balancing of the Domar's long run equilibrium path on a '*knife-edge*' equilibrium growth rate developed scenarios that for a small slip in the fixed proportions given in equation (5.16) would lead to a continued failure to satisfy the rule of full capacity utilization either by creating persistent unemployment or via inflation (Solow 1956, p. 65).

The second problem related to the reliance of the multiplier effect in the Domar's model which in Solow's view was a short-term tool used to resolve long run problems (Solow 1956, p. 66). Lastly, in the Domar's model, the only factor of production that affected the growth in output was the productive capacity which was a function of the stock of capital alone. Under Solow's proposition, labour was reintroduced as an important factor used in the production function. The proposition

adopted in the Domar model was to allow the combination of capital and labour to be in fixed proportions; while in Solow's growth model, capital and labour were combined in varying proportions.

The mathematical representation of Solow's growth model is based on three equations. He first assumed that output was a function of both capital, labour and technological progress (Solow 1956, p. 66).

$$Y = F(K, L, T) \quad \text{for } K, L, T > 0 \quad (5.17)$$

In intensive form per effective labour, equation (5.17) is represented as (Barro and Sala-i-Martin 2004, p. 26)

$$Y = Lf(k, 1, T) = Lf(k) \quad \text{for } k = K/L \quad (5.18)$$

To solve the two unknowns, Solow assumed the rates of change for K and L over time to be the following: for capital, the rate of change was equivalent to gross investment less depreciation (Barro and Sala-i-Martin 2004, p. 26)

$$\frac{dK}{dt} = \dot{K} = sY - \delta K \quad (5.19)$$

Alternatively from equation (5.18) using the product rule

$$\dot{K} = \dot{k}L + k\dot{L} \quad (5.20)$$

Alternatively, the labour force grew exponentially as indicated by the following labour function

$$\frac{dL}{dt} \cdot \frac{1}{L} = \frac{\dot{L}}{L} = \eta \quad \text{for } \eta > 0 \quad (5.21)$$

The Solow growth model was, therefore, solved as follows. Substituting equation (5.18), (5.20) and (5.21) into (5.19) we get

$$\dot{k}L + k\eta L = sLf(k) - \delta Lk \quad (5.22)$$

Dividing equation (5.22) throughout by L and solving for \dot{k} we get the fundamental equation of the Solow growth model as follows:

$$\dot{k} = sf(k) - (\eta + \delta)k \quad (5.23)$$

Thus, in the Solow growth model, the optimal growth path where output, consumption and capital are maximised is at the intersection where $sf(k) = (\eta + \delta)k$. The long run growth rates were, therefore, determined by exogenous elements in a closed economy. The transitional dynamics of the Solow growth model thus allow the growth path to converge to some optimum level even when exogenous shocks (s, η) have been experienced within the economy (see Barro and Sala-i-Martin 2004, pp. 37-40).

The strength of the Solow growth model, unlike the Domar model, depends on its convergence whenever an external shock occurs. According to Solow (1956), shifts in the production function caused by increases (or decreases) in the rates of savings, population growth and technological progress have temporary level effects. Once the shifts to the balanced growth path are made, the economy returns to its steady state growth path. However, he argued that shifts in the neoclassical production function arising from increases (decreases) in the savings rate or population growth had a limit. For savings in a closed economic setting, there is a limit to which households can save their income for future consumption. Similarly, there is a limit to which population can grow or decrease. Solow's model proposition therefore argues that it is only technological progress that will continue to generate growth-effects in terms of economic growth in the long run per capita income and consumption. As such, technological progress in the Solow neoclassical growth model provides the only source of sustained long run growth of per capita income (Solow 1956).

Because Solow's growth model is designed in a closed economic setting, that the implication is that the rate of growth driven by technology is determined outside his model and is therefore independent of any government policy intervention that might be instituted.

5.2.2.3 *Criticisms of the Exogenous Growth Models*

Some of the criticisms under the neoclassical growth theories are discussed in this section. The first problem relates to a measure of the dissatisfaction with the neoclassical model. Mankiw *et al.* (1995) showed that based on its present structure the Solow neoclassical growth model leaves a high magnitude of income per capita unexplained when comparing international income differences between countries. Mankiw *et al.* (1995, p. 282) showed that the magnitude of income differences in the neoclassical Solow growth model could be represented by the following equation on variations in income per capita:

$$dy^*/y^* = [\sigma/1 - \sigma][ds/s - d(\eta + g + \delta)/(\eta + g + \delta)] \quad (5.24)$$

Where: $\sigma = f'(k^*)k^*/f(k^*)$ is the steady-state capital share.

Based on their calculations and using data from national income accounts, they showed that the Solow neoclassical growth model could only explain income disparities of not more than two when in fact the world income disparities could even be five or ten times more than what the Solow growth model predicts (Mankiw *et al.* 1995). This confirms that the exogenous growth model suffers from omitted variable bias.

Second, the Solow residual, which represents the total factor productivity or the portion of output that cannot be explained by amount of inputs used in the production process, has come under heavy criticism especially by the endogenous growth theorists, is that it harbours efficiency factors that have a significant impact on the utilization of inputs in the production process (Mosley *et al.* 1987). According to a World Bank report (World Bank 1990a), the three components of sustained growth are comprised of stable macroeconomic conditions, an appropriate price mechanism and regulatory environment, and also efficient institutions that can convert savings into productive investments. These efficiency factors include a low and stable inflation rate, a competitive exchange rate, a well-developed and sound financial system, and clear and sustainable tax rules. These efficiency factors are capable of inducing savings and investment thereby preventing capital flight (World Bank 1990a, p. 100). In the exogenous growth framework, however, this burden was disguised via the Solow residual.

To address this problem, the Solow growth model has been augmented by a number of researchers with additional factors that may have an influence on long-run economic growth. For example, Mankiw *et al.* (1992, p. 420) found that the inclusion of a human capital accumulation variable improved model results with implied physical and human capital shares averaging one-third as had been predicted by the Solow growth model. Knight *et al.* (1993) included outward orientation as an important input in the growth process. The inclusion of trade policies was based on the notion that export and import sectors promoted a country's openness and facilitated the transfer of technology of advanced capital goods; as well as the diffusion of knowledge and skills (Easterly and Wetzel 1989, p. 10; Knight *et al.* 1993, p. 515).

5.2.3 Endogenous Theories of Economic Growth

This section analyses endogenous growth theories by reviewing the four main sources of capital modelled by endogenous growth theorists namely: innovative physical capital (Frankel 1962); endogenous savings (Ramsey 1928, Cass 1965, Koopmans 1965); intellectual capital (Romer 1986; Grossman and Helpman 1991; Aghion and Howitt 1992); and human capital (Lucas 1988). In the next section that follows these variants of the endogenous growth models are discussed.

5.2.3.1 Physical Capital Based Endogenous Growth Theories

Frankel (1962) AK Theory

Endogenous growth models that focus on the accumulation of physical capital assume that the savings (or investment) rate makes a permanent positive contribution to the long run growth rate. According to Frankel (1962) aggregate production functions can also exhibit increasing returns to scale if a portion of the capital employed is used as innovative capital that contributes to technological progress. Such innovative capital can be in the form of improvements in the organization, quality of labour, technical changes and external economies of scale, among others. (Frankel 1962, p. 1001). Frankel's aggregate production function is assumed to take the following form:

$$Y = aK \quad (5.25)$$

The aggregate production function given in equation (5.25) is a special case of the Cobb-Douglas function where the elasticities for capital and labour are $\alpha = 1$ and $\beta = 0$, respectively. In equation (5.25), the constant, a , is referred to as an output-capital ratio which is positive. This implies that an increase in the savings (or investment) rate will lead to a permanent increase in the long run growth rate (Frankel 1962, p. 1012-13). AK models, therefore, assume the presence of a unitary elasticity of physical capital on long run economic growth.

The Ramsey-Cass-Koopmans (1928, 1965) Endogenous Economic Growth Model

Frank Ramsey (1928), David Cass (1965) and Tjalling Koopmans (1965) developed a growth theory where the central principle is to determine an optimum feasible growth path by maximising social welfare. Their argument is based on the assumption that for any economy, the social objective is to ensure that there is an adequate provision of consumption goods over time. For this

to be the case, the optimal feasible growth path cannot be determined without maximising utility of current consumption per capita (Ramsey 1928, p. 543; Cass 1965, p. 234). In their framework, the determination of the savings rate is, therefore, endogenous that is contrary to Solow's prediction. In their model setting, national income is used to satisfy consumption and investment over time. The general equilibrium in intensive form is, therefore, where output is equated to the sum of consumption and investment (Cass 1965, p. 234).

$$y(t) = c(t) + z(t) \quad (5.26)$$

Where: $y(t)$ = Output with respect to time
 $c(t)$ = Consumption with respect to time
 $z(t)$ = Investment with respect to time

The fundamental growth equation (or production function) is the same as for the Solow function in equation (5.23). Cass argued that for any particular growth path, total welfare is represented by the following social welfare function (Cass 1965, p. 234):

$$\frac{1}{\gamma} \int_0^{\infty} U(c(t)) e^{-(\rho-n)t} dt \quad (5.27)$$

Where: $U(\cdot)$ = Utility index of current consumption per capita
 ρ = Discount factor or rate of time preference for future welfare
 $e^{-(\cdot)}$ = Family size multiplier
 n = Population growth
 $\frac{1}{\gamma}$ = Weight of current population

The objective is to specify a feasible growth path that maximises the social welfare function presented in equation (5.27). The optimum savings rate is endogenously determined in a virtual setting determined through a saddle path represented by a monotone function that can steadily increase, decrease or remain constant as the per capita capital stock rises (Cass 1965, p. 238). In a closed economy given competitive markets and rational economic agents, preferences of per capita consumption streams are given by the following isoelastic consumer utility function:

$$\frac{1}{\gamma} \int_0^{\infty} \frac{[c(t)^{1-\sigma} - 1]}{1-\sigma} e^{-(\rho-n)t} dt \quad (5.28)$$

Where: σ = Constant Relative Risk Aversion (CRRA)

To determine optimal allocations, therefore, is to maximise the utility function (5.28) subject to the production function given in equation (5.26). This involves solving a Hamiltonian function of the order (see Barro and Sala-i-Martin 2004, p. 89):

$$H(z, \theta, c, t) = \frac{1}{\gamma} \frac{[c(t)^{1-\sigma}-1]}{1-\sigma} + \theta[y(t) - c(t)] \quad (5.29)$$

Where: θ = Shadow price or multiplier

The key message derived from the Ramsey-Cass-Koopmans model is that policy choices can influence rates of savings and investment. In its simplest terminology, the first term on the right hand side of the Hamiltonian function (5.29) is the sum of current period utility valued at a constant relative risk aversion σ and the second term is the rate of increase in capital valued at a shadow price $\theta(t)$. The objective, therefore, is to maximise the Hamiltonian with respect to per capita consumption provided that the social planner correctly chooses the shadow price $\theta(t)$ and the constant relative risk aversion, σ .

5.2.3.2 Intellectual Capital Based Endogenous Growth Theories

5.2.3.2.1 Romer (1986) Knowledge-based Endogenous Growth Model

The need to endogenise the drivers of economic growth continued with Romer in 1986 when he developed a fully specified model of long run economic growth with the savings rate assumed to be endogenously generated by an intertemporal utility maximization function supported by technology. In his assertion the long run economic growth path of the technology-driven endogenous model is led by the accumulation of measurable new knowledge via what he terms ‘*forward looking, profit-maximising agents*’. The new knowledge is assumed to be generated from research technology, which exhibits diminishing marginal returns to knowledge (Romer 1986, p. 1003).

The possibility of having increasing returns driven by an intangible capital good in Romer’s model allows for the possibility of having a fully specified model, which he claimed to be competitive, where per capita income can grow without bounds through a monotone function which steadily increases over time (Romer 1986, p. 1003). He further claimed that since developed countries are usually custodians of technological advancement rather than poor countries, rich countries will

tend to grow faster than poor countries. The key deviation from the Cass (1965) neoclassical endogenous growth model comes by adding the concept of increasing marginal returns to the economic growth path based on an intangible capital good, that is, knowledge (Romer 1986, p. 1004).

By adopting all assumptions in the Cass (1965) model and adding another factor, that is intangible knowledge, Romer considered a discrete-time model of economic growth comprising two periods. The consumer utility function is strictly concave and given by $U(c_1, c_2)$ for a single good consumed in two periods. The axiom states that consumers have an initial endowment of the consumption good in period 1 but in period 2 the consumption good is a function of the intangible capital good, that is, knowledge, denoted κ , and a vector of other tangible factors like capital and labour denoted \mathbf{x} (Romer 1986, p. 1014).

The production function in Romer's model was also assumed to be a concave function with the following factors

$$Y = F(k_i, K, x_i) \tag{5.30}$$

- Where:
- Y = Output
 - k_i = New knowledge in firm i
 - K = Sum of new knowledge in the industry
 - x_i = A vector of other factors in firm i

In Romer's production function, the new knowledge (k_i) exhibits increasing returns to scale and had a convex function; while the total knowledge in the sector ($K = \sum_{i=1}^N k_i$) possesses properties of a concave function and thus diminishing returns to scale. The second crucial assumption in Romer's model relates to the assumption of its having a competitive equilibrium that is not Pareto optimal. He argued that it was essentially the existence of externalities that holds the model in a general equilibrium which can be sustained by government intervention in order to correct the externality created by knowledge by means of taxes and subsidies (Romer 1986, p. 1004). For this competitive equilibrium to hold, Romer assumed that the overall production function is a concave function for all factors of production (Romer 1986, p. 1015). He assumed that knowledge is a principle and a measureable but intangible input of production and a factor that violated the Inada (1963) conditions of diminishing marginal rate of substitution.

Thus, in a competitive equilibrium, the maximization problem was to maximise consumer utility subject to consumption in the first and second period. This involved solving a Lagrangian multiplier of the order

$$\mathcal{L} = U(c_1, c_2) + p_1(\bar{e} - k - c_1) + p_2[F(k, K, \mathbf{x}) - c_2] + \omega(\bar{\mathbf{x}} - \mathbf{x}) \quad (5.31)$$

Where: \bar{e} = Consumption endowment in period one
 k = New knowledge
 p_1, p_2, ω = Shadow prices or multipliers

Simply put, Romer's endogenous model with new knowledge can be summarised as a competitive equilibrium growth model with factors that can exhibit properties that are constant, or increasing or diminishing returns to scale as long as the competitive equilibrium growth model is concave (Romer 1986, p. 1018).

The possibility of holding all these controversial assumptions is again presumed to be left in the hands of a 'benevolent dictator' who sets 'economy-wide' values of the intangible knowledge that is a convex function in the production function (Romer 1986, p. 1015). The setup for maximising consumption is the same as in the Cass (1965) model where Romer came up with a similar equilibrium maximising function with parameters to be determined outside the model that included the determination of shadow prices, rate of time preference, and an additional factor, that is, intangible knowledge.

5.2.3.2.2 *Human Capital Based Endogenous Growth Theories – Lucas (1988)*

Another variant of the endogenous growth model that adds an important factor of production – human capital – was proposed by Lucas (1988). Lucas defined human capital as consisting essentially of developments in skills' levels where the productivity of a single worker was increased by enhancing skill levels. Lucas postulated that human capital has two effects: human capital effects on existing factors of production and the production function and also time allocation which affects human capital accumulation (Lucas 1988, p. 17). His model framework conformed to the classical triad first introduced by JB Say's praxeological deduction on the importance of human capital in the accumulation of output or income.

The Lucas (1988) human capital growth model had two solutions to solve: an optimal path and an equilibrium path. The optimal path aims to maximise consumer utility subject to the production

function and the endogenous human capital accumulation function. The equilibrium path involves maximising the endogenous human capital accumulation function (Lucas 1988, p. 20). The consumer utility function is similar to the Cass model (1965) within a closed economic system and an exogenous population growth rate λ . The production function was modified and includes human capital based on skill level with technological progress that is Hicks-neutral defined as follows (Lucas 1988, p. 18):

$$L(t)c(t) + \dot{K}(t) = AK(t)^\beta [u(t) h(t)L(t)]^{1-\beta} h_a(t)^\gamma \quad (5.32)$$

Where: $h_a(t)^\gamma$ = External effects of human capital
 $h(t)$ = Human capital accumulation
 A = Level of technology assumed to be constant
 $\dot{K}(t)$ = Growth of physical capital
 $K(t)$ = Physical capital
 $L(t)$ = Labour
 $c(t)$ = Consumption
 $u(t)$ = Consumer utility

If $\gamma = 0$, then there are no external effects and the balanced growth path of the Lucas human capital growth model becomes a concave function with a straight line that passes through the origin. However, if $\gamma > 0$, then the Lucas model becomes a convex function and the accumulation of human capital function is based on the level of effort devoted to the accumulation of human capital linked to its rate of change. Lucas adapted a similar formulation by Uzawa (1965) and Rosen (1976) where the growth rate of human capital accumulation was (Lucas 1988, p. 19):

$$\dot{h}(t) = h(t)\delta[1 - u(t)] \quad (5.33)$$

Based on the three equations (5.25), (5.32) and (5.33), Lucas solved the following Hamiltonian function that maximised consumer utility subject to the production function (5.32) and human capital accumulation function (5.33) (Lucas 1988, p. 20)

$$\begin{aligned} H(c, u, K, h, \theta_1, \theta_2, t) \\ = \frac{L(t)[c(t)^{1-\sigma} - 1]}{1 - \sigma} + \theta_1 [AK(t)^\beta \{u(t) h(t)L(t)\}^{1-\beta} h_a(t)^\gamma - L(t)c(t)] \\ + \theta_2 [\delta h(t)(1 - u(t))] \end{aligned} \quad (5.34)$$

The solutions to Lucas' human capital growth model, however, were based on one key restriction that for the model to hold, the value of the constant relative risk aversion factor should be greater than one. The Lucas model based on this restriction provides an economic growth model where human capital is seen as leading to growth effects more than level effects and is dependent on the value of the rate of preference or discount factor, ρ , the growth rate for human capital accumulation, δ , and the constant relative risk aversion parameter, σ (Lucas 1988, p. 23).

In summary, the Lucas human capital endogenous growth model assumed increasing returns based on a human capital development function that is convex. In addition, and perhaps what Lucas (1988, p. 12) argued, even the parameters in the endogenous growth models do not lead to growth effects – that is, altering growth rates along the balanced growth paths – but to level effects – cause changes that shift the balanced growth path without affecting the slope of the long run growth path.

5.2.3.2.3 *Schumpeterian Endogenous Growth Models of Industrial Innovation*

Another set of theoretical endogenous growth models based on intellectual capital have been developed by Grossman and Helpman (1991) and Aghion and Howitt (1992). These endogenous growth models focus on quality-improving innovations based on Schumpeter's (1942) creative-destruction theory; or the theory of economic innovation. The Schumpeterian theory postulates that aggregate output is accumulated through a continuum of improvements in intermediate products. He further argues that capitalism is a form of economic change that can never be stationary: change is not left only to economic life changes affecting society (for example, wars, revolutions, etc.), nor quasi-automatic increases in capital accumulation and population – but also via quality improvements. In addition he argues that the fundamental impulse of change comes from the creation of new consumer goods, new (and improved) methods of production and transportation, new markets and new forms of industrial organization (Schumpeter 1942, pp. 82-84).

The application of Schumpeter's creative destruction theory in economic growth was applied by Grossman and Helpman (1991, p. 43) who argued that product quality improvements raise total factor productivity in the manufacturing of consumer and capital goods over time. Aghion and Howitt (1992, p. 323), on the other hand, modelled the role of industrial innovations that improve the quality of products. Both theories are based on Schumpeter's (1942) theory of creative destruction where there are quality ladders in which each innovation is built on a previous one

(Grossman and Helpman 1991, p. 44) or “better products render previous ones obsolete” (Aghion and Howitt 1992, p. 323). In these Schumpeterian models, the long-run growth rate, therefore, depends on the share of GDP spent on research and development and not necessarily on the share of output that is saved (Coe and Helpman 1995; Stokey 1995).

5.2.3.3 Criticisms of the Endogenous Growth Models

Recent studies on endogenous growth theories have extended the neoclassical framework by relaxing the important assumptions of exogenous growth theories such as diminishing returns to scale, the exogeneity of technological change, and investment in human capital. A fundamental departure from the exogenous growth models is founded on the assumption that capital employed exhibits constant or increasing and not diminishing returns to scale. The fundamental problems with the endogenous growth models discussed in the previous section are, to some extent, based on the challenges of determining the optimal values of the intangible parameters that become subjective in terms of the valuations of the benevolent dictator or social planner. Frankel (1962) assumed this to be achieved through the accumulation of innovative capital; Cass (1965) emphasized the importance of policy choices in influencing the level of savings and investment; Romer (1986) assumed that this is possible through knowledge externalities; Grossman and Helpman (1991) and Aghion and Howitt (1992) assumed the existence of constant returns to scale to emanate from economic innovation through product improvement or differentiation; and Lucas (1988) assumed this possibility through increasing the efficiency of human capital in the form of skills or learning by doing. There are five challenges that we observe with endogenous growth models that are yet to be addressed.

The first challenge is that most of the endogenous growth models are faced with the problem of how to empirically estimate the optimum values of the rate of time preference, constant relative risk aversion (CRRA) and shadow prices. These parameters are usually assumed to be determined by a social planner or a benevolent dictator (Cass 1965; Romer 1986; Lucas 1988). Lucas (1988) assumed this value to be greater than one for his model to be valid; King and Rebelo (1990) assumed a value of CRRA to be either one-half or two for them to be able to assess the impact of a permanent change in the tax rate, while Stokey (1995) in estimating the impact of research and development on economic growth, assumed parameter values of the rate of time preference and the CRRA to be equal to one. Overall, these parameters cannot be empirically measured or estimated, but have to be assumed.

The second challenge relates to the fact that empirical estimation of endogenous growth models is also usually done through simulations. As noted by Schumpeter (1942, p. 83), any *ex-post* appraisal of an economic innovation cannot be achieved since the process of realizing any transformation from an economic innovation takes considerable time to fully reveal its ultimate effects and can take decades if not centuries. Hence, the only meaningful evaluation is *ex-ante*, that is, simulation or forecasts. Furthermore, he argues that a meaningful analysis of an economic innovation can occur only within a particular industrial domain and becomes inconclusive beyond that (Schumpeter 1942, p. 83).

The third challenge associated with endogenous growth modelling and empirical verification relates to finding a suitable proxy for human capital accumulation that would represent accumulation of knowledge, skills and learning-by-doing acting as an additional source of innovative capital. However, models that rely on intangible variables such as knowledge and skills are hard to measure empirically. There is still no agreement on the best proxy for human capital as evidenced by different and unreliable approaches such as cost-based (Jorgenson and Fraumeni 1989), output-based (Barro and Lee 1994), and income-based approaches (Mulligan and Sala-i-Martin 1997). In addition, Levine and Renelt (1992, p. 945) have argued that though investment in human capital is important, the proxies used such as school enrolment or average years of schooling do not control for quality and investment in human capital should be seen as more than just an investment in formal schooling. Others have argued that an appropriate measure would be to estimate the value of all forgone earnings when an individual is engaged in training (Kwon 2009). This again has its own drawbacks especially in determining the potential income that an individual is expected to earn.

A fourth challenge noted by Diamond (1990, p. 221) shows that the stability or instability in determining the saddle point in endogenous growth models assumes perfect foresight of the parameters – shadow prices, subjective rate of time preference and constant relative risk of aversion $(\theta(t), \rho, \sigma)$ by the social planner which is rarely the case. The key assumption made is that planners, consumers and firms are rational agents that have perfect foresight of future prices and correctly – and rationally – choose the parameters $(\theta(t), \rho, \sigma)$. In practice, the social planner cannot know whether the assumptions made for the equilibrium path are correct or even how to correct a miscalculation concerning the optimum equilibrium path based on consumer utility. As Solow (1956) notes, building a credible theory of investment or even consumption over time based on the axiom of perfect foresight is difficult. Eventually the endogenous growth models present

level effects just like the Solow neoclassical growth model and not growth effects. Level effects have temporary effects on the economic growth path of an economy and the endogenous models, while taking a different approach to developing alternative theories of economic growth based on maximising consumer utility, did not achieve the intended objective of endogenising growth effects.

The final challenge, as noted by Rothbard (1995a, p. 379-381), states that utility cannot be measured: it is indivisible – and a subjective abstract-valuation ranked by an individual. Given its subjective and intangible nature, the concept of comparing and aggregating consumption utility for individuals would be equally impossible and difficult to estimate empirically.

5.2.4 Other Growth Theories

Another set of growth theories emerged in the economic growth literature especially in the 1990s and these models allowed for the efficiency of investment and human capital in the economy to be influenced by policies and institutional settings. These models reinforce the notion that economic policies have a long-term effect on the long run equilibrium growth path (Bassanini *et al.* 2001, p. 6). Therefore, policies that contribute to the efficiency of savings and investment by lowering distortions in resource allocation will generally encourage economic growth (Easterly and Wetzel 1989, p. 20). The theoretical arguments are grounded in growth hypotheses such as the Wagner Law or Peacock-Wiseman hypothesis on government spending and growth (Wagner 1892; Peacock and Wiseman 1961); the Mundell-Tobin hypothesis on inflation and growth (Mundell 1963; Tobin 1965); the Balassa-Samuelson hypothesis on purchasing power parity, and growth of real exchange rates, trade and growth (Balassa 1964; Samuelson 1964); and the McKinnon-Shaw hypothesis on financial repression and growth (McKinnon 1973; Shaw 1973).

5.2.4.1 The Wagner Law and Economic Growth

The Wagner law, or the Peacock-Wiseman hypothesis, or the law of increasing state spending postulates that public expenditure rises at a faster rate than national output. The law predicts that any economy that undergoes a transition to higher income levels will experience an increase in public expenditure as a share of GDP. This increase is due to the following: increased social activities on the part of the state; increased government administration and protection – and the welfare functions of the state (Wagner 1892; Peacock and Wiseman 1961; Kolluri *et al.* 2000). According to Peacock and Wiseman (1961) political choices on resource utilization differ from choices made through price or market mechanisms. In their analysis, the increase in public

expenditure is dependent on two effects: the displacement effect and the concentration effect. The former effect occurs in times of conflict where governments raise government expenditures and taxes to support a cause, for example, a war. The concentration effect, on the other hand, occurs during times of economic development as government expenditure grows to support social and welfare demands.

The use of government expenditure as a policy instrument to influence economic growth was also advocated by Keynes (1936). In contrast to the neoclassical price mechanism that was a key factor to equilibrate markets, Keynes argued that there were some situations where a depressed economy would not quickly respond to the price mechanism to return to equilibrium. Thus, the use of countercyclical fiscal policies aimed at reducing the amplitude of the business cycle during a depression were recommendable in order to influence short run growth while market forces do so in the long run (Keynes, 1936). Keynes's approach made deliberate use of government budget and expenditures to stimulate demand and employment during times when aggregate demand of goods and services was lower than supply. According to the Keynesian theory, government spending could be used to stimulate the economy by inducing investment through government expenditure on infrastructure (fiscal policy) and a reduction in real interest rates (monetary policy).

However, supply-side theories postulate that government expenditure reduces the efficiency of investment through two main channels: distortionary taxation that reduces the rate of return on factors of production and also through direct distortion on the allocation of resources (subsidies and transfers) that eventually affects the price mechanism (World Bank 1990a, p. 101-102; Bassanini *et al.* 2001, p. 18). In a neoclassical framework situation these distortions are seen to lead to an efficiency loss and have negative *level-effects* on output (Jorgenson and Yun 1990) while the endogenous growth models rather stress the potential growth-effects of government spending on growth. Therefore, a government that is willing to focus more on public investment, save more or accumulate small budget deficits; will tend to increase the long run equilibrium level of per capita output and, hence, its growth rate (Barro 1990; Barro and Sala-i-Martin 1992; Barro 1999).

5.2.4.2 *The Mundell-Tobin Hypothesis and Economic Growth*

The motivation on the relationship between inflation and economic growth has been discussed in the literature in terms of the Mundell-Tobin hypothesis (Mundell 1963; Tobin 1965). The

influence of inflation on economic growth is through the efficiency of savings and investment where inflation acts as a tax on savings and investment (Bassanini *et al.* 2001). While the monetary growth theory literature on inflation and growth posits a positive influence of inflation on the accumulation of physical capital and growth – the Mundell-Tobin hypothesis – there are others who posit a negative relationship between inflation and growth (Sidrauski 1967; Stockman 1981; Fischer 1983). Other studies have postulated no significant relationship between inflation and economic growth (Friedman and Schwartz 1963). Recent models on the relationship between inflation and economic growth postulate that a negative relationship exists only at certain thresholds – lower inflation can be positively associated with economic growth whereas higher rates of inflation may be negatively associated with economic growth (Bullard and Keating 1995; Bruno and Easterly 1998; Khan and Senhadji 2001).

5.2.4.3 *The Balassa-Samuelson Hypothesis and Economic Growth*

The relationship between economic growth and changes in the exchange rate is referred to as the Gustav Cassel hypothesis or the Balassa-Samuelson (1964) hypothesis. The Purchasing Power Parity (PPP) theory postulates that the equilibrium exchange rate between currencies should be equivalent to their relative prices. Any deviation is inflationary and is expected to be corrected through exchange rate adjustments. The relationship between real exchange rates and economic growth has always been an important subject in the economic growth literature. A country that constantly faces high inflation, greater than that of the country it trades with will often face current account deficits, constant exchange rate devaluations or depreciations, and low growth (Ito *et al.* 1999). The position of a country's exchange rate (nominal or real) describes the economic development status of the economy. If the economy faces rapid economic growth, the local currency is expected to appreciate, while depreciation is an indication of economic stagnation or weak performance of the economy (Ito *et al.* 1999, p. 110).

5.2.4.4 *The McKinnon-Shaw Hypothesis and Growth*

According to the McKinnon-Shaw (1973) hypothesis, financial restrictions have a negative influence on economic growth as artificial ceilings on interest rates lead to a reduction in savings, capital accumulation and hence the efficient allocation of resources (McKinnon 1973; Shaw 1973). On the other hand, credit rationing influences growth negatively by channelling credit to areas that may not be productive, hence leading to slower growth (Gelb 1989). Empirical evidence has shown that higher real interest rates are positively associated with growth (Balassa 1989; Gelb

1989). On the other hand, financial repression or low or negative real interest rates are negatively associated with growth (World Bank 1990a).

5.3 Empirical Literature Review

This section reviews empirical studies that have investigated the key sources or determinants of economic growth are reviewed via three sections that focus on the key determinants of growth in developing countries (Section 5.3.1), developed countries (Section 5.3.2), and a combination of both (Section 5.3.3).

5.3.1 Determinants of Growth in Developing Countries

Several studies have examined the determinants of economic growth in developing countries and these include Dollar (1992), Fischer (1992), Knight *et al.* (1993), Most and Vann de Berg (1996), Easterly and Levine (1997), Burnside and Dollar (2000), Chen and Feng (2000), Radelet *et al.* (2001), Bhaskara-Rao and Hassan (2011), Chang and Mendy (2012), and Anyanwu (2014).

Dollar (1992) investigated the sources of economic growth in 95 developing countries, covering the period 1976-1985. The study investigated the relationship between the investment rate, real exchange rate variability and the index of real exchange rate distortions on per capita GDP growth. The results showed that real exchange rate variability and the index of real exchange rate distortion were negative and significantly associated with long run economic growth; while the investment rates were positive and significantly associated with economic growth. In addition, the study found that the higher the degree of exchange rate instability, the lower the degree of technological diffusion from advanced economies (Dollar 1992, p. 534). The study, therefore, concluded that outward-orientation plays an important role in accelerating technological development in an economy: this is achieved through a low degree of protection and a stable real exchange rate regime.

Using an extended and augmented neoclassical growth model Fischer (1992) investigated macroeconomic stability and growth in Sub-Saharan Africa also in Latin America and the Caribbean countries during the period 1970-1985. Using a cross-section regression, the study investigated the relationship between per capita real GDP growth and each of the following variables: initial real GDP, initial enrolment rate for primary school education, average inflation rate, budget surplus share in Gross National Product (GNP), foreign debt share in GNP, share of investment in GDP, and dummy variables for Sub-Saharan Africa (SSA) and Latin America and

Caribbean (LAC) countries. The study results revealed that human capital, investment, and budget surplus were positively and significantly associated with growth while initial real GDP, inflation and dummy variables for SSA and LAC were negatively and significantly associated with growth. Foreign debt was found to have no influence on growth.

Knight *et al.* (1993) examined an augmented exogenous growth model using a panel of cross-sectional and time series data for 98 countries. In their model, they extended the Mankiw *et al.* (1992) model by examining the relationship between investment, human capital, public investment and outward-oriented trade policies on economic growth. Using two sub-samples of 81 countries and 59 developing countries, their study showed a strong and positive correlation between physical capital, human capital and economic growth in both sub-samples. The results also showed public investment to be positively and significantly associated with economic growth in developing countries. The weighted tariffs as a measure of trade openness and population growth were both negatively and significantly associated with economic growth in both sub-samples (Knight *et al.* 1993, p. 534). The study concluded that physical capital, human capital, public investment, openness to trade, and population growth were all important determinants of economic growth.

Most and Vann de Berg (1996) investigated the determinants of growth in eleven (11) Sub-Saharan Africa countries using a neoclassical growth model based on a time series approach. The study examined the relationship between economic growth and three principal sources of investment, namely: official development assistance (foreign aid), foreign direct investment, and domestic savings. An additional variable included was population growth. Their study found mixed results where foreign aid was negatively and significantly associated with growth in Togo, Ivory Coast, Nigeria, Zambia, Rwanda, and Botswana: on the other hand it was positively and significantly associated with growth in Niger, Senegal and Mauritius but there was no significant relationship in Cameroon. Domestic savings were found to be positively and significantly associated with growth in Togo, Senegal, Ivory Coast, Nigeria, Cameroon, and Kenya but negatively and significantly associated with growth in Mauritius and Zambia; and no significant relationship with growth was found in Niger, Rwanda, and Botswana. Foreign Direct Investment was positively and significantly associated with growth in Ivory Coast, Niger, Kenya and Togo but negatively and significantly associated with growth in Mauritius and Rwanda: no significant relationship was found in Senegal, Nigeria, Zambia, Botswana and Cameroon. Finally, population

growth was found to be negatively and significantly associated with growth in Senegal, Mauritius and Niger but insignificant in the rest of the countries studied.

Easterly and Levine (1997), using an empirical cross-sectional growth equation, investigated the determinants of economic growth in Sub-Saharan Africa and Latin America and Caribbean Countries during the periods 1960, 1970 and 1980. The regressors included a black market exchange rate premium (a general indicator of trade, exchange rate and price distortions), central government surplus share in GDP, liquid liabilities of the financial system share in GDP (a measure of financial depth), average educational attainment, a measure of telephones per worker (an indicator of the state of a country's infrastructure), political assassinations, a measure of civil liberties, numbers of revolutions and coups, numbers of casualties from war, and dummy variables representing Sub-Saharan Africa, and Latin America and the Caribbean countries. The study found the logs of schooling, financial depth, a measure of telephones per worker, and fiscal surplus were positively and significantly associated with growth, while political assassinations and black market premiums were negatively and significantly associated with growth. All dummy variables were negative and significantly associated with economic growth, showing that Sub-Saharan African countries and Latin America and Caribbean countries experienced slow growth. Furthermore, the study results revealed that Africa's poor growth was associated with low schooling, political instability, underdeveloped financial systems, distorted foreign exchange markets, high government deficits, and insufficient infrastructure. The study concluded that budget deficits, black market premiums, financial depth, political stability, infrastructure, and human capital development accounted for a substantial amount of cross-country variation in growth rates (Easterly and Levine 1997, p. 1213).

Burnside and Dollar (2000) investigated the relationship between foreign aid, policies and economic growth in 56 developing countries comprising of 16 middle-income and 40 low-income countries. The regressions were divided into six four-year time periods covering the years 1970-1993. The determinants included were initial real per capita GDP, aid receipts share in GDP, inflation rates, government budget surpluses, government consumption, a measure of institutional quality, efficiency of government bureaucracy, ethno-linguistic fractionalization, political assassinations, level of broad money as a share of GDP, dummy variables for trade openness, and regional dummy variables for Sub-Saharan Africa and East Asia. Using a two-stage least squares (2SLS) method, the results showed that foreign aid was positively and significantly associated with growth when it entered the growth regression as an interactive term with policy: however,

foreign aid was found to have no influence on economic growth. These results applied for both middle- and low-income countries. On the other hand, the results showed that budget surplus, institutional quality, trade openness and countries situated in East Asia were positively and significantly associated with economic growth. In addition, the results revealed that political assassinations, inflation and countries located in SSA were negatively and significantly associated with economic growth.

Chen and Feng (2000) investigated the relationship between trade (exports plus imports) as a share of real GDP, state-owned enterprises, inflation, investment, higher education enrolment and economic growth in China. Using provincial panel data, the study found trade and university enrolment to be positively and significantly associated with the annual average rate of per capita GDP. Inflation and state-owned enterprises, on the other hand, were negatively and significantly associated with economic growth. Their study concluded, therefore, that private enterprises, foreign trade and education were important determinants of China's long run economic growth.

Covering the period 1965-1990, Radelet *et al.* (2001) investigated the determinants of economic growth in 18 Asian countries. Using an extended neoclassical cross-country growth model, the study investigated the relationship between four main categories of determinants on economic growth, namely: initial conditions (initial per capita GDP, and initial human capital stock); natural resources and geography (natural resource intensity, landlockedness, location (nearness to the tropics and ratio of coastline distance to land area); policy variables (government savings, quality of institutions and trade openness); and demographic variables (growth of working age population, growth of total population, and initial life expectancy at birth). The study results revealed that initial education attainment, coastline distance to land area, government savings, trade openness, quality of institutions, life expectancy and the growth of the working age population were positively and significantly associated with economic growth: on the other hand initial output per worker, natural resources' abundance, landlockedness, and location in the tropics were negatively and significantly associated with economic growth. No significant relationship was found between the growth of total population and economic growth.

Bhaskara-Rao and Hassan (2011) investigated the determinants of long run growth in Bangladesh based on a neoclassical growth framework covering the period 1970-2007. The empirical evidence examined indicated the nature of the relationships between nine key determinants and total factor productivity, namely: share of FDI in GDP, share of official development assistance in GDP, share of money supply (M2) in GDP, share of remittances in GDP, trade share in GDP

(exports plus imports), government expenditure share in GDP, inflation, a time trend and a dummy variable representing implementation of reforms. Based on an Autoregressive Distributed Lag method, the study results revealed that the implementation of reforms since the 1980s, FDI, money supply, and trade openness were positively and significantly associated with economic growth; while government expenditure and inflation were negatively and significantly associated with economic growth. No significant relationships were found between official development assistance, remittances, time trend, and total factor productivity.

Chang and Mendy (2012) investigated the empirical relationship between openness and economic growth in 36 African countries during the period 1980-2009. Using a panel fixed effects regression model, the study examined the relationship between foreign direct investments, foreign aid, exports, imports, investment, gross national savings, labour employed, trade openness and the annual growth rate of GDP. The study results revealed that foreign aid, exports, imports, labour employed and openness were positively and significantly associated with economic growth: however foreign direct investment, domestic investment, and gross national savings were negatively and significantly associated with economic growth. The study also found that foreign aid exhibited mixed results when disaggregated by region. In the Middle and North Africa regions, foreign aid was positively and significantly associated with economic growth; while in the West and East Africa regions foreign aid was negatively and significantly associated with economic growth.

Finally, Anyanwu (2014) examined the factors affecting economic growth in Africa and China using an empirical growth model. Applying cross-country panel data for African countries covering the period 1996-2010 together with time series data for the 1984-2010 period for China, the study investigated the relationship between the initial real GDP per capita, government consumption share in GDP, investment rates, official development aid share in GDP, foreign direct investment share in GDP, total trade share in GDP, external debt share in GDP, secondary school enrolment, inflation rates, institutionalised political regime, government effectiveness, urban population, domestic credit to private sector share in GDP, agriculture material price index, metal price index, oil price index, industrial materials price index, sub-regional dummy variables (central, east, west, south, north) and economic growth. The study results showed that for Africa higher domestic investment, net official aid, secondary school enrolment, metal price index, government effectiveness (governance) and urban population were all positively and significantly associated with economic growth while the rest of the regressors were not significantly associated

with economic growth. In China, using a subset of the regressors, the study results showed that domestic investment, and trade openness were positively and significantly associated with economic growth, while official development aid, population growth, inflation, credit to the private sector, agricultural material price, and oil price indices were negatively and significantly associated with economic growth.

5.3.2 *Determinants of Growth in Developed Countries*

Some studies that examined the determinants of growth in developed countries are discussed in this section: these include Bleaney *et al.* (2001), Freire-Seren (2002), Anaman (2004), Acikgoz and Mert (2014), Bayraktar (2006), Asheghian (2009), and Checherita-Westphal and Rother (2012), among others.

Bleaney *et al.* (2001) using annual data from 22 developed countries covering the period 1970-1995, investigated the relationship between fiscal policies and long run economic growth. The fiscal policy variables included were distortionary taxes and government productive expenditure. The study results showed that productive government expenditure had a significant and positive association with the long-run economic growth rate: distortionary taxes on the other hand had a negative and significant association with the long-run growth rate (Bleaney *et al.* 2001, p. 43). The study concluded that productive fiscal expenditures increased economic growth; while distortionary fiscal policies reduced economic growth.

Freire-Seren (2002) investigated the relationship between human capital accumulation and economic growth in Spanish regions using an augmented neoclassical growth model covering the period 1964-1991. Using two determinants, namely: human capital development (fraction of the employed population with at least secondary school education), and investment rate, the study found both human capital development and investment to be positively and significantly associated with growth.

Anaman (2004), covering the period 1971-2001, investigated the determinants of economic growth in Brunei Darussalam using an augmented neoclassical growth model. The dependent variable was the annual growth of real GDP and the regressors included annual growth of total exports, government size (government expenditure share in GDP), investment share in GDP, annual growth of labour, and a dummy variable for the 1997/1998 Asian financial crisis. The results showed that exports and investment share were positively and significantly associated with real GDP growth. The study results also showed that government size exhibits threshold effects

with moderate government size positively and significantly associated with economic growth, while higher government size is negatively and significantly associated with economic growth. The dummy variable for the Asian financial crisis was statistically insignificant.

Acikgoz and Mert (2014), using an autoregressive distributed lag and Fully Modified Ordinary Least Squares methods, investigated the relationship between investment and real GDP per capita in three Asian countries – Hong Kong, Republic of Korea, and Taiwan. Using time series data covering the period 1951-2007 for Taiwan, 1953-2007 for Republic of Korea, and 1960-2007 for Hong Kong, the study results showed that in the short run, the investment share was positively and significantly associated with economic growth: in addition it was positively and significantly related to the level of real GDP per capita in the long run. These findings proved consistent in all three countries.

Bayraktar (2006) investigated the robustness of the correlation between per capita growth rates and selected macroeconomic indicators in Turkey using an Extreme Bounds Analysis covering the period 1968-1998. The regressors used included state variables such as investment share of GDP, high school enrolment rate, and the annual rate of population growth: control variables included fiscal policy indicators (government deficit share in GDP, government expenditure share in GDP); international trade indicators (the ratio of exports to GDP, ratio of imports to GDP, and the real exchange rate), and also monetary indicators (inflation rate, growth rate of domestic credit, inflation rate, standard deviation of inflation, growth rate of domestic credit, and the standard deviation of domestic credit growth). The results revealed that state variables that were robustly correlated with economic growth included the investment share and human capital development which were positively and significantly associated with economic growth, while population growth was insignificantly associated with growth. Fiscal policy variables were also insignificantly associated with growth and, thus, fragile determinants of growth. International openness variables such as export share in GDP, import share in GDP and the real exchange rate, were also insignificantly associated with economic growth, and hence also fragile determinants of growth. In terms of monetary indicators, the study found a robust negative and significant correlation between inflation and growth; while the other monetary indicators were not robustly correlated with growth. The study, therefore, concluded that investment, human capital development and inflation were robust determinants of growth in Turkey.

Asheghian (2009) employed an augmented neoclassical growth model to investigate the determinants of economic growth in Japan covering the period 1971-2006. Using a Beach-

Mackinnon technique, the study investigated the relationship between the growth rates of total factor productivity, domestic investment, foreign direct investment and GDP. The study results showed that the growth rates of total factor productivity and domestic investment were positively and significantly associated with economic growth; while the growth rate of foreign direct investment was insignificantly associated with economic growth.

Checherita-Westphal and Rother (2012) examined the relationship between high government debt and economic growth in 12 Euro countries (that is, Austria, Belgium, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Netherlands, Portugal, and Spain) using a conditional convergence equation and covering the period 1970-2008. The regressors used included initial level of income per capita, gross fixed capital formation, private savings share in GDP, population growth rate, gross government debt share in GDP, government balance, real interest rate, and trade share (exports plus imports) in GDP. Using per capita GDP growth rate as the dependent variable, the results revealed that government balance, private savings, and trade openness were positively and significantly associated with economic growth; while population growth and real interest rates were negatively and significantly associated with economic growth. Government debt was found to be positively and significantly associated with economic growth, while the square of government debt was negatively and significantly associated with economic growth, hence, confirming threshold effects. Total gross fixed capital formation was found to have no influence on economic growth.

5.3.3 Determinants of Growth in Developing and Developed Countries

Some studies that have examined the determinants of growth in a cross-section of countries are discussed in this section. These include Mankiw *et al.* (1992), Fischer (1993), Islam (1995), Sachs and Warner (1997), Hamilton and Monteagudo (1998), Barro (1999, 2003), Papageorgiou (2003), Masanjala and Papageorgiou (2004), and Collier and Goderis (2012), among others.

Using an augmented exogenous growth model, Mankiw *et al.* (1992) examined the relationship between the average share of real investment in real GDP, the percentage of working age population in secondary school for learners aged 15-19, and the average rate of growth of the working-age population aged 15-64, on real GDP per capita in 1985. Using a cross-section of 98 non-oil countries covering the period 1960-1985; 76 intermediate countries; and 22 OECD countries the study found that both physical and human capital were positively and significantly associated with long run economic growth in the non-oil and intermediate sub-samples: however

in OECD countries, the reported coefficients were statistically insignificant. The rate of population growth, on the other hand, was negatively and significantly associated with economic growth in all sub-samples (Mankiw *et al.* 1992, p. 420).

Using an extended augmented neoclassical growth model, Fischer (1993) investigated the role of macroeconomic factors in influencing economic growth. Covering the period 1961-1988, the study focused on 22 developing and developed countries. Using two methods – cross-section growth regression and panel growth regression – the study investigated the relationship between the inflation rate, budget surplus share in GDP, change in terms of trade, black market exchange rate premiums, and the mean of the standard deviation of the inflation rate on the growth rate of real GDP. The cross-sectional growth regression revealed that budget surplus was positively and significantly associated with economic growth, while the black market exchange rate premium was negatively and significantly associated with economic growth. The study results also revealed that changes in terms of trade and inflation had no influence on growth. The results, using panel growth regression, showed that the budget surplus and changes in terms of trade were positively and significantly associated with economic growth; while inflation and the black market exchange rate premium were negatively and significantly associated with economic growth.

Islam (1995) examined the augmented Solow model, using a panel data approach for three samples covering the period 1960-1985: that is 96 non-oil countries; 74 intermediate countries; and 22 OECD countries. The study included three variables: average share of real investment in real GDP; average schooling years in total population over the age of 25; and population growth. Using a Least Squares with Dummy Variable (LSDV) estimator, the study found a positive and significant relationship between physical capital and economic growth; a negative and significant association between human capital and economic growth only in non-oil countries; and a negative and significant association between population growth and economic growth.

Sachs and Warner (1997) investigated the fundamental sources of long run economic growth using a neoclassical growth model in 83 countries and covering the period 1965-1990. Using a cross-country growth regression, the determinants included were based on three categories: variables that represent measures of geography/location – share of land subject to tropical climate and landlockedness; measures of resource endowments – share of natural resource exports in GDP; and measures of economic policies – for example, public debt of the central government, index of institutional quality (an average of sub-indices for the rule of law, bureaucratic quality, and corruption); index of openness to international trade; the level and square of human capital

(life expectancy); population growth, and initial per capita GDP. Using growth per capita as the dependent variable, the study results revealed that openness to trade, population growth, central government public debt, institutional quality index, and life expectancy were positively and significantly associated with economic growth, while initial level of per capita GDP, countries situated in the tropics, landlockedness, and high natural resource exports were negatively and significantly associated with economic growth.

Hamilton and Monteagudo (1998), using least-squares regression, re-examined the Mankiw *et al.* (1992) empirical model, using data covering the period 1960-1985. The variables included were changes in the rate of physical investment, the average percentage of the working age population that was in secondary school, and the average annual rate of growth of the working age population for that country between 1960 and 1970. They found that changes in output growth were positively and significantly associated with changes in the rate of physical investment: however changes in human capital development were negatively and significantly associated with economic growth. They also found that the coefficient on the change in population growth was not statistically significant (Hamilton and Monteagudo 1998, p. 500).

Barro (1999) investigated the determinants of economic growth, using an extended neoclassical growth model for 100 countries covering the period 1960-1995. Based on a panel regression and three stage least squares method, the study investigated the relationship between nine regressors and the growth rate of per capita real output, namely: investment share in real GDP, government consumption share in real GDP, subjective index on maintenance of the rule of law, subjective index for democracy (electoral rights), inflation, school attainment at the start of each period, total fertility rate, growth of terms of trade (export prices relative to import prices), and international openness (exports plus imports share in GDP). The study results showed that investment share, growth rate of terms of trade, years of schooling, rule of law index, democracy index and international openness were positively and significantly associated with economic growth; while government consumption, total fertility rate, and inflation were negatively and significantly associated with economic growth.

Barro (2003) investigated the determinants of economic growth in a panel of 87 countries that covered both developed and developing countries during the period 1965-1995. The study results were based on three cross-section growth regressions that covered the periods 1965-1975; 1975-1985; and 1985-1995. The regressors included comprised state variables, that is, initial level of per capita GDP, and average years of school attainment and life expectancy; and also policy

variables, that is, trade openness (exports plus imports) share in GDP; terms of trade; government consumption share in GDP; subjective indicator of democracy (electoral rights); rule of law; landlockedness; log of total fertility rate; real gross domestic investment share in GDP; and inflation. The results revealed that average years of school attainment, investment, and the rule of law, democracy, trade openness, and terms of trade were all positively and significantly associated with economic growth; while initial level of per capita GDP, life expectancy, fertility rate, government consumption, inflation rate and landlockedness were negatively and significantly associated with economic growth.

Papageorgiou (2003) investigated the relationship between changes in primary and post-primary education as proxies of human capital development on economic growth. Using cross-country data from 80 countries for the beginning (1960) and ending period (1987), he found a positive and significant relationship between primary education and output production in low-income countries: moreover post-primary education was found to contribute significantly towards innovation and technology adaptation – mainly in rich countries. The study concluded that wealthy countries benefit more from innovation than imitation (Papageorgiou 2003, p. 627); that middle-income countries benefit more from imitation than innovation and that low-income countries benefit from imitation and not innovation (Papageorgiou 2003, p. 628). The study, therefore, concluded that human capital development plays a dual role in the economic growth process: first as a driver of final production and second as a significant contributor towards research and development (innovation and imitation). The study also concluded that there is a threshold of economic development where R&D activities begin to affect growth.

Masanjala and Papageorgiou (2004), using a Constant Elasticity of Substitution (CES) specification, empirically tested the Solow growth model by examining the relationship between investment, human capital, population growth and economic growth. Using a cross-section regression based on data from 90 countries and covering the period 1960-1995, the study revealed that both physical and human capital were positively and significantly associated with economic growth: on the other hand population growth was negatively and significantly associated with economic growth (Masanjala and Papageorgiou 2004, p. 180).

Lastly, Collier and Goderis (2012) investigated the relationship between commodity prices and economic growth based on a panel error correction model. Using a neoclassical growth model covering a panel of 120 countries during the period 1963-2008, the study included regressors such as investment share of GDP, population growth, secondary schooling, trade share in GDP,

population ages 0-14, inflation, the commodity export price index, the agricultural commodity export price index, the non-agricultural commodity export price index, coups, civil wars, and natural disasters. The study results showed that in the short run, the growth in commodity price index was positively and significantly associated with the short run growth rate of real GDP, while coups, civil wars, and natural disasters were negatively and significantly associated with the short run growth rate of real GDP. In the long run, the study results revealed that commodity export price index, non-agricultural commodity price index, population (ages 0-14), and inflation were negatively and significantly associated with the long run level of real GDP, while trade share in GDP was positively and significantly associated with the long run level of GDP. The study concluded that higher commodity export prices significantly reduce the long-run level of real GDP per capita in commodity exporting countries.

Table 5.1 summarises these empirical growth studies and describe the key macroeconomic determinants that have been found to be significantly associated with economic growth.

Table 5.1: Empirical Literature Results – Key Macroeconomic Determinants of Economic Growth

Author(s)	Countries and Sample Period	Methodology	Determinants with a Significant Association with Growth
Developing Countries			
Dollar 1992	1976-1985 95 developing economies	Cross-sectional regression	<ul style="list-style-type: none"> – Investment rate is positively and significantly associated with economic growth – Real exchange rate variability and real exchange rate distortions are negatively and significantly associated with economic growth.
Fischer 1992	Sub-Saharan Africa and Latin American and Caribbean countries; 1970-1985	Cross-section regression	<ul style="list-style-type: none"> – Human capital, investment, and budget surplus are positively and significantly associated with economic growth; – Initial real GDP and inflation are negatively and significantly associated with economic growth – Growth in Sub-Saharan African countries is less than in Latin America and Caribbean countries
Knight, Loayza and Villanueva 1993	98 countries; 76 developing countries; 1960-1985	Panel regression	<ul style="list-style-type: none"> – Physical, human capital are positively and significantly associated with economic growth. – Public investment is positively and significantly associated with economic growth. – Weighted tariff rates are negatively and significantly associated with economic growth.
Most and Vann de Berg 1996	11 Sub-Saharan Africa countries – Togo, Ivory Coast, Nigeria, Zambia, Rwanda, Botswana, Niger, Senegal, Mauritius and Cameroon; (sample period not available)	Country-specific Time series regression	<ul style="list-style-type: none"> – Foreign aid is negatively and significantly associated with economic growth in Togo, Ivory Coast, Nigeria, Zambia, Rwanda, and Botswana; and positively and significantly associated with economic growth in Niger, Senegal and Mauritius; – Domestic savings are positively and significantly associated with economic growth in Togo, Senegal, Ivory Coast, Nigeria, Cameroon, and Kenya; and negatively and significantly associated with economic growth in Mauritius and Zambia. – Foreign Direct Investment is positively and significantly associated with economic growth in Ivory Coast, Niger, Kenya and Togo; and negatively and significantly associated with economic growth in Mauritius and Rwanda; – Population growth is negatively and significantly associated with economic growth in Senegal, Mauritius and Niger.
Easterly and Levine 1997	Sub-Saharan Africa and Latin America and Caribbean Countries;	Cross-sectional regression	<ul style="list-style-type: none"> – The log of schooling, financial depth, a measure of telephones per worker, and fiscal surplus are positively and significantly associated with economic growth;

Author(s)	Countries and Sample Period	Methodology	Determinants with a Significant Association with Growth
	1960-1980		<ul style="list-style-type: none"> – Political assassinations and black market premiums are negatively and significantly associated with economic growth. – Sub-Saharan African countries and Latin America and Caribbean countries experienced slow growth compared to other regions
Burnside and Dollar 2000	56 countries (16 middle-income, and 40 low-income countries); 1970-1993	Two-stage least squares (2SLS) method (regressions divided in six four-year time periods covering the years)	<ul style="list-style-type: none"> – Foreign aid is positively and significantly associated with economic growth when it enters the growth regression as an interactive term with policy. – Budget surplus, institutional quality, trade openness and countries situated in East Asia are positively and significantly associated with economic growth. – Political assassinations, inflation and countries that are located in SSA are negatively and significantly associated with economic growth.
Chen and Feng 2000	China (29 provinces); 1978-1989	Cross-country analytical approach	<ul style="list-style-type: none"> – University enrolment and trade are positively and significantly associated with economic growth. – Inflation and state-owned enterprises are negatively and significantly associated with economic growth.
Radelet <i>et al.</i> 2001	14 Asian countries; 1965-1990	Cross-country growth framework	<ul style="list-style-type: none"> – Initial education attainment, coastline distance to land area, government savings, trade openness, quality of institutions, life expectancy, growth of working age population are positively and significantly associated with economic growth; – Initial output per worker, natural resource abundance, landlockedness, location to the tropics are negatively and significantly associated with economic growth
Bhaskara-Rao and Hassan 2011	Bangladesh; 1970-2007	Neoclassical growth framework – ARDL method	<ul style="list-style-type: none"> – The implementation of reforms since the 1980s, FDI, money supply, and trade openness are positively and significantly associated with economic growth. – Government expenditure and inflation are negatively and significantly associated with economic growth.
Chang and Mendy 2012	36 African countries; 1980-2009	Panel fixed effects regression model	<ul style="list-style-type: none"> – Foreign aid, exports, imports, labour employed and openness are positively and significantly associated with economic growth; – Foreign direct investment, domestic investment, and gross domestic savings are negatively and significantly associated with economic growth. – In Middle and North Africa foreign aid is positively and significantly associated with economic growth; while in West and East Africa foreign aid is negatively and significantly associated with economic growth.

Author(s)	Countries and Sample Period	Methodology	Determinants with a Significant Association with Growth
Anyanwu 2014	53 African countries; 1996-2010 (five non-overlapping three-year averages of cross-sectional data); Time series data for China; 1984-2010	cross-country panel regression for Africa; and time-series regression for China	<ul style="list-style-type: none"> – Africa: higher domestic investment, net official aid, secondary school enrolment, metal price index, government effectiveness (governance), and urban population are positively and significantly associated with economic growth. – China: domestic investment, and trade openness are positively and significantly associated with economic growth; while official development aid, population growth, inflation, credit to the private sector, agricultural material price, and oil price indices are negatively and significantly associated with economic growth.
Developed Countries			
Bleaney, Gemmell and Kneller 2001	22 OECD countries; 1970-1995	Panel estimation: two-way fixed effects model	<ul style="list-style-type: none"> – Investment and productive expenditure are positively and significantly associated with economic growth. – Distortionary taxation is negatively and significantly associated with economic growth.
Freire-Seren 2002	Spain (Spanish Regions); 1964-1991	Augmented neoclassical growth model	<ul style="list-style-type: none"> – Human capital and investment are positively and significantly associated with economic growth.
Anaman 2004	Brunei Darussalam; 1971-2001	Augmented neoclassical growth model	<ul style="list-style-type: none"> – Exports and investment share are positively and significantly associated with economic growth. – Government size exhibits threshold effects where moderate government size has a positive and significant association with growth – and higher government size has a negative and significant association with growth.
Bayraktar 2006	Turkey; 1968-1998	Extreme Bounds Analysis	<ul style="list-style-type: none"> – Investment share and human capital have a robust positive and significant association with economic growth. – In terms of monetary indicators, the study found a robust negative and significant relationship between inflation and growth.
Asheghian 2009	Japan; 1971-2006	Augmented neoclassical growth model - Beach-Mackinnon technique	<ul style="list-style-type: none"> – The growth rate of total factor productivity and the growth rate of domestic investment are positively and significantly associated with economic growth.
Checherita-Westphal and Rother 2012	12 Euro countries; 1970-2008	Conditional convergence equation	<ul style="list-style-type: none"> – Government balance, government debt, private savings, and trade openness are positively and significantly associated with economic growth; – Population growth, the square of government debt and real interest rates are negatively and significantly associated with economic growth.

Author(s)	Countries and Sample Period	Methodology	Determinants with a Significant Association with Growth
Acikgoz and Mert 2014	3 Asian countries; Time series data (Taiwan, 1951-2007; Korea, 1953-2007; and Hong Kong, 1960-2007)	ARDL and FMOLS methods	<ul style="list-style-type: none"> – Short-run results: investment share is positively and significantly associated with economic growth; – Long-run results: investment is positively and significantly associated with the level of real GDP per capita.
Developed and Developing Countries			–
Mankiw <i>et al.</i> 1992	98 non-oil countries; 75 intermediate countries; 22 OECD 1960-1985	Single cross-section ordinary least squares estimation	<ul style="list-style-type: none"> – Physical and human capital are positively and significantly associated with economic growth. – Population growth is negatively and significantly associated with economic growth.
Fischer 1993	22 developing and developed countries; 1961-1988	Cross-sectional growth regression; panel growth regressions	<ul style="list-style-type: none"> – Cross-sectional growth regression results: budget surplus is positively and significantly associated with economic growth; the black market exchange rate premium is negatively and significantly associated with economic growth. – Panel growth regression results: budget surplus and changes in terms of trade are positively and significantly associated with economic growth; inflation and the black market exchange rate premium are negatively and significantly associated with economic growth.
Islam 1995	96 non-oil countries 74 intermediate 22 OECD 1960-1985	Least squares with dummy variable (LSDV) estimator	<ul style="list-style-type: none"> – Physical capital is positively and significantly associated with economic growth. – Human capital is negatively and significantly associated with economic growth only in non-oil countries.
Sachs and Warner 1997	83 developed and developing countries; 1965-1990	cross-country growth regression	<ul style="list-style-type: none"> – Trade openness, population growth, central government public debt, institutional quality index, and life expectancy are positively and significantly associated with economic growth; – Initial level of per capita GDP, countries situated in the tropics, landlockedness, high natural resource exports are negatively and significantly associated with economic growth.
Hamilton and Monteagudo 1998	98 non-oil countries; 75 intermediate countries; 22 OECD 1960-1985	Ordinary Least Squares regression with White (1980) Heteroskedasticity – Consistent standard errors	<ul style="list-style-type: none"> – The change in output growth is positively associated with the change in the rate of physical investment. – The change in output growth is negatively associated with the change in the rate of population growth. – An increase in the fraction of resources devoted to education is associated with slower (not faster) economic growth.

Author(s)	Countries and Sample Period	Methodology	Determinants with a Significant Association with Growth
Barro 1999	100 countries (Asia, Latin America, OECD, Sub-Saharan Africa); 1960-1995	Panel regression and three stage least squares method	<ul style="list-style-type: none"> – Investment share, growth rate of terms of trade, years of schooling, rule of law index, democracy index and international openness are positively and significantly associated with economic growth; – Government consumption, total fertility rate, and inflation are negatively and significantly associated with economic growth.
Bernanke and Gurkaynak 2001	98 non-oil countries (75 intermediate countries; and 22 OECD countries); 1960-1995	Single cross-section ordinary least squares estimation	<ul style="list-style-type: none"> – The saving rate and human capital are positively and significantly associated with economic growth. – Population growth is negatively and significantly associated with economic growth.
Barro 2003	87 countries (developed and developing countries); 1965-1995	Cross-country regressions	<ul style="list-style-type: none"> – Average years of school attainment, investment, rule of law, democracy, trade openness, and terms of trade are positively and significantly associated with economic growth; – Initial level of per capita GDP, life expectancy, fertility rate, government consumption, inflation rate and landlockedness are negatively and significantly associated with economic growth.
Papageorgiou 2003	80 countries (27 high-income countries; 27 middle-income countries; 26 low-income countries); 1960-1987	OLS cross-country regression	<ul style="list-style-type: none"> – Physical capital, human capital accumulation, innovation and imitation are positively and significantly associated with economic growth.
Masanjala and Papageorgiou 2004	90 countries; 1960-1995	Cross-section regression	<ul style="list-style-type: none"> – Physical capital and human capital are positively and significantly associated with economic growth. – Population growth is negatively and significantly associated with economic growth.
Collier and Goderis 2012	Panel of 120 countries; 1963-2008	Panel error correction model	<ul style="list-style-type: none"> – Short-run results: the growth in commodity price index is positively and significantly associated with economic growth; while coups, civil wars, and natural disasters are negatively and significantly associated with economic growth. – Long-run results: commodity export price index, non-agricultural commodity price index, population (ages 0-14), and inflation are negatively and significantly associated with the long run level of real GDP while trade share in GDP is positively and significantly associated with the long run level of GDP.

The overall study results show that physical capital is largely positive and significantly associated with economic growth (Mankiw *et al.* 1992; Dollar 1992; Fischer 1992; Knight *et al.* 1993; Islam 1995; Hamilton and Monteagudo 1998; Barro 1999, 2003; Bleaney *et al.* 2001; Freire-Seren 2002; Papageorgiou 2003; Anaman 2004; Masanjala and Papageorgiou 2004; Acikgoz and Mert 2014; Bayraktar 2006; Asheghian 2009; Checherita-Westphal and Rother 2012; Anyanwu 2014). In some cases, the results also show that in developing countries investment can be negatively and significantly associated with growth (Most and Vann de Berg 1996; Chang and Mendy 2012). The main proxies used in the empirical growth literature include investment share in GDP and domestic savings (both private and public). The results are similar regardless of whether the countries included are from developing or developed economies.

In terms of human capital development, the widely used proxies include Barro-Lee measure of human capital, log of schooling, enrolment, initial education attainment, literacy rate, years of schooling, and life expectancy. The empirical literature reviewed in this study show that human capital development is positively and significantly associated with growth (Mankiw *et al.* 1992; Fischer 1992; Knight *et al.* 1993; Easterly and Levine 1997; Sachs and Warner 1997; Chen and Feng 2000; Radelet *et al.* 2001; Barro 1999, 2003; Freire-Seren 2002; Papageorgiou 2003; Masanjala and Papageorgiou 2004; Bayraktar 2006; Anyanwu 2014). However, in some cases human capital development was found to be negatively and significantly associated with growth (Islam 1995; Hamilton and Monteagudo 1998; Barro 2003). These results are similar in both developing and developed economies.

Fiscal policy variables commonly used in the empirical growth literature studied cited in this study include budget surplus, tariffs, government expenditure, institutional quality, government effectiveness, and state-owned enterprises. The empirical results revealed that productive fiscal policies proxied by fiscal surplus, government savings, and the quality of institutions are positively and significantly associated with growth (Fischer 1992, 1993; Easterly and Levine 1997; Sachs and Warner 1997; Burnside and Dollar 2000; Bleaney *et al.* 2001; Radelet *et al.* 2001; Checherita-Westphal and Rother 2012; Anyanwu 2014). On the other hand, distortionary fiscal policies proxied by fiscal deficits, distortionary taxation, government consumption, and state-owned enterprises are negatively and significantly associated with growth (Knight *et al.* 1993; Barro 1999, 2003; Chen and Feng 2000; Bleaney *et al.* 2001; Bhaskara-Rao and Hassan 2011). These results are also similar across countries.

The relationship between trade related variables and economic growth is also mixed and similar across countries. The proxies that have been investigated include real exchange rates, black market exchange rate premiums, trade openness, exports, imports and terms of trade. The empirical results revealed that trade openness, exports and imports are positively and significantly associated with economic growth (Fischer 1993; Sachs and Warner 1997; Barro 1999, 2003; Burnside and Dollar 2000; Chen and Feng 2000; Radelet *et al.* 2001; Bhaskara-Rao and Hassan 2011; Chang and Mendy 2012; Checherita-Westphal and Rother 2012; Collier and Goderis 2012; Anyanwu 2014). On the other hand, the real exchange rate, and black market exchange rate premiums are negatively and significantly associated with economic growth. Terms of trade, on the other hand, show mixed results (Dollar 1992; Fischer 1993; Easterly and Levine 1997).

Demographic factors studied in the empirical growth literature include population growth, growth of working age population, labour employed, labour force, and fertility rate. Some studies found population, population growth, and labour employed to be positively and significantly associated with growth (Sachs and Warner 1997; Radelet *et al.* 2001; Chang and Mendy 2012; Anyanwu 2014). Others however have found a negative and significant relationship between population, population growth, and fertility rate (Mankiw *et al.* 1992; Most and Vann de Berg 1996; Hamilton and Monteagudo 1998; Barro 1999, 2003; Masanjala and Papageorgiou 2004; Checherita-Westphal and Rother 2012; Collier and Goderis 2012; Anyanwu 2014).

Exogenous factors that were commonly investigated in the empirical literature include foreign aid and foreign direct investment. The empirical literature revealed mixed results where foreign aid and foreign direct investment are either positively or negatively associated with economic growth. Most and Vann de Berg (1996), Chang and Mendy (2012) and Anyanwu (2014) found foreign direct investment and foreign aid to be negatively and significantly associated with economic growth. On the other hand, foreign direct investment and foreign aid were also found to be positively and significantly associated with growth (Most and Vann de Berg 1996; Burnside and Dollar 2000; Bhaskara-Rao and Hassan 2011; Chang and Mendy 2012; Anyanwu 2014). These determinants were found to be particularly important for developing countries.

Monetary policy or macroeconomic stability variables investigated in the empirical growth studies include inflation and money supply. The results revealed that in most cases inflation is negatively and significantly associated with economic growth (Fischer 1992, 1993; Barro 1999, 2003; Burnside and Dollar 2000; Chen and Feng 2000; Bhaskara-Rao and Hassan 2011; Bayraktar 2006;

Collier and Goderis 2012; Anyanwu 2014). The results are generally similar regardless of whether the countries studied are from developing or developed countries.

The other category of sources of economic growth that include political factors, natural resources, geographic factors, reforms, and financial and regional factors also provide mixed results. Political variables investigated in this paper include rule of law, democracy, political assassinations, coups, and civil wars. The results showed that democracy and the rule of law were positively and significantly associated with economic growth (Barro 1999, 2003); while political assassinations, coups, and civil wars were negatively and significantly associated with economic growth (Easterly and Levine 1997; Burnside and Dollar 2000; Collier and Goderis 2012). Natural resource variables used in the empirical growth literature include natural resource abundance or exports and commodity prices. The results showed that countries that relied on natural resources experienced lower economic growth (Sachs and Warner 1997; Radelet *et al.* 2001). On the other hand, commodity prices exhibit mixed results on growth where the results showed either a positive or negative association with economic growth (Collier and Goderis 2012; Anyanwu 2014). These results are applicable for both developing and developed countries.

Geographic factors investigated in the empirical growth literature include landlockedness, countries in the tropics, and those along the coastline. The study results revealed that countries that were landlocked and situated in the tropics experienced low economic growth (Sachs and Warner 1997; Radelet *et al.* 2001; Barro 2003); while countries along the coastline experience high growth (Radelet *et al.* 2001). Some of the reform variables investigated in the empirical literature included the implementation of policy reforms where the results revealed a positive association with economic growth (Bhaskara-Rao and Hassan 2011). Financial indicators investigated include financial depth, credit to the private sector and real interest rates. The results showed that financial depth was positively and significantly associated with economic growth (Easterly and Levine 1997); while credit to the private sector and real interest rates were negatively and significantly associated with economic growth (Checherita-Westphal and Rother 2012; Anyanwu 2014).

Countries in Sub-Saharan Africa and Latin and Caribbean countries have been found to experience low economic growth compared to countries in other regions (Fischer 1992; Easterly and Levine 1997); while countries in Asia experience high economic growth compared to other regions (Burnside and Dollar 2000). Technology (Asheghian 2009; Papageorgiou 2003) and infrastructure (Easterly and Levine 1997) were found to be positively and significantly associated

with economic growth; while convergence (Fischer 1992; Sachs and Warner 1997; Radelet *et al.* 2001; Barro 2003) and climatic factors (Collier and Goderis 2012) were negatively and significantly associated with economic growth.

5.4 Conclusion

The chapter has examined theoretical developments in the economic growth literature from the Classical to Neoclassical Economists that we study today. In addition, the study has examined empirical growth studies that examine the fundamental macroeconomic determinants of growth in developing and developed countries. The study has identified four main classes of theoretical growth theories. Within these growth theories, ten key economic growth determinants can be identified: these include land, physical capital, innovative capital, human capital (labour), population growth, technology, fiscal policy, monetary policy, trade, and financial factors.

The first class relates to classical growth models led by Adam Smith (1723-1790), Jean Baptiste Say (1767-1832), David Ricardo (1772-1823), and Thomas Malthus (1766-1834). The Classical proponents are well known for their contribution to the economic growth literature through the triad of classical factors of economic growth, namely: accumulation of physical capital, land, and labour. The study reveals that neither the labour theory of value advocated by Smith (1776) nor the land theory of value by Ricardo (1772-1823) provides a sound and logical representation of how economies accumulate wealth. The contribution of Classical Economists towards the theory of economic growth was to provide the groundwork for neoclassical economic growth models which became prominent in the 20th century. Despite all these significant contributions towards an understanding of what drives the economic growth of a nation, no significant theory of economic growth was modelled by Classical Economists could fully explain and justify the large disparities of wealth of different economies.

The exogenous growth models postulate that physical capital, labour and technology are the most important determinants of economic growth. However, it has been argued that the structural model presented by exogenous growth theories fails to explain the observed high magnitudes of income per capita when comparing international income differences between nations. In essence, the exogenous structural model can only explain income disparities of up to twice the size when in fact income disparities in the world exceed ten times the size. The implication of this phenomenon is that there is need for a third input or more to be included in the exogenous structural model that, when combined with capital and labour, can explain a combined capital share of more than two-

thirds. This will guarantee the possibility of explaining income disparities that are greater than twice the size.

The endogenous growth models provide good ideas with regard to the possibility of having this third factor. Different types of these factors have been proposed that include innovative capital, intellectual or knowledge-based capital, and human capital – that is development of skills and learning by doing. Endogenous growth theorists argue that the presence of such innovative or intellectual capital skills can lead to increasing returns to scale when compared to diminishing returns to scale proposed by exogenous growth models. However, the structural modelling approach adopted by endogenous growth theorists has proven to be difficult to empirically measure especially when the measurement of such innovative or intellectual capital leans towards the measurement of consumer utility.

There are other theories, on the other hand, that have brought in the important element of factors that affect the efficiency of savings and capital. Their argument states that income differences can also be partly explained by the role of efficiency factors in maintaining or sustaining the accumulation of both physical and human capital or the reallocation of scarce resources. These efficiency factors that have been added to the growth debate include the role of inflation, government spending, financial development, and trade in minimizing or enhancing capital flight. The structural modelling approach adopted by other growth theories that became prominent in the 1990s, however, further investigate the role of these efficiency factors by adding them as additional regressors in the exogenous structural growth model. In some cases, these efficiency factors are assumed to be fixed regressors or alternatively just additional regressors.

There are two main issues for future theoretical economic growth research that are envisaged in this study. First, much as there has been an improvement in ensuring data availability especially for most countries in the world, such as the data on human capital development, for example, Penn World Tables, or World Development Indicators, especially for most countries in the world, the empirical measurement of factors such as research and development, intellectual capital, or human capital continues to be a challenge. Second, there is still a need to link theory and evidence, as well as to continue the process of developing other growth theories that seek to account for international productivity differences. An important area for future growth research would be to link trade and growth, especially the role of foreign direct investment in the economic growth process.

The chapter has also reviewed empirical growth studies that investigated the key macroeconomic determinants of economic growth, both in the short and long run. While the theoretical literature has identified ten broad sources of economic growth (that is, the accumulation of physical capital, human capital, population growth, technology, innovative capital, fiscal policy, monetary policy, trade, and financial factors), from the empirical literature review, eight additional sources of economic growth have been found, namely: climatic, exogenous, infrastructure, geographic, political, reforms, natural resources, and regional factors. The importance of these factors cuts across all countries, whether developing or developed.

A general overview of the empirical growth studies investigated in this study reveal that the macroeconomic determinants of economic growth in developing countries are based on their order of importance: they include exogenous (foreign aid and foreign direct investment), fiscal policy, physical capital, trade, human capital, demographic, monetary policy, natural resources, reforms, geographic, regional, political, and financial factors. In developed countries, the study reveals that the determinants of growth include physical capital, fiscal policy, human capital, trade, and demographic factors, together with monetary policy and financial and technological factors. On the other hand, studies that have examined a cross-section of both developing and developed countries reveal that the determinants of growth may include human capital, trade, physical capital, demographic, fiscal policy, political factors, monetary policy, natural resources, and geographical, technological and climatic factors.

In general, based on the literature reviewed, the key macroeconomic determinants of growth in order of their significance include physical capital, fiscal policy, trade, human capital, demography, exogenous factors, monetary policy (macroeconomic stability), natural resources, and political, geographic, financial, regional, technological, and climatic factors, together with reforms and infrastructure-related variables. The results also reveal that the determinants of growth investigated in single-equation growth studies include physical capital, exogenous factors, monetary policy, human capital, demography, fiscal policy, trade, natural resources, reforms, and financial and technological factors. Panel or cross-country regression studies, on the other hand, reveal that the determinants of growth in order of their importance include fiscal policy, trade, physical capital, human capital, demography, monetary policy, exogenous and political factors, natural resources, geography, regional factors, reforms, and also financial, technological, climatic and infrastructure factors. Overall, this study has shown that the empirical growth literature proposes more macroeconomic growth determinants than does the theory. We find that the main

challenge that affects the future of both theoretical and empirical growth literature is the absence of a comprehensive structural model that can accommodate all important macroeconomic determinants of economic growth investigated in this study. This makes the empirical interpretation of results difficult both from the theoretical point of view and for policy makers who must direct implementation.

CHAPTER 6

EMPIRICAL MODEL SPECIFICATION AND ESTIMATION TECHNIQUES

6.1 Introduction

This chapter discusses theoretical and empirical model specification and estimation techniques that are used in the study to examine the relationship between real GDP and key macroeconomic determinants of economic growth in three study countries namely: Malawi, Zambia and South Africa. The rest of the chapter is divided as follows. Section 6.2 discusses the theoretical foundations of the model used in this study. Section 6.3 discusses the empirical model specification and the theoretical and empirical underpinnings of the model adopted in the study. Section 6.4 presents the estimation techniques based on the autoregressive distributed lag (ARDL) bounds testing approach to co-integration. Section 6.5 discusses the post-estimation diagnostic tests. Section 6.6 discusses the variables used, their definitions and data sources; and Section 6.7 concludes the chapter.

6.2 Theoretical Foundations of the Model Used in the Study

To establish linkages with the theoretical foundations, the empirical dynamic model adopted in this study is assumed to follow a Cobb-Douglas aggregate production function with labour-augmenting (Harrod-neutral) technological progress. Building on Fischer (1993); Knight *et al.* (1993); and Acikgoz and Mert (2014) methodology, the aggregate Cobb-Douglas production function is assumed to take the form:

$$Y_t = K_t^\alpha HC_t^\beta (A_t \{GC_t, RER_t, INF_t, TRD_t\} L_t)^{1-\alpha-\beta} \quad (6.1)$$

In equation (6.1), K, HC and L represent the traditional inputs – physical capital, human capital and labour, respectively; α represents the partial elasticity of output with respect to physical capital; and β is the partial elasticity of output with respect to human capital. When using time series data, the literature recommends that the technological change (A_t) should be assumed to be labour-augmenting and should follow a Harrod-neutral technical change (Uzawa, 1965; Lucas, 1988; Acikgoz and Mert, 2014). The model builds on Fischer (1993, p. 494) approach where he assumes the labour-augmenting technology to have two multiplicative components – the overall

economic efficiency which is dependent on institutional factors and government economic management policy; and the level of technological progress which is assumed to be labour-augmenting (Harrod-neutral). This framework has also been supported by Barro (1999, p. 445) where the empirical model of the long run or equilibrium level of per capita output was assumed to depend on government policies, institutions and the national population. Barro (1990) concluded that better enforcement of regulations and fewer market distortions will tend to raise the long run equilibrium level of per capita output and, hence, its growth rate.

According to the World Bank (1990a) report, sustainable economic growth has three requirements, namely: a stable macroeconomic environment; an appropriate price mechanism and regulatory structure; and efficient and effective institutions that can convert national savings into productive investments (World Bank 1990a, p. 100). Fischer's (1993, p. 487) definition of a stable macroeconomic framework implies a policy environment that is conducive to growth. This reflects an environment where inflation is low and predictable, real interest rates are at appropriate levels to attract savings, fiscal policy is stable (distortions are sustainable), the real exchange rate is competitive and predictable, and the balance of payments position is perceived to be viable (World Bank 1990a, p. 4).

Rather than assuming economic efficiency factors to be fixed regressors these factors have been assumed to consist of policy variables that affect the stabilisation curve of the exogenous growth model (Fischer 1992, 1993). Fischer (1993) regressed the growth rate of real GDP on inflation rate, ratio of budget surplus to GDP, black market premium on foreign exchange, and terms of trade. In Bassanini *et al.*'s (2001, p. 54) framework, using a cross-country regression, the included variables were real GDP per capita, accumulation of physical capital, human capital, growth of working age population, inflation, government consumption, government capital accumulation, tax and non-tax receipts, direct/indirect taxes, business and non-business research and development, private credit, stock market capital, and trade exposure. The rationale of taking this approach originates from three fronts, namely: the Solow residual or total factor productivity; the conditional convergence hypothesis; and macroeconomic uncertainty or the efficiency of traditional inputs of growth.

First, in the exogenous growth model, total factor productivity is defined as the portion of production and productivity that cannot be explained by the amount of traditional inputs such as the accumulation of physical capital and human capital stock. As such, the Solow residual is a source of omitted variables. Mosley *et al.* (1987) used export growth in addition to domestic

savings, foreign aid, foreign direct investment and literacy growth to isolate the components of total factor productivity that drive economic growth. In addition, Fischer (1993, p. 494) argued that the standard procedure of adding policy-induced macroeconomic variables to a growth regression implicitly assumed that policy variables affected economic growth through the productivity residual. Thus, rather than assuming these important determinants to be lumped in with the Solow residual, isolating their influence on growth is important to guide policy decision makers.

Second, the absolute convergence hypothesis of the neoclassical growth model (Solow 1956; Cass 1965) postulate that poorer economies grow faster and tend to catch up with richer economies. However, Barro (2003, p. 235) argued that this hypothesis did not empirically hold and in order to understand why this is the case the relationship between growth rates and the initial position of real GDP per capita has to be examined after holding constant some variables that are unique to each country or a set of countries. Thus, the empirical growth framework should integrate state variables that consist of the accumulation of physical and human capital stock as well as policy variables that include common characteristics driven by governments and private agents such as the ratio of government consumption to GDP, the extent of international openness, indicators of macroeconomic stability, and political stability measures such as maintenance of the rule of law and democracy (Barro 2003, p. 236).

Third, macroeconomic stability matters for growth through uncertainty (Fischer 1992, p. 173). In the theoretical literature, two sources of uncertainty are described. The first is through policy-induced macroeconomic uncertainty that affects the efficiency of the price mechanism (Lucas 1973; Froyen and Waud 1980). The second is temporary uncertainty which affects the future potential of the rate of investment to grow and causes capital flight (Pindyck 1988; Pindyck and Somalino 1993). Thus, the sources of uncertainty based on the endogenous and empirical growth theorists have assumed the efficiency of capital (both physical and human) to be affected by a number of policy-related factors that include trade policy, inflation, financial repression, real exchange rate instability, among others (Easterly and Wetzel 1989; World Bank 1990a; Dollar 1992; Fischer 1993).

Growth Economists that study economic growth trends have postulated that the international differences in income between developing and developed countries can be explained in part by differences in the macroeconomic policy environment. Savings and investment (both physical and human capital) are traditionally the key determinants of economic growth and many empirical

studies have found these determinants to be positively and significantly associated with economic growth. However, a stable macroeconomic environment is a necessary condition in order to maintain the efficiency of savings and investment as well as minimise capital flight (World Bank 1990a, p. 100; Fischer 1993, 486; Bassanini *et al.* 2001, p. 5). Many endogenous empirical studies have also singled out policy distortions that affect the price mechanism and the efficient allocation of resources as the key factors that bring international differences in economic performance especially in developing countries (Easterly and Wetzel 1989, p. 1; Corbo, *et al.* 1992, p. 160). What the endogenous growth theories have postulated is that eliminating policy distortions can lead to both a one-time increase in the output level in the long run (level effects) as well as the growth rate of output in the short run (growth effects). The standard neoclassical Solow (1956) growth model postulated that distortionary policies exhibit only growth effects and not level effects. The endogenous growth literature, on the other hand, have presented models where policy distortions have significant effects both on short and long run economic growth (Romer 1986; Lucas 1988; Barro 1989, 1991; Barro and Sala-i-Martin 1992).

The variables that are included in this study, therefore, consist of the accumulation of physical capital (investment), human capital (average years of schooling), population growth, and policy variables (efficiency factors) that include government consumption share in GDP, real exchange rate, inflation, international trade and foreign aid. The distortions in these efficiency factors are assumed to affect the rate of savings and investment at certain thresholds where the relationship can either be positive or negative. Thus, these efficiency factors, just like population growth, are assumed to grow exogenously as follows:

$$L_t = L(0)e^{\eta t} \quad (6.2)$$

$$A_t = A(0)e^{g t} \quad (6.3)$$

$$GC_t = GC(0)e^{\theta t} \quad (6.4)$$

$$RER_t = RER(0)e^{\tau t} \quad (6.5)$$

$$INF_t = INF(0)e^{\pi t} \quad (6.6)$$

$$TRD_t = TRD(0)e^{\delta t} \quad (6.7)$$

$$AID_t = AID(0)e^{\rho t} \quad (6.8)$$

The growth rates are represented by the exponential coefficients such as population, η ; technology, g ; public consumption, θ ; the real exchange rate, τ ; inflation, π ; diffusion of knowledge (international trade), δ ; foreign aid (as an additional source of savings and investment), ρ ; as well as their initial endowments for population, $L(0)$; technology, $A(0)$; public

consumption, $GC(0)$; real exchange rate, $RER(0)$; inflation, $INF(0)$; international trade, $TRD(0)$; and foreign aid, $AID(0)$. The theoretical model specification adopted is based on the notion that adequate levels of savings and investments are necessary but not sufficient to guarantee higher rates of economic growth in an economy. Macroeconomic stability is also essential and affects the efficiency of the factors of production at certain thresholds (World Bank 1990a; Fischer 1993). Some of the empirical studies that support the role of macroeconomic instability include threshold effects that arise from government expenditure (Anaman 2004), real exchange rate instability (Rodrik 2008; Vieira *et al.* 2013), inflation (Bruno and Easterly 1998), trade volatility (Mendoza 1997), and foreign aid (Burnside and Dollar 2000; Dalgaard and Tarp 2004).

Assuming that the fraction of income invested in physical capital and human capital is given by s_k, s_h , respectively, the evolution of the economy can, therefore, be assumed to be determined by the following two empirical dynamic equations expressed in quantities per unit of effective labour:

$$\Delta k_t = s_k y_t - (\eta + g + \theta + \tau + \pi + \delta + \rho) k_t \quad (6.9)$$

$$\Delta h_t = s_h y_t - (\eta + g + \theta + \tau + \pi + \delta + \rho) h_t \quad (6.10)$$

In equations (6.9 and 6.10), the small letters represent quantities per unit of effective labour, $A_t L_t$, and postulate that a unit of consumption can be transformed into either a unit of physical capital or a unit of human capital (Acikgoz and Mert 2014). For the production function to converge towards its equilibrium steady state, decreasing returns to the sources of capital, $\alpha + \beta < 1$ is assumed. Therefore, the evolution towards a steady state for investment and human capital with respect to a given set of policy variables in a given country is, therefore, defined by the following two equations:

$$k^* = \left(\frac{s_k^{1-\beta} s_h^\beta}{(\eta + g + \theta + \tau + \pi + \delta + \rho)} \right)^{\frac{1}{1-\alpha-\beta}} \quad (6.11)$$

$$h^* = \left(\frac{s_k^\alpha s_h^{1-\alpha}}{(\eta + g + \theta + \tau + \pi + \delta + \rho)} \right)^{\frac{1}{1-\alpha-\beta}} \quad (6.12)$$

Where $(\blacksquare)^*$ = Steady state value of investment and human capital stock

Substituting equations (6.11 and 6.12) into our production function (equation 6.1) and expressing the variables in logarithmic form, the steady state empirical long run growth equation can be expressed as follows:

$$\ln y_t = \ln A(0) + gt + \frac{\alpha}{1-\alpha-\beta} \ln(s_k) + \frac{\beta}{1-\alpha-\beta} \ln(s_h) - \frac{\alpha+\beta}{1-\alpha-\beta} \ln(\eta + g + \theta + \tau + \pi + \delta + \rho) \quad (6.13)$$

Equation (6.13), therefore, reveals the structural theoretical model that shows how the long run level of income per capita is dependent on the accumulation of physical capital and human capital stock; a Harrod-neutral (or labour-augmenting) technological factor represented by the linear trend variable, gt ; and policy factors that improve their efficiency – population growth, government consumption, real exchange rate depreciation, inflation, trade, and foreign aid. An important aspect of the initial technological endowment factor, $\ln A(0)$, is that it represents fixed regressors that are exogenous and country-specific that may induce growth.

In summary, the efficiency factors provide the essentials and a link on how policy variables influence the aggregate production function. Distortions in these factors are expected to have a long lasting influence on the accumulation of savings and investment and can either prevent or induce capital flight (World Bank 1990a, p. 100). At first glance, the efficiency factors are not directly controllable by policy and each variable optimally varies in response to shocks in the economy (Fischer 1993, p. 487). Furthermore, significant distortions in these efficiency factors that pass a certain threshold have significant adverse macroeconomic consequences, first on the level of savings and accumulation of physical capital (neoclassical theory) and secondly on growth (new growth theories).

6.3 Empirical Model Specification

The multivariate framework or model used in this study to examine the determinants of economic growth is a variant to similar models used in the previous studies (see, among others, Fischer 1993; Chen and Feng 2000; Anyanwu 2014). This study uses two models to examine the key

macroeconomic determinants of economic growth in the study countries. The first model (Model 1) is estimated as follows:

Model 1

$$Y = f(INV, HC, POPG, GC, RER, INF, TRD) \quad (6.14)$$

The model specification in equation (6.14) is used in all three study countries, namely: Malawi, Zambia and South Africa. However, the empirical literature reviewed in this study has also pointed out the importance of foreign aid in developing economies (see, among others, Burnside and Dollar 2000; Asteriou 2009). Foreign aid act as an alternative source of finance that supplements domestic investment and their inflow is seen as filling in the savings gap especially for developing economies (Chenery and Strout 1966; Riddell 1987). In most developing countries, foreign aid has played a major role to supplement economies faced with low savings and foreign exchange constraints (Chenery and Strout 1966; Mosley 1980). Thus, Model 2 is an extension to Model 1 which includes foreign aid and is specified for the Malawi and Zambia growth equations, except South Africa due to insufficient data which was only available for the period 1993-2013.

Model 2

$$Y = f(INV, HC, POPG, GC, RER, INF, TRD, AID) \quad (6.15)$$

The key macroeconomic variables used in equations (6.14 and 6.15) are described as follows: Y represents real GDP per capita, INV is the share of investment in GDP, HC represents human capital development, $POPG$ represents population growth, GC represents a share of government consumption in GDP, RER represents the real exchange rate depreciation, INF is inflation, TRD represents a proxy of trade openness, and AID represents foreign aid as a share of GDP. All variables are transformed to natural logarithms. The justification for including the macroeconomic variables in models (6.14) and (6.15) are discussed below based on the theoretical and empirical underpinnings that describe the linkages between economic growth and each of the key macroeconomic determinants used in equations (6.14) and (6.15).

Physical Capital Accumulation and Economic Growth

The justification of including the accumulation of physical capital (investment) is supported by the theoretical growth literature as one of the most important and traditional determinant that is

positively associated with economic growth (Domar 1946; Solow 1956; Frankel 1962; Lucas 1988). Investment is widely known to be positively associated with the rate of economic growth through the savings ratio (Keynes 1936; Solow 1956). Regardless of the type of physical capital used, many empirical studies have found a positive relationship between investment and economic growth (Mankiw *et al.* 1992; Dollar 1992; Knight *et al.* 1993; Islam 1995; Hamilton and Monteagudo 1998; Bleaney *et al.* 2001; Masanjala and Papageorgiou 2004; Acikgoz and Mert 2014). In this study, the accumulation of the physical capital stock is represented by the ratio of gross fixed capital formation to real GDP. Thus, physical capital is expected to be positively and significantly associated with economic growth in the study countries.

Human Capital Development and Economic Growth

Human capital development is another traditional determinant that is positively associated with economic growth. This is supported by the theoretical growth literature that states that investment in human capital stock contributes towards economic growth by investing in people through education and health (Becker 1962; Weisbrod 1962; Mincer 1962). The proponents of human capital development are the endogenous growth theorists who advocate for its inclusion in growth models as another key input of economic growth (Romer 1986; Lucas 1988). However, many studies that have investigated the relationship between human capital development and economic growth find mixed results. Some studies have found a positive relationship between human capital development and economic growth (Mankiw *et al.* 1992; Knight *et al.* 1993). In other cases, the relationship is negative (Islam 1995; Hamilton and Monteagudo 1998; Barro 2003). In most cases, the difference arises due to the proxies used as a measure of human capital development. Studies that have found a positive relationship between human capital development and economic growth use proxies such as school enrolment (Chen and Feng 2000; Anyanwu 2014) and average years of schooling (Barro 1999, 2003; Radelet *et al.* 2001; Papageorgiou 2003). Studies that have found a negative association between human capital development and economic growth have used proxies such as life expectancy and fertility rates (Barro 2003). In this study, human capital development is proxied by total enrolment at all levels. Therefore, *a priori* expectation is a positive association between human capital development and economic growth in the three study countries.

Population Growth and Economic Growth

The important relationship between population growth and economic growth is supported by the Malthusian theory of population that postulates that a lower rate of population growth is positively associated with per capita income growth, while a higher rate of population growth is negatively associated with per capita income growth (Malthus 1798). There have been two main contributions on the link between population dynamics and economic growth. In the 1950s, the Lewis (1954) dual economy model gave rise to the population demographic transition model postulating that population mortality and fertility rates decline over time when an economy goes up the stages of development. The overall result is on demographic changes that increase the working-age population expected to boost long run per capita income growth (Golley and Wei 2015). Higher mortality and fertility rates, on the other hand, affect the efficiency of human capital. In the late 1990s, a new theory on population growth emerged spearheaded by Boserup (1996) who argued that population growth is positively associated with economic growth as increases in population stimulates innovation and invention that leads to increases in output production and productivity. Therefore, according to the demographic transition model, if people are willing to save more, and reduce fertility; then the long-run equilibrium level of per capita output and, hence, its growth rate rises (Barro 1999). The empirical relationship between population growth and economic growth has been mixed and varies between countries (Thornton 2001; Warr 2004). Some empirical studies on the relationship between population growth and economic growth have found a negative and significant relationship (Mankiw *et al.* 1992; Most and Vann de Berg 1996); and others a positive association with economic growth (Sachs and Warner 1997; Radelet *et al.* 2001). The population growth rate is expected to exhibit threshold effects; and thus either a positive or negative relationship with economic growth in the study countries.

Government Expenditure and Economic Growth

The relationship between government expenditure and economic growth has been advocated by endogenous growth theorists who have argued that government policies have a permanent and typically negative effect on long run economic growth (Barro 1990; Barro and Sala-i-Martin 1992). However, a critical observation by endogenous growth studies is that fiscal policies related to government spending and taxation exhibit threshold effects depending on the size of government (Barro 1990, p. S120) or on the social and private rate of return to investment needs (Barro and Sala-i-Martin 1992, p. 660). If social returns outweigh private returns, then productive

fiscal policies that encourage investment are expected to be positively associated with economic growth. On the other hand, if private returns outweigh social returns, then fiscal policies that encourage consumption are expected to be negatively associated with economic growth. The relationship between government spending and economic growth is further supported by the Wagner law or the Peacock-Wiseman hypothesis that suggest that there is a positive co-movement where public expenditure tends to rise at a faster rate than national output (Wagner 1892; Peacock and Wiseman 1961). The empirical work on the relationship between government expenditure and economic growth has also been mixed. Some empirical studies have found that fiscal policies affect the efficiency of investment in the medium and long-term through the crowding out effect of private investment especially when government deficits finance public consumption, subsidies or transfers (Easterly and Wetzel 1989; World Bank 1990a). These studies found that a higher ratio of government spending to GDP was, on average, negatively associated with economic growth for a given level of investment thereby reducing the efficiency of investment (Barro and Sala-i-Martin 1992; Barro 2003). Other studies found that small to moderate government sizes were positively associated with economic growth while large government sizes impeded economic growth (Anaman 2004). Furthermore, fiscal policies have been found to affect the credibility of monetary policy where unsustainable government expenditures increase the risk premia and instability of inflation, interest rates and the exchange rates (Fischer 1992, 1993; Bassanini *et al.* 2001, p. 17). *A priori* expectation, therefore, is that the level of government consumption exhibit threshold effects; and either a positive or negative relationship with economic growth is expected in the study countries.

Real Exchange Rates and Economic Growth

The relationship between real exchange rate depreciation and economic growth is supported in the literature by the Balassa-Samuelson hypothesis who argue that real exchange rate depreciation is negatively associated with economic growth: they suggest that any deviation from the Purchasing Power Parity (PPP) is inflationary and is expected to be corrected through exchange rate adjustments (Balassa 1964; Samuelson 1964). The stability of any economy's real exchange rate regime is one of the most important key macroeconomic policies that many economies in the world follow. It is argued that higher levels of real exchange rate instability can suppress economic growth especially in countries with underdeveloped capital markets (Vieira *et al.* 2013). In such countries, real exchange rate variability has a negative influence on long run economic growth (Dollar 1992). Exchange rates also enter into growth equations as a proxy of market distortions

and more generally as proxies for macroeconomic instability related to the balance of payments or capital markets (Barro 2003, p. 267). Though a number of studies have investigated the relationship between exchange rate regimes and economic growth, the key proxies used have been the (real) exchange rate instability, distortions, misalignment or disequilibrium. The relationship between real exchange rate and economic growth has also focused on real exchange rate undervaluation or overvaluation (Dollar 1992; Rodrik 2008). The empirical evidence has revealed that a highly unstable real exchange rate is negatively associated with economic growth; while a real exchange rate that has moderate volatility is positively associated with economic growth (Vieira *et al.* 2013). In other cases a stable exchange rate environment has been found to be conducive for trade and economic growth and a real exchange rate stability either by eliminating any overvaluation or undervaluation of the local currency is a necessary condition if long run economic growth is to be sustained (Elbadawi *et al.* 2012, p. 681). In such cases, a stable exchange rate regime is positively associated with economic growth (Bleaney and Nishiyama 2002; Gluzmann *et al.* 2012). Overall, the relationship between the real exchange rate and economic growth is driven by threshold effects and *a priori* expectation will depend on the stability of the exchange rate in the study countries. If the study country has a stable real exchange rate regime, then the expectation is for a positive relationship between the real exchange rate and economic growth. Conversely, the expectation is for a negative relationship between the real exchange rate and economic growth if there is instability in the real exchange rate.

Inflation and Economic Growth

The relationship between inflation and economic growth is supported in the literature through the Mundell-Tobin hypothesis who argue that inflation is positively associated with economic growth (Mundell 1963; Tobin 1965). On the other hand, others have argued that inflation is negatively associated with economic growth (Sidrauski 1967; Stockman 1981; Fischer 1983); while the Friedman and Schwartz hypothesis postulated no significant relationship between inflation and economic growth (Friedman and Schwartz 1963). Fischer (1992, 1993) argued that the inflation rate was a good indicator of how the government managed the economy; while Barro (2003, p. 240) suggested that it was a good measure of macroeconomic stability. In most cases, inflation is seen to be a tax on productivity growth (Bassanini *et al.* 2001; Fischer 1992, 1993). Furthermore, it has been argued that low inflation brings about economic efficiency as economies, through the price mechanism, are able to allocate scarce resources to their best economic use. Thus globally many governments gear their economic strategies towards reducing inflation. A government that

is associated with high inflation is a sign of a government that has lost control of the macroeconomic environment (Fischer 1993, p. 487). High inflation has been a phenomenon of a government's reliance on money creation which leads to financial repression and reduce the efficiency of savings and investment, thereby having a negative influence on long run economic growth (Easterly and Wetzel 1989, p. 9; World Bank 1990a, p. 103). Though the empirical evidence has strongly supported a negative relationship between inflation and economic growth, especially through its influence on capital intensity or the efficiency of physical capital (Fischer 1983; Bruno and Easterly 1998), inflation exhibit threshold effects on economic growth, depending on its level (Bruno and Easterly 1998). Gylfason and Herbertsson (2001) found that an inflation rate in excess of 10% per annum was generally detrimental to economic growth. This was supported by Burdekin *et al.* (2004) who also argued that economies that experience inflation rates of more than 20% experienced low growth. On the contrary, countries that target inflation stability may face a situation where inflation is positively associated with higher economic growth rates than countries that experience inflation instability (Bassanini *et al.* 2001; Gillman and Harris 2010). Therefore, a priori expectation is either a positive or negative relationship between inflation and economic growth in the study countries.

International Trade and Economic Growth

The empirical literature posits that the relationship between international trade and economic growth is positive as the inclusion of trade policies promote a country's openness and facilitate the transfer of technology of advanced capital goods, and act as a catalyst for the diffusion of knowledge and skills (Knight *et al.* 1993). In addition, the trade sector is important as it brings in foreign exchange which are used to import the needed capital goods (Knight *et al.* 1993). As such, external trade or trade openness is an important source of foreign capital, advanced technology and knowledge and further contributes towards the efficiency of capital by raising its productivity (Sachs and Warner 1997). A number of policy determinants related to trade investigated in the economic growth literature include trade volume (exports plus imports) as a share in GDP (Chen and Feng 2000; Yanikkaya 2003); terms of trade (Barro 1999, 2003; Bleaney and Nishiyama 2002; Esfahani and Ramirez 2003; Falvey *et al.* 2012); exports (Iqbal and Zahid 1998); and imports (Iqbal and Zahid 1998). The relationship between trade-policy related variables and economic growth have been mixed. Studies that used trade volume found mostly a positive relationship between trade and economic growth (Burnside and Dollar 2000; Chen and Feng 2000; Radelet *et al.* 2001; Bhaskara-Rao and Hassan 2011). Studies that used terms of trade as a proxy

of trade openness also found a positive relationship (Fischer 1993; Barro 1999, 2003; Greenaway *et al.* 2002; Falvey *et al.* 2012). However, Mendoza (1997) found a negative relationship between terms of trade and economic growth. Studies that used exports also found a positive relationship with economic growth (Anaman 2004). Chang and Mendy (2012) found a positive association between imports and economic growth. *A priori* expectation, therefore, is that trade is expected to be positively and significantly associated with economic growth in the study countries.

Foreign Aid and Economic Growth

The relationship between foreign aid and economic growth is assumed to be positive and is seen as a measure of the effect of changes in international factors on the income position of domestic residents. Several studies have used neoclassical growth models to show how foreign aid can lead to economic growth by making available the needed capital for production (Chenery and Strout 1966). However the empirical findings on the relationship between foreign aid and economic growth have been mixed. Some studies have found a positive association between foreign aid and economic growth (see, among others, Burnside and Dollar 2000; Dalgaard and Tarp 2004; Asteriou 2009); while others have found a negative association (Most and Vann de Berg 1996). In other studies, no significant relationship has been found to exist between foreign aid and economic growth (see among others, Burke and Ahmadi-Esfahani 2006). However, a priori expectation in this study is that foreign aid is either positively or negatively associated with economic growth in the study countries.

6.4 Estimation Techniques

6.4.1 ARDL Bounds Testing Approach

In the empirical analysis, the Autoregressive Distributed Lag (ARDL) bounds testing approach to co-integration developed by Pesaran and Shin (1999) and later extended by Pesaran *et al.* (2001) is employed to estimate the short run growth effects and long run level relationships between real GDP per capita and the selected macroeconomic determinants expressed in equation (1). Pesaran *et al.* (2001) developed a cointegrating test that uses an ARDL short run error correction model. The model developed by Pesaran *et al.* (2001) has the advantage that a cointegrating relationship can be found even when the variables are integrated either of order one or order zero. The Pesaran *et al.* (2001) bounds testing approach to estimating co-integrating relationships has been found to be superior to other traditional methods such as the Engle and Granger (1987) and Johansen (1988,

1991) methods that assume variables are integrated of order one (Odhiambo 2013; Altintas and Kum 2013).

The ARDL modelling framework has got five distinct advantages. First, the ARDL model include lags of both the dependent and explanatory variables and it is a powerful tool in investigating short and long run cointegrating relationships between variables of interest (Pesaran and Shin 1999). Second, the bounds test, based on the unrestricted error correction model proposed by Pesaran *et al.* (2001), can be applied irrespective of whether the study variables are integrated of order zero or one (Narayan and Smyth 2005; Odhiambo 2013). Third, the ARDL model can take up a sufficient number of lags that captures the data generating process in a general to specific modelling framework (Hirnisssa *et al.* 2009). Fourth, given the sample size of the present study which covers the period 1970-2013 (44 observations), the ARDL approach provides robust results in studies affected by small sample sizes and the parameter estimates exhibit desirable small sample properties (Pesaran and Shin 1999; Narayan 2005). Finally, the two-stage ARDL approach effectively corrects for any possible endogeneity in the explanatory variables (Pesaran and Shin 1999; Acikgoz and Mert 2014).

6.4.2 Unit Root Tests

Although the ARDL bounds testing approach to co-integration does not require pre-testing of variables for stationarity, variables that are integrated of order two or higher make the bounds testing approach irrelevant (Altintas and Kum 2013). The bounds test procedure can only be applied if the variable is stationary in levels or integrated of order zero, $I(0)$; or is stationary at the first difference or integrated of order one [$I(1)$]. For variables that become stationary at second difference or integrated of order two [$I(2)$], then the bounds test cannot be applied. It is, therefore, important to determine whether the variables of interest are integrated of an order not more than one. The study, therefore, investigates the order of integration of each variable of interest by using three unit root tests. The first is the Augmented Dickey-Fuller (1979) unit root test that takes into account the presence of serial correlation in the time series data. The second unit root test used is the Elliott, Rothenberg and Stock (1996) Dickey Fuller Generalised Least Squares (DF-GLS) unit root test that detrends the time series data. The third test investigates the presence of structural breaks in the time series data using the Perron (1990) innovation outlier model.

6.4.2.1 Augmented Dickey-Fuller (ADF) Unit Root Test

The Augmented Dickey-Fuller (ADF) test is an augmented version of the standard Dickey-Fuller (1979) test for unit root. The Standard Dickey-Fuller (DF) is valid only when the time series follows an autoregressive (AR) process of order one. However, if the time series is correlated with higher order lags, the disturbances are no longer valid. Thus, the ADF corrects for this violation by including a parametric correction to address the presence of serial correlation in the test equation. Given this case, lagged difference terms of the time series are added as additional regressors in the test regression in the following form:

$$\Delta Y_t = \alpha Y_{t-1} + \delta_i X_t + \sum_{i=1}^p \beta_i \Delta Y_{t-i} + u_t \quad (6.16)$$

In equation (6.16), the term X_t consist of optional explanatory variables such as a constant, or a constant and linear time trend. The test statistic follows the conventional t –ratio. The ADF test has got advantages over similar tests such as the Phillips-Perron (1988) unit root test with serial correlation as the latter does not perform well in cases with finite samples (Davidson and MacKinnon 2004).

6.4.2.2 Dickey Fuller Generalised Least Squares (DF-GLS) Unit Root Test

Given that the ADF test allows for the inclusion of optional explanatory variables such as a constant, or a constant and linear time trend; the computed critical values become larger if these explanatory variables are included. Thus, this reduces the power of the test (Davidson and MacKinnon 2004). Elliott *et al.* (1996) proposed a simpler modification of the ADF test where the time series is detrended prior to estimation of the test equation in order to eliminate the optional explanatory variables in the time series. Elliott *et al.* (1996) defines the GLS detrended data, y_t^d as

$$Y_t^d = Y_t - \delta(a)_i X_t \quad (6.17)$$

Given equation (6.17), the DF-GLS unit root test involves modifying the standard ADF test equation (6.16) by substituting the original time series with the GLS detrended time series. The following equation is therefore estimated as the test regression:

$$\Delta Y_t^d = \alpha Y_{t-1}^d + \delta_i X_t + \sum_{i=1}^p \beta_i \Delta Y_{t-i}^d + u_t \quad (6.18)$$

The test statistic of the DF-GLS test also follows the conventional t–ratio, if the optimal explanatory variable includes only the constant term. However, when both a constant and a linear time trend are included; Elliott *et al.* (1996) computed critical values of the test statistic for sample sizes of $T = \{50, 100, 200, \infty\}$.

6.4.2.3 Perron (1990) Unit Root Test with Structural Break

Perron (2005, p. 6) argued that random walks and structural changes have an intricate relationship and if found, the conventional unit root tests may be biased towards accepting a false null hypothesis of unit root when the time series becomes trend stationary with a structural break. There are different types of breaks that are studied in the literature and related to intercept breaks, trend breaks, and one-time breaks. The null hypothesis in this case is a unit root with a break or a trend stationary with a break (Perron 1989, 1990). Perron (2005) suggests that dummy variables should be included in the unit root test which are part of the deterministic components of the regression. The Perron (1990) test for unit root with structural break in a time series assumes the following model:

$$\Delta Y_t = \mu + \alpha D_t + \phi T + \psi^* Y_{t-1} + \sum_{i=1}^{p-1} \psi_i^* \Delta Y_{t-i} + u_t, \quad (6.19)$$

where $u_t \sim IID(0, \sigma^2)$, $\psi^* = (\psi_1 + \psi_2 + \dots + \psi_p) - 1$ and $\psi_i^* = -\sum_{i=j+1}^p \psi_i$

In equation (6.19), Y_t is the time-series under observation. The structural breaks can include either a shift-in-trend component given by the trend variable ϕT ,

$$T = \begin{cases} t & \text{for } t > k \\ 0 & \text{for } t \leq k \end{cases} \quad (6.20)$$

If the structural break is due to a change in mean, then there is a shift-in-mean component is given by αD , where:

$$D = \begin{cases} 1 & \text{for } t > k \\ 0 & \text{for } t \leq k \end{cases} \quad (6.21)$$

In the indicator functions (6.20 and 6.21), k represents the structural break identified for a particular variable. A significant shift-in-mean coefficient implies evidence of a structural break

in the time series under investigation. If it is followed by a significant shift-in-trend coefficient then Perron (1990) argues that the change in mean of the series at the break is not instantaneous but evolves over time.

6.4.3 Autoregressive Distributed Lag Bounds Test for Co-integration

Following the work of Pesaran *et al.* (2001), the ARDL representation of the two empirical models specified in equations (6.14) and (6.15) can be represented as follows:

Model 1

$$\begin{aligned} \Delta \ln Y_t = & \beta_0 + \beta_1 T_t + \sum_{i=1}^n \beta_{2i} \Delta \ln Y_{t-i} + \sum_{i=0}^n \beta_{3i} \Delta \ln INV_{t-i} + \sum_{i=0}^n \beta_{4i} \Delta \ln HC_{t-i} + \sum_{i=0}^n \beta_{5i} \Delta \ln POPG_{t-i} \\ & + \sum_{i=0}^n \beta_{6i} \Delta \ln GC_{t-i} + \sum_{i=0}^n \beta_{7i} \Delta \ln RER_{t-i} + \sum_{i=0}^n \beta_{8i} \Delta \ln INF_{t-i} + \sum_{i=0}^n \beta_{9i} \Delta \ln TRD_{t-i} \\ & + \alpha_1 \ln Y_{t-1} + \alpha_2 \ln INV_{t-1} + \alpha_3 \ln HC_{t-1} + \alpha_4 \ln POPG_{t-1} + \alpha_5 \ln GC_{t-1} + \alpha_6 \ln RER_{t-1} \\ & + \alpha_7 \ln INF_{t-1} + \alpha_8 \ln TRD_{t-1} + \varepsilon_t \dots \dots \dots (6.22) \end{aligned}$$

Model 2

$$\begin{aligned} \Delta \ln Y_t = & \beta_0 + \beta_1 T_t + \sum_{i=1}^n \beta_{2i} \Delta \ln Y_{t-i} + \sum_{i=0}^n \beta_{3i} \Delta \ln INV_{t-i} + \sum_{i=0}^n \beta_{4i} \Delta \ln HC_{t-i} + \sum_{i=0}^n \beta_{5i} \Delta \ln POPG_{t-i} \\ & + \sum_{i=0}^n \beta_{6i} \Delta \ln GC_{t-i} + \sum_{i=0}^n \beta_{7i} \Delta \ln RER_{t-i} + \sum_{i=0}^n \beta_{8i} \Delta \ln INF_{t-i} + \sum_{i=0}^n \beta_{9i} \Delta \ln TRD_{t-i} \\ & + \sum_{i=0}^n \beta_{10i} \Delta \ln AID_{t-i} + \alpha_1 \ln Y_{t-1} + \alpha_2 \ln INV_{t-1} + \alpha_3 \ln HC_{t-1} + \alpha_4 \ln POPG_{t-1} \\ & + \alpha_5 \ln GC_{t-1} + \alpha_6 \ln RER_{t-1} + \alpha_7 \ln INF_{t-1} + \alpha_8 \ln TRD_{t-1} + \alpha_9 \ln AID_{t-1} \\ & + \varepsilon_t \dots \dots \dots (6.23) \end{aligned}$$

The parameters β_2, \dots, β_9 in Model 1 and $\beta_2, \dots, \beta_{10}$ in Model 2 are the short-run multipliers (elasticities) and $\alpha_1, \dots, \alpha_8$ in Model 1 and $\alpha_1, \dots, \alpha_9$ in Model 2 are the long-run multipliers (elasticities). The white noise residual term is assumed to be independent and identically distributed in both models and is denoted by ε_t . Both equations are, therefore, Autoregressive Distributed Lag (ARDL) models that are estimated using Ordinary Least Squares (OLS) to test the existence of a long run equilibrium relationship between the dependent variable and its regressors. Furthermore, the specification in models 1 and 2 allow the growth rate during the

transition to the steady state to be subject to short run business cycle fluctuations driven by shocks to the economic environment (Collier and Goderis 2012, p. 1243).

Model 1 and 2 can also be written in a short-form as:

$$\ln Y_t = \beta_0 + \sum_{i=1}^p \gamma_i \ln Y_{t-i} + \sum_{j=1}^k \sum_{i=0}^q \beta_{j,i} \ln X_{j,t-1} + \varepsilon_t \quad (6.24)$$

In equation (6.24), some of the explanatory variables may have no lagged terms in the ARDL model ($q = 0$) and are called static or fixed regressors. The estimated ARDL model is transformed then into a long run representation that reveals the long run response of the dependent variable to a change in the regressors. The calculation is, therefore, given by the following expression (see also Acikgoz and Mert 2014, p. 39; IHS Global Inc. 2015, p. 284):

$$\theta_j = \frac{\sum_{i=1}^q \beta_{j,i}}{1 - \sum_{i=1}^p \gamma_i} \quad (6.25)$$

As suggested by Pesaran and Shin (1997, p. 22), the Schwarz-Bayesian Criteria (SBC) lag-length selection method can be used when estimating the country-specific ARDL model based on its superiority of being consistent in model selection compared to the Akaike Information Criterion (AIC). However, the SBC tends to select simpler or under-fit models compared to AIC which tends to over-fit ARDL specifications. Burnham and Anderson (2004) argued that the AIC has theoretical advantages over the Schwarz-Bayesian Criterion (SBC). On the other hand, Yang (2005) argued that the AIC has an asymptotic optimal selection method in selecting a model with the least mean squared error whereas the SBC is not asymptotically optimal. However, the choice of the ARDL model based on either AIC or SBC will depend on the country model.

The models specified in equations (6.22) and (6.23) can be used to test the joint null hypothesis of no level relationship (co-movement) between the dependent variable, real GDP per capita, and the regressors using the Pesaran *et al.* (2001) bounds testing procedure. To carry out the test, the two models are estimated using standard OLS estimation method and then test for no level relationships between real GDP per capita and the explanatory variables. The bounds test for the existence of level relationships is similar to the Wald F – test and involves testing the following

joint null hypotheses using parameters specified in equations (6.22) and (6.23). For both models, the joint null and alternative hypotheses are given as:

Model 1

$$\boxed{H_0: \alpha_1 = \alpha_2 = \alpha_3 = \alpha_4 = \alpha_5 = \alpha_6 = \alpha_7 = \alpha_8 = 0} \quad (6.26)$$

$$\boxed{H_1: \alpha_1 \neq \alpha_2 \neq \alpha_3 \neq \alpha_4 \neq \alpha_5 \neq \alpha_6 \neq \alpha_7 \neq \alpha_8 \neq 0} \quad (6.27)$$

Model 2

$$\boxed{H_0: \alpha_1 = \alpha_2 = \alpha_3 = \alpha_4 = \alpha_5 = \alpha_6 = \alpha_7 = \alpha_8 = \alpha_9 = 0} \quad (6.28)$$

$$\boxed{H_1: \alpha_1 \neq \alpha_2 \neq \alpha_3 \neq \alpha_4 \neq \alpha_5 \neq \alpha_6 \neq \alpha_7 \neq \alpha_8 \neq \alpha_9 \neq 0} \quad (6.29)$$

The Pesaran *et al.* (2001) bounds testing procedure depends on the F – statistic for testing the existence of level relationships. The upper critical bound (UCB) and lower critical bound (LCB) of the bounds test are given in Pesaran *et al.* (2001). The following rules are adopted when carrying out the bounds test (Pesaran *et al.* 2001, p. 290).

If $F_{bound} > UCB \Rightarrow$ Existence of Level Relationships

If $F_{bound} < LCB \Rightarrow$ No Existence of Level Relationships

If $LCB \leq F_{bound} \leq UCB$

\Rightarrow Results are inconclusive; there is need to consider cointegration rank of variables or use alternative cointegration tests.

In econometric theory, if a dependent variable and its set of covariates that are integrated of some order have a long-term structural relationship then they may be co-integrated provided there is a check that the residuals from their structural relationship are stationary. In that case the structural relationship becomes meaningful (Gujarati 2004, p. 822). Using the Pesaran *et al.* (2001) bounds test, if the computed F – statistic is outside the critical bounds (UCB), then the joint null hypothesis of no level relationships can be rejected (Pesaran *et al.* 2001, p. 304). This implies that a long-run stable relationship between real GDP per capita and the regressors exists.

6.4.4 ECM-Based ARDL Model

Having found that there is a long run co-integration relationship between economic growth and the key macroeconomic determinants used in this study, the error correction model for equations (6.22) and (6.23) can be expressed as follows:

Model 1

$$\begin{aligned} \Delta \ln Y_t = & \beta_0 \Delta T_t + \sum_{i=1}^n \beta_{1i} \Delta \ln Y_{t-i} + \sum_{i=0}^n \beta_{2i} \Delta \ln INV_{t-i} + \sum_{i=0}^n \beta_{3i} \Delta \ln HC_{t-i} + \sum_{i=0}^n \beta_{4i} \Delta \ln POPG_{t-i} \\ & + \sum_{i=0}^n \beta_{5i} \Delta \ln GC_{t-i} + \sum_{i=0}^n \beta_{6i} \Delta \ln RER_{t-i} + \sum_{i=0}^n \beta_{7i} \Delta \ln INF_{t-i} + \sum_{i=0}^n \beta_{8i} \Delta \ln TRD_{t-i} \\ & + \rho ECM_{t-1} + \varepsilon_t \dots \dots \dots (6.30) \end{aligned}$$

Model 2

$$\begin{aligned} \Delta \ln Y_t = & \beta_0 \Delta T_t + \sum_{i=1}^n \beta_{1i} \Delta \ln Y_{t-i} + \sum_{i=0}^n \beta_{2i} \Delta \ln INV_{t-i} + \sum_{i=0}^n \beta_{3i} \Delta \ln HC_{t-i} + \sum_{i=0}^n \beta_{4i} \Delta \ln POPG_{t-i} \\ & + \sum_{i=0}^n \beta_{5i} \Delta \ln GC_{t-i} + \sum_{i=0}^n \beta_{6i} \Delta \ln RER_{t-i} + \sum_{i=0}^n \beta_{7i} \Delta \ln INF_{t-i} + \sum_{i=0}^n \beta_{8i} \Delta \ln TRD_{t-i} \\ & + \sum_{i=0}^n \beta_{9i} \Delta \ln AID_{t-i} + \rho ECM_{t-1} + \varepsilon_t \dots \dots \dots (6.31) \end{aligned}$$

In equations (6.30) and (6.31), the term, ECM, is the error correction term, which measures the short run speed of adjustment towards the long run equilibrium path of the estimated ARDL model (Collier and Goderis 2012). According to Collier and Goderis (2012, p. 1243), real output responds to deviations from the long run equilibrium which is captured by the error correction term (ECM) by gradually bringing the economy back to its steady state level. This implies that the coefficient of the error correction term should be negative and statistically significant and the magnitude of this coefficient should be less than one. It should be noted that the lag or difference of a constant term in an ECM is zero, hence it is not included in equations (6.30) and (6.31).

6.5 Post-Estimation Diagnostic Tests

Since the ARDL representation can be estimated using standard ordinary least squares regression, it is important to employ some post estimation diagnostic techniques. An ARDL representation is

assumed to have residuals that are serially uncorrelated with a zero expected value and a constant covariance matrix (Pesaran and Shin 1999). If the regression models are affected by serial correlation, the models suffer from misspecification. This implies that some of the influences on the dependent variable are generated from the error terms and not the independent regressors. Furthermore, models with lagged dependent variables are prone to biased estimates (Gujarati 2004). In such cases where it is found that the disturbances are serially correlated, it is recommended that the ARDL specification should be augmented with additional lags to correct for serial correlation (Pesaran and Shin 1999).

One of the key assumptions for the bounds testing procedure is that the errors of the optimal ARDL model must be serially independent (Pesaran *et al.* 2001, p. 308). If serial correlation is present, the choice of the final ARDL model may be dependent on the serially correlated errors. This results in estimating coefficients that are no longer the best linear unbiased estimator (BLUE) with invalid standard errors and even test statistics. This requirement may also be influential in the final choice of the maximum lags for the variables in the model. Sections 6.4.1 to 6.4.6 discuss the post-diagnostic tests used in this study.

6.5.1 CUSUM and CUSUM of Squares Test

Brown *et al.* (1975) introduced the cumulative sum (CUSUM) test that plots the cumulative sum of recursive residuals. The CUSUM test is based on a null hypothesis of parameter stability and is investigated within critical values at the 5% significance level. If the cumulative sum of recursive residuals are outside the upper and lower critical lines, the null hypothesis is rejected and there is evidence of parameter instability in the ARDL model.

Brown *et al.* (1975) also introduced the cumulative sum of squares (CUSUMQ) test that investigates for variance instability. The CUSUMQ test plots the cumulative sum of squares of the recursive residuals and the null hypothesis of variance stability is investigated within critical values at the 5% significance level. If the null hypothesis is rejected then there is evidence that the ARDL model suffers from variance instability. If the CUSUM or the CUSUMQ test cannot be rejected, it is recommended that either lags should be added or some lags should be removed from the ARDL model.

6.5.2 Breusch-Godfrey Serial Correlation (LM) Test

One of the common problems in using time series regressions is that the estimated residuals are correlated with their own lagged values. Such a problem makes ordinary least-squares estimates to be inefficient with underestimated standard errors. This results in biased and inconsistent estimates especially when lagged dependent variables are included on the right hand side of the test equation (Breusch 1978; Godfrey 1978).

The Breusch (1978)-Godfrey (1978) Lagrange Multiplier (LM) test is a test of normality of the residual distribution. The Breusch-Godfrey LM test considers higher autoregressive or moving average forms of order p . The LM test statistic follows a chi-squared distribution and is asymptotically equivalent to the Box-Pierce (1970) portmanteau or Q – statistic test for white noise for lags of order p . If the lag order $p = 1$, then the Breusch-Godfrey LM test statistic degenerates to the Durbin (1970) h – test for first-order serial correlation, whose test statistics follows a t – distribution.

The null hypothesis is, therefore, the assumption of no serial correlation up to a specified order in the residuals or they are ‘white noise’ (normality or independence of the disturbances) against the alternative of the presence of serial correlation.

6.5.3 Breusch-Pagan-Godfrey Test for Heteroskedasticity

The presence of heteroscedasticity in the residuals of a properly specified linear least-squares regression model produces parameter estimates that are consistent but inefficient. As such, a low power test develops which may result in rejecting a false null hypothesis (White 1980, p. 817). There are different models that have been proposed in the literature for testing the presence of heteroscedasticity. The study will employ the Breusch-Pagan-Godfrey Lagrange Multiplier test for heteroskedasticity (Godfrey 1978; Breusch and Pagan 1979) that regresses the squared residuals on a vector of independent regressors. The LM statistic follows a *chi – square* (χ^2) – distribution with degrees of freedom equal to the number of covariates used. The null hypothesis, therefore, is the assumption of no heteroskedasticity versus an alternative hypothesis of heteroskedasticity of the form $\sigma^2 = \sigma^2 h(z'_t, \alpha)$ (IHS Global Inc. 2015, p. 185).

6.5.4 Regression Specification Error Test (RESET)

The Ramsey (1969) Regression Specification Test (RESET) is used in this study to test for model misspecification. The RESET test is a general test for specification errors that arise due to omitted

variables, incorrect functional form, simultaneous equation problems and heteroscedasticity (Ramsey 1969, p. 350). In the presence of such specification errors, the Ordinary Least Squares estimates are biased and inconsistent and result in conventional inference procedures that are inefficient. The RESET procedure tests the presence of specification errors by examining the distribution of the classical linear least-squares disturbance term. The RESET procedure assumes that the residuals are independently and identically distributed. The test hypothesis, therefore, compares the joint null hypothesis that the specification of the model is correctly specified devoid of the four specifications errors versus a joint alternative hypothesis that the model suffers from specification errors (Ramsey 1969, p. 350).

6.5.5 Normality Test

Apart from serial correlation and heteroskedasticity the ARDL model assumes that the residuals are normally distributed. The normality test is a multivariate extension of the Jarque-Bera residual normality test based on the third (skewness) and fourth (kurtosis) moments of the residuals compared to those of the normal distribution. Under the null hypothesis of normality, the study will report the normality test statistics for skewness (m_3) and kurtosis or degree of excess ($m_4 - 3$) measures. The Jarque-Bera statistic is assumed to have a *chi-square* (χ^2) – distribution with two degrees of freedom and the null hypothesis tested assumes that the errors are normally distributed (Jarque and Bera 1980, 1981, 1987).

6.5.6 Autoregressive Conditional Heteroscedasticity (ARCH) Test

In some financial time series such as inflation and exchange rates, serial correlation may arise due to autocorrelation between current and past residual variances. An Autoregressive Conditional Heteroskedastic (ARCH) process may arise where a relationship exists between the variance of the disturbances and the squared residual term (Engle 1982). Another form could be a Generalised Autoregressive Conditional Heteroskedastic (GARCH) condition where a relationship exists between the disturbance variance and lagged values of the squared disturbance term and lagged conditional variances (Bollerslev 1986). It is argued that ARCH in itself does not invalidate standard OLS inference but ignoring ARCH effects may result in loss of efficiency (Engle 1982). If this is detected, then use of generalised least-squares regression is advised to eliminate the ARCH effects (Gujarati 2004, p. 861). The ARCH test follows the *F* – distribution which is an omitted variable test for the joint significance of all lagged squared residuals.

6.6 Data Sources and Definition of Variables

Table 6.1 summarises the variables used in this study, including their definitions and sources. The study uses annual time-series data covering the period from 1970 to 2013 – a sample size of 44 observations. This data are obtained from the World Bank Development Indicators (World Bank 2015c) and United Nations Educational, Scientific and Cultural Organisation (UNESCO) Institute of Statistics (UNESCO 2015).

Table 6.1: Definition and Source of Variables

Variable	DEFINITION	SOURCE
Dependent Variable		
Real GDP per capita (GDPPC)	Real gross domestic product (real GDP) expressed in 2005 constant USD prices divided by population	World Bank 2015c
Investment (INV)	Gross fixed capital formation expressed in 2005 constant USD prices as a share of real GDP	World Bank 2015c
Human Capital (HC)	Total enrolment	UNESCO Institute of Statistics, 2015
Population Growth (POPG)	Rate of change of total population	World Bank 2015c
Government Consumption (GC)	Government consumption expressed in 2005 constant USD prices as a share of real GDP	World Bank 2015c
Real Exchange Rate (RER)	Real Exchange Rate expressed as the ratio of nominal exchange rate (LCU per US\$, period average) and PPP conversion factor, GDP (LCU per international \$)	World Bank 2015c
Inflation Rate (INF)	Inflation Rate defined as the growth rate of the Consumer price index (2010 = 100)	World Bank 2015c
Trade (TRD)	Ratio of exports and imports expressed in 2005 constant USD prices as a share of real GDP	World Bank 2015c
Foreign Aid (AID)	Net official development assistance and official aid received expressed in 2005 constant USD prices as a share of real GDP	World Bank 2015c

6.7 Conclusion

This chapter has discussed the theoretical foundations, empirical model specification, and estimation techniques used in examining the key macroeconomic determinants of economic growth in three SADC countries, namely – Malawi, Zambia and South Africa. The chapter has also discussed post-estimation diagnostic tests that include goodness of fit measures and stability tests on the selected ARDL model. These tests are important to ensure that the ARDL model used

in this study is well-specified and the associated results are valid, robust and usable for policy guidance.

CHAPTER 7

ECONOMETRIC ANALYSIS AND EMPIRICAL FINDINGS

7.1 Introduction

The econometric analysis and empirical results from the three selected countries, namely: Malawi, Zambia, and South Africa are discussed in this chapter. The rest of the chapter is organised as follows. Section 7.2 presents unit root test results of all the variables used and the ARDL co-integration test results. Section 7.3 presents the empirical analysis of the ARDL-based error correction model in the three study countries. Section 7.4 discusses the post-estimation diagnostic test results for all the growth equations. Section 7.5 summarises the ARDL regression results for all three study countries. Section 7.6 concludes the chapter.

7.2 Econometric Analysis and Empirical Results

7.2.1 Unit Root Tests

The order of integration for the variables of interest in the respective countries are reported on: these are based on the Augmented Dickey-Fuller (1979); Elliott, Rothenberg and Stock's (1996) Dickey Fuller Generalised Least Squares (DF-GLS); and the Perron (1990) structural break unit root tests. In order to determine whether to include a constant or a trend, it is important to know the data generating process of the time series, which can be autoregressive or trended. Thus, a graphical analysis of the time series is important in order to determine whether to include an intercept, an intercept and a trend, or none. The advantage of this approach is that it is based on the notion that one of the common problems with unit root tests is that they are affected by type 1 (distorted size) and type 2 (low power) errors. Thus, in cases where the sample size is small, an erroneous inclusion of an intercept or a trend, may lead to the possibility of accepting a false null hypothesis.

Table 7.1 illustrates the data generating processes for the selected time series to be used in this study.

Table 7.1: Data Generating Process for Selected Time Series

Variable Name	Malawi LOG(GDP_MWI)	Zambia LOG(GDP_ZMB)	South Africa LOG(GDP_RSA)	Decision
Log(GDPPC)				All countries – Trend stationary (Include both intercept and trend)
Log(INV)				<p>Malawi & Zambia – Difference stationary (Include Intercept only)</p> <p>RSA – Trend stationary (Include both intercept and trend)</p>
Log(HC)				All countries – Trend stationary (Include both intercept and trend)

Variable Name	Malawi	Zambia	South Africa	Decision
Log(POPG)				<p>Malawi – Difference stationary (Include Intercept only) Zambia – Difference stationary (no intercept nor trend) RSA – Trend stationary (Include both intercept and trend)</p>
Log(RER)				<p>All countries – Trend stationary (Include both intercept and trend)</p>
Log(GC)				<p>Malawi & Zambia – Difference stationary (Include Intercept only) RSA – Trend stationary (Include both intercept and trend)</p>

Variable Name	Malawi	Zambia	South Africa	Decision
Log(INF)				<p>Malawi – Difference stationary (Include Intercept only)</p> <p>Zambia & RSA – Trend stationary (Include both intercept and trend)</p>
Log(TRD)				<p>All Countries – Difference stationary (Include Intercept only)</p>
Log(AID)				<p>Malawi – Difference stationary (Include Intercept only)</p> <p>Zambia – Trend stationary (Include both intercept and trend)</p>

As is illustrated in Table 7.1, a preliminary graphical analysis shows that when testing for unit roots on the variables of interest in Malawi, the test equations for real GDP per capita, human capital development, and real exchange rate depreciation are trend stationary and should include both an intercept and a trend, while population growth, government consumption, inflation, investment, foreign aid, and trade time series should include an intercept only.

In Zambia, the variables – that is, real GDP per capita, human capital development, real exchange rate depreciation, inflation and foreign aid illustrate trend stationary properties and an intercept and a trend should be included in the unit root test equation. On the other hand, investment, population growth, government consumption and trade variables are difference stationary, which implies that the unit root test equation can include no deterministic variable or just the intercept term.

The data generating processes for all variables in South Africa show that they are trend stationary. All unit root tests equations will, therefore, include both an intercept and a trend.

Table 7.2 reports unit root test results for the three study countries.

Table 7.2: Stationarity Tests for all Variables

Variable Name	Stationarity of all Variables in Levels						Stationarity of all Variables in 1 st Differences					
	ADF		DF-GLS		Perron		ADF		DF-GLS		Perron	
	Without Trend	With Trend	Without Trend	With Trend	Without Trend	With Trend	Without Trend	With Trend	Without Trend	With Trend	Without Trend	With Trend
Malawi												
Log(GDPPC)	-	-2.02	-	-1.85	-	-3.78	-	-7.42***	-	-2.91*	-	-8.00***
Log(INV)	-3.32**	-	-3.08***	-	-4.55	-	-	-	-	-	-9.18***	-
Log(HC)	-	-1.34	-	-1.38	-	-2.39	-	-6.32***	-	-5.99***	-	-6.43***
Log(POPG)	-2.67*	-	-2.71***	-	-7.32***	-	-4.82***	-	-	-	-	-
Log(GC)	-3.57***	-	-3.60***	-	-4.36*	-	-	-	-	-	-9.75***	-
Log(RER)	-	-3.08	-	-3.17*	-	-4.35*	-	-6.19***	-	-6.32***	-	-6.69***
Log(INF)	-4.19***	-	-4.20***	-	-5.73***	-	-	-	-	-	-	-
Log(TRD)	-4.13***	-	-4.05***	-	-4.96***	-	-	-	-	-	-	-
Log(AID)	-1.69	-	-1.66*	-	-3.59	-	-11.28***	-	-1.75*	-	-12.44***	-
Zambia												
Log(GDPPC)	-	0.98	-	-0.94	-	-4.52	-	-7.26***	-	-7.42***	-	-9.86***
Log(INV)	-1.41	-	1.31	-	-2.79	-	-11.16***	-	-9.32***	-	-13.11***	-
Log(HC)	-	-1.31	-	-1.52	-	-3.37	-	-3.91**	-	-3.95**	-	-6.45***
Log(POPG)	0.26	-	-0.82	-	-1.75	-	-1.91*	-	-1.65*	-	-4.23*	-
Log(GC)	-4.18***	-	-3.14***	-	-5.04***	-	-	-	-	-	-	-
Log(RER)	-	-0.79	-	-0.95	-	-4.69	-	-5.18***	-	-5.25***	-	-10.04***
Log(INF)	-	-1.82	-	-1.25	-	-5.41**	-	-6.15***	-	-5.99***	-	-
Log(TRD)	-1.74	-	-1.62*	-	-3.39	-	-5.38***	-	-5.31***	-	-6.50***	-
Log(AID)	-	-1.77	-	-1.99	-	-4.85	-	-10.03***	-	-10.01***	-	-10.69***
South Africa												
Log(GDPPC)	-	-1.12	-	-1.38	-	-3.57	-	-4.34***	-	-4.28***	-	-5.17***
Log(INV)	-	-1.95	-	-2.05	-	-4.34	-	-6.61***	-	-6.25***	-	-7.05***
Log(HC)	-	-0.77	-	-0.96	-	-6.77***	-	-5.61***	-	-5.65***	-	-
Log(POPG)	-	-2.19	-	-1.98	-	-6.19***	-	-4.51***	-	-4.55***	-	-
Log(GC)	-	-2.21	-	-2.13	-	-5.56**	-	-5.95***	-	-5.18***	-	-
Log(RER)	-	-2.89	-	-2.83	-	-4.16	-	-5.70***	-	-5.73***	-	-6.64***
Log(INF)	-	-3.94**	-	-3.10*	-	-4.94*	-	-	-	-8.70***	-	-12.55***
Log(TRD)	-2.76*	-	-2.10**	-	-3.45	-	-6.37***	-	-	-	-7.74***	-

Note: for all p-values: *** 1% significance level; ** 5% significance level; * 10% significance level.

As illustrated in Table 7.2, the stationarity results for Malawi conclusively showed that real GDP per capita, human capital development, real exchange rate depreciation, and foreign aid were integrated of order one, while inflation and the trade variables were integrated of order zero, regardless of the unit root test used. The investment and government consumption variables were integrated of order zero when the ADF and DF-GLS tests were used, and integrated of order one when subjected to Perron (1990) structural break unit root test. The population growth variable was integrated of order one when the ADF test was used, and integrated of order zero when the DF-GLS and structural break test were used.

In Zambia, the results showed that real GDP per capita, investment, human capital development, population growth, real exchange rate depreciation, foreign aid, and international trade were integrated of order one, while government consumption was integrated of order zero irrespective of the unit root test used. On the other hand, the inflation variable was integrated of order one when ADF and DF-GLS tests were used, and integrated of order zero when Perron (1990) unit root test was used.

In South Africa, the unit root test results revealed that real GDP per capita, investment, and the real exchange rate variables were integrated of order one, regardless of the unit root test used. The results also showed that human capital development, population growth and government consumption variables were integrated of order one when the ADF and DF-GLS tests were employed; and integrated of order zero when the Perron test was used. The inflation variable was found to be integrated of order one when the DF-GLS and Perron tests were used and integrated of order zero when the ADF test was employed. Lastly, the trade variable was found to be integrated of order zero in the DF-GLS test and integrated of order one in the ADF and Perron tests. Overall, all variables in the study countries were found to be either integrated of order one or zero. Therefore, the ARDL bounds testing procedure for cointegrating relationships as suggested by Pesaran *et al.* (2001) can be employed.

7.2.2 ARDL Bounds Test for Co-integration

The Akaike Information Criteria (AIC) and Schwarz-Bayesian Criteria (SBC) were employed to determine the appropriate lag-length in order to estimate the ARDL equation for each study country. The optimal lag length selected for each model was two (2) lags and was chosen based on the number of regressors included in each model and the sample size. Based on Pesaran *et al.* (2001, pp. 300-301) asymptotic critical value bounds, the results showed that the optimal model

for each study country is as follows: Case I: no intercept and no trend for the South African growth model; and Case II: restricted intercept and no trend for the Malawi and Zambia growth models.

As discussed in Chapter 6, the study estimates two models. The first model (Model 1) is specified for all three countries, namely: Malawi, Zambia and South Africa for comparative purposes and excludes foreign aid. The second model (Model 2) is specified for Malawi and Zambia and includes foreign aid. In Model 1, the optimal ARDL model selected was $ARDL(1, 0, 0, 2, 1, 1, 2, 1)$ for Malawi, based on the AIC, and an $ARDL(2, 1, 0, 0, 0, 0, 0, 2)$ model for Zambia, based on the SBC, and finally an $ARDL(1, 0, 0, 0, 0, 0, 1, 1)$ model for South Africa, based on the SBC. In Model 2, the optimal ARDL model selected for the Malawi growth equation, based on the AIC, was $ARDL(1, 2, 2, 2, 1, 2, 2, 2, 0)$ model. The optimal ARDL growth equation for Zambia was selected, using the SBC and reported an optimum $ARDL(2, 0, 0, 0, 0, 0, 0, 2, 0)$ model. Given that the models were optimally specified, the existence of long-run level relationships between the dependent variable and the regressors was investigated.

Table 7.3 reports the bounds test for level relationships for Model 1.

Table 7.3: Model 1 – ARDL Bounds Test Results without Foreign Aid

Country	Dependent Variable	Function	Value (F-statistic)	Co-integration Status		
Malawi (Case II)	Real GDP per capita	(<i>GDPPC</i> INV, HC, POPG, GC, RER, INF, TRD)	4.14***	Co-integrated		
Zambia (Case II)	Real GDP per capita	(<i>GDPPC</i> INV, HC, POPG, GC, RER, INF, TRD)	5.85***	Co-integrated		
South Africa (Case I)	Real GDP per capita	(<i>GDPPC</i> INV, HC, POPG, GC, RER, INF, TRD)	5.67***	Co-integrated		
Null Hypothesis: No long run relationships exist						
Asymptotic Critical Values (Pesaran <i>et al.</i>, 2001; Case I and II, p. 300)						
	1%		5%		10%	
Case	<i>I</i> (0)	<i>I</i> (1)	<i>I</i> (0)	<i>I</i> (1)	<i>I</i> (0)	<i>I</i> (1)
I	2.54	3.91	1.97	3.18	1.70	2.83
II	2.73	3.90	2.17	3.21	1.92	2.89

Note: *** denotes 1% significance level; ** 5% significance level; * 10% significance level.

As illustrated in Table 7.3, all computed bounds test statistics are statistically significant at the 1% significance level. The results showed that the computed *F* – statistic without foreign aid for the Malawi growth equation was 4.14, the reported statistic for Zambia was 5.85, while the South Africa growth equation reported a computed *F* – statistic of 5.67.

Table 7.4 reports the Pesaran *et al.* (2001) bounds test for level relationships for Model 2 with foreign aid for the Malawi and Zambia.

Table 7.4: Model 2 – ARDL Bounds Test Results with Foreign Aid

Country	Dependent Variable	Function	Value (F-statistic)	Co-integration Status	
Malawi	Real GDP per capita	(<i>GDPPC</i> INV, HC, POPG, GC, RER, INF, AID, TRD)	5.99***	Co-integrated	
Zambia	Real GDP per capita	(<i>GDPPC</i> INV, HC, POPG, GC, RER, INF, AID, TRD)	6.17***	Co-integrated	
Null Hypothesis: No long run relationships exist					
Asymptotic Critical Values (Pesaran <i>et al.</i>, 2001; Case II, p. 300)					
1%		5%		10%	
<i>I</i> (0)	<i>I</i> (1)	<i>I</i> (0)	<i>I</i> (1)	<i>I</i> (0)	<i>I</i> (1)
2.62	3.77	2.11	3.15	1.85	2.85

Note: *** 1% significance level; ** 5% significance level; * 10% significance level.

As illustrated in Table 7.4, all computed F – statistics for the Malawi and Zambia growth equations were statistically significant at the 1% significance level. For the Malawi growth equation, the computed F – statistic was 5.99, while the Zambian growth equation reported a computed F – statistic of 6.17. In summary, the bounds test to cointegrating relationships, using the Pesaran *et al.* (2001) approach in both Models 1 and 2, confirmed the existence of long-run level relationships between the dependent variable, real GDP per capita, and the set of covariates in all three study countries.

7.3 ARDL-Based Empirical Analysis of Model 1

Table 7.5 presents regression results for Model 1 on the relationship between the key macroeconomic determinants and economic growth in all three study countries, both in the short and long run.

Table 7.5: Estimated Results for Model 1 – Short and long run Coefficients

Panel 1 – Long-Run Coefficients [Dependent Variable: $\log(GDPPC)_t$]						
	Malawi		Zambia		South Africa	
Regressor	Coefficient	Probability	Coefficient	Probability	Coefficient	Probability
$\log(INV)_t$	0.2955*	0.092	0.3940***	0.012	1.0413***	0.009
$\log(HC)_t$	0.1627**	0.024	0.2697***	0.004	0.3622***	0.004
$\log(POPG)_t$	-0.2319*	0.070	0.5962	0.131	-0.4372*	0.082
$\log(GC)_t$	0.0442	0.762	-0.3275**	0.046	-0.8754**	0.042
$\log(RER)_t$	0.0474	0.832	-0.0598	0.371	0.1114	0.586
$\log(INF)_t$	-0.1611**	0.015	0.0357	0.511	-0.4216*	0.058
$\log(TRD)_t$	0.5201**	0.045	-0.1242	0.296	1.3527**	0.019
C_t	2.6194**	0.025	5.5124***	0.007	-	-
Panel 2 – Estimated Short run Coefficients (Elasticities) [Dependent Variable: $\Delta\log(GDPPC)_t$]						
	Malawi		Zambia		South Africa	
Regressor	Coefficient	Probability	Coefficient	Probability	Coefficient	Probability
$\Delta\log(GDPPC)_{t-1}$	-	-	-0.4481***	0.003	-	-
$\Delta\log(INV)_t$	0.0873**	0.022	0.0459***	0.010	0.0684**	0.030
$\Delta\log(HC)_t$	0.0481**	0.025	0.0586***	0.005	0.0238	0.122
$\Delta\log(POPG)_t$	-0.0743	0.252	0.1295	0.273	-0.0287*	0.051
$\Delta\log(POPG)_{t-1}$	0.1094	0.110	-	-	-	-
$\Delta\log(GC)_t$	-0.0716	0.232	-0.0711***	0.006	-0.0575**	0.030
$\Delta\log(RER)_t$	-0.0049	0.931	-0.0129	0.443	0.0073	0.583
$\Delta\log(INF)_t$	-0.0249**	0.011	0.0077	0.554	-0.0071	0.219
$\Delta\log(INF)_{t-1}$	0.0124	0.152	-	-	-	-
$\Delta\log(TRD)_t$	0.1329**	0.033	0.0155	0.596	-0.0371	0.297
$\Delta\log(TRD)_{t-1}$	-	-	-0.0437*	0.100	-	-
ECM_{t-1}	-0.2954**	0.034	-0.2171**	0.014	-0.0657**	0.012
		Malawi		Zambia		South Africa
R-Squared		0.6706		0.7779		0.7559
R-Bar Squared		0.4805		0.6860		0.6873
S.E. of Regression		0.0346		0.0244		0.1323
F-Stat		5.292[0.000]		10.16[0.000]		14.16[0.000]
Residual Sum of Squares		0.0311		0.0173		0.0056
DW-statistic		2.42		2.05		2.07
Akaike Info. Criterion		-75.76		-91.14		-117.77
Schwarz-Bayesian Criterion		-61.86		-79.85		-109.08

Note: *** 1% significance level; ** 5% significance level; * 10% significance level.

Panel 1 presents the estimated results of the long run coefficients, while panel 2 presents the estimated short run coefficients for the three countries' growth equations. The results in panel 2 reveal that in the short run, the adjustment process measured by the Error Correction Term (ECM) is between 0 and -1 in the three study countries and are all statistically significant at the 5% significance level. The results show that the speed of adjustment towards the long run equilibrium path is estimated as -0.30% for Malawi, -0.22% for Zambia, and -0.07% for South Africa. The

speed of adjustment that monotonically converges towards the equilibrium path thus confirms the long run equilibrium relationship between real GDP per capita and the regressors being studied in the respective countries. The study results also reveal that the underlying ARDL models in the three study countries are a good fit, represented by an estimated R –squared value of 0.67 and an adjusted R –squared value of 0.48 for the Malawi growth equation, R –squared value of 0.78 and an adjusted R –squared value of 0.69 for the Zambia growth equation, and R –squared value of 0.76 and an adjusted R –squared value of 0.69 for the South Africa growth equation.

The results reveal that the accumulation of physical capital is positively and significantly associated with economic growth both in the short and long run in all study countries. In the long run, the results in Malawi show that a 1% increase in investment leads to a 0.30% increase in real GDP per capita and the results are statistically significant at the 10% significance level. In Zambia, a 1% increase in investment leads to a 0.39% increase in real GDP per capita and the results are statistically significant at the 1% significance level. In South Africa, the results show that a 1% increase in investment leads to a 1.04% increase in real GDP per capita and the results are statistically significant at the 1% level.

The short-run results for Malawi show that a 1% increase in the growth of investment leads to a 0.09% increase in the growth of real GDP per capita; and the results are statistically significant at the 5% significance level. In Zambia, a 1% increase in the growth of investment leads to a 0.05% increase in the growth of real GDP per capita and the results are statistically significant at the 1% significance level. The results in South Africa reveal that a 1% increase in the growth of investment leads to a 0.07% increase in the growth of real GDP per capita and they show that the results are statistically significant at the 5% significance level. These results are consistent with empirical growth studies that found similar results in developing countries (see, among others, Bleaney, *et al.* 2001; Anyanwu 2014).

The study results also show that human capital development is positively and significantly associated with economic growth in all study countries in the long run; while in the short run human capital development is positively and significantly associated with short run economic growth only in Malawi and Zambia. The long-run results reveal that a 1% increase in human capital development in Malawi leads to a 0.16% increase in real GDP per capita and the results are statistically significant at the 5% significance level. In Zambia, the results show that a 1% increase in human capital development leads to a 0.27% increase in real GDP per capita in the

long run and that the results are statistically significant at the 1% significance level. The results in South Africa show that a 1% increase in human capital development leads to a 0.36% increase in real GDP per capita in the long run and the results are statistically significant at the 1% significance level.

The short-run results, on the other hand, reveal that a 1% increase in the growth of human capital development leads to a 0.05% increase in the growth of real GDP per capita in Malawi and the results are statistically significant at the 5% significance level. Similarly, a 1% increase in the growth of human capital development leads to a 0.06% increase in the growth of real GDP per capita in Zambia and the results are statistically significant at the 1% significance level. The results are similar to other studies that found a significant positive relationship between human capital development and economic growth (see, among others, Mendoza 1997; Barro 1999, 2003; Anyanwu 2014).

The relationship between population growth and economic growth is found to be negative and significant, both in the short and long run only in South Africa: these results are significant at the 10% significance level. The results in Malawi further show a negative and significant relationship between population growth and economic growth only in the long run and the results are statistically significant at the 10% significance level. No significant association was found between population growth and economic growth in Zambia, both in the short and long run. The long-run results showed that in Malawi a 1% increase in population growth leads to a -0.23% decrease in real GDP per capita, while in South Africa a 1% increase in population growth leads to a -0.44% decrease in real GDP per capita. In the short run, the results revealed a negative and significant relationship only in South Africa where the change in population growth leads to a -0.03% decrease in the growth of real GDP per capita. These results are similar to some empirical growth studies that support a negative relationship between population growth and economic growth (see, among others, Most and Vann de Berg 1996; Checherita-Westphal and Rother 2012; Anyanwu 2014).

The relationship between government consumption and economic growth was found to be negatively and significantly associated with economic growth in Zambia and South Africa and no significant relationship was found in Malawi, both in the short and long run. The long-run results revealed that a 1% increase in government consumption in Zambia leads to a -0.33% decrease in real GDP per capita, while in South Africa a 1% increase in government consumption leads to a -0.88% decrease in real GDP per capita, and both results are statistically significant at the 5%

significance level. The short-run results, on the other hand, showed that a 1% increase in the growth of government consumption in Zambia leads to a -0.07% decrease in real GDP per capita growth, while in South Africa a 1% increase in the growth of government consumption leads to a -0.06% decrease in real GDP per capita growth. These short-run results were statistically significant at the 1% and 5% significance levels, respectively. These results are similar to other studies that have found a negative and significant relationship between government consumption and economic growth (see, among others, Barro 1999, 2003; Bhaskara-Rao and Hassan 2011).

In terms of inflation, the results revealed a negative and significant relationship between inflation and economic growth in Malawi, both in the short and long run; and a negative and significant relationship in South Africa only in the long run. No significant relationship was found between inflation and economic growth in Zambia, both in the short and long run. The long-run results showed that a 1% increase in inflation in Malawi leads to a -0.16% decrease in real GDP per capita and the results are statistically significant at the 5% significance level. In South Africa, the results revealed that a 1% increase in inflation leads to a -0.42% decrease in real GDP per capita and the results are statistically significant at the 10% significance level. In the short run, the growth of inflation leads to a -0.02% decrease in the growth of real GDP per capita in Malawi and the results are statistically significant at the 5% significance level. These results are consistent with empirical results that also found a negative and significant association between inflation and economic growth (Fischer 1992; Barro 1999, 2003; Burnside and Dollar 2000; Chen and Feng 2000; Bhaskara-Rao and Hassan 2011, Anyanwu 2014).

The relationship between international trade and economic growth was found to be positive and significant in Malawi and statistically significant at the 5% significance level both in the short and long run. In South Africa, the relationship was positive and significant only in the long run and statistically significant at the 5% significance level, while in Zambia it was negative and significant only in the short run; and was statistically significant at the 10% significance level. The long-run results in Malawi revealed that a 1% increase in international trade leads to a 0.52% increase in real GDP per capita, while in South Africa a 1% increase in international trade leads to a 1.35% increase in real GDP per capita. In the short run, the study results revealed that a 1% increase in growth of international trade in Malawi leads to a 0.13% increase in the growth of real GDP per capita, while in Zambia a 1% increase in international trade leads to a -0.04% decrease in the growth of real GDP per capita. These results are consistent with the empirical growth literature that have revealed a positive association between trade and economic growth (see,

Fischer 1993; Barro 1999; Anyanwu 2014, among others); and a negative relationship especially when there is a high degree of uncertainty (see, among others, Mendoza 1997).

Lastly, the study did not find any significant relationship between real exchange rate depreciation and economic growth in all study countries, both in the short and long run.

7.3.1 Post-Estimation Diagnostic Test Results for Model 1

Table 7.6 reports the post-estimation diagnostic results for Model 1.

Table 7.6: Post-Estimation Diagnostic Tests – Model 1

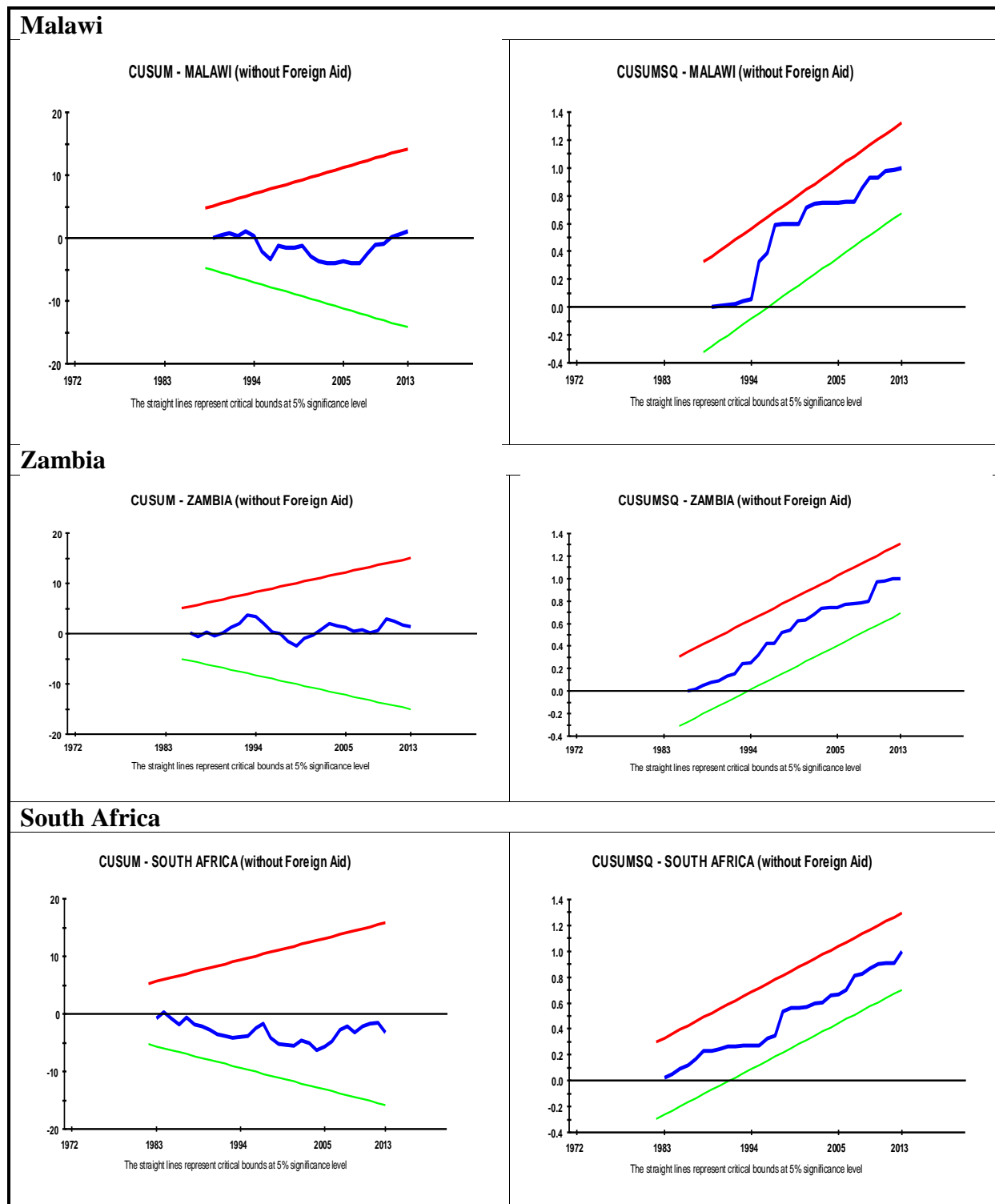
Null Hypothesis (F-statistic)	Model 1: Without Foreign Aid		
	Malawi	Zambia	South Africa
Breusch-Godfrey Test: No Serial Correlation	2.28 [0.143]	0.33 [0.568]	0.18 [0.672]
Breusch-Pagan-Godfrey Test: No Heteroskedasticity	1.75 [0.194]	0.71 [0.405]	0.02 [0.882]
Ramsey RESET Test: Functional Form	1.32 [0.261]	0.45 [0.509]	0.00 [0.949]
Normality: CHSQ (2)	1.06 [0.589]	4.17 [0.124]	0.90 [0.636]
ARCH Test: Heteroskedasticity (no ARCH terms)	1.73 [0.199]	1.32 [0.284]	0.11 [0.743]

*Note: for all p-values: *** 1% significance level; ** 5% significance level; * 10% significance level.*

As illustrated in Table 7.6, the results reveal that the null hypotheses for all post-diagnostic tests cannot be rejected at the 5% significance level. Thus, the estimated ARDL models in Model 1 are correctly specified and the parameter estimates are valid and unbiased.

Figure 7.1 demonstrate the CUSUM and CUSUMSQ results for Model 1.

Figure 7.1: CUSUM and CUSUMSQ Tests for Model 1



As illustrated in Figure 7.1, the CUSUM as well as the CUSUMSQ for Model 1 growth equations are within the 5% critical lines and thus suggest coefficient stability in all study countries.

7.4 ARDL-Based Empirical Analysis of Model 2

This section reports the long-run and short-run empirical results of the relevant specified models for each study country. Apart from measuring the short-run speed of adjustment towards the long-run equilibrium path, the error correction model also reports the relationship between the growth of the selected variables and the growth of real per capita GDP in the short run. Since the variables are expressed the logs, the associated coefficients are elasticities, which measure the level relationship between the selected regressors and real GDP per capita.

Table 7.7 presents the short and long run multipliers for the growth equations in the study countries.

Table 7.7: Estimated Results for Model 2 – Short and long run Coefficients

Panel 1 – Long-Run Coefficients [Dependent Variable: $\log(GDPPC)_t$]				
Regressor	Malawi		Zambia	
	Coefficient	Probability	Coefficient	Probability
$\log(INV)_t$	0.2972***	0.001	0.2933**	0.032
$\log(HC)_t$	0.1371**	0.015	0.2987***	0.004
$\log(POPG)_t$	-0.1216**	0.017	0.1957	0.718
$\log(GC)_t$	0.0771	0.445	-0.2149	0.181
$\log(RER)_t$	-0.0607	0.698	-0.0777	0.270
$\log(INF)_t$	-0.0569**	0.033	0.0145	0.815
$\log(TRD)_t$	0.4278**	0.012	-0.0163	0.910
$\log(AID)_t$	-0.0867	0.107	-0.1485*	0.097
C_t	3.5947***	0.000	3.4908	0.206
Panel 2 – Estimated Short run Coefficients (Elasticities) [Dependent Variable: $\Delta\log(GDPPC)_t$]				
Regressor	Malawi		Zambia	
	Coefficient	Probability	Coefficient	Probability
$\Delta\log(GDPPC)_{t-1}$	-	-	-0.3345**	0.018
$\Delta\log(INV)_t$	0.0892**	0.028	0.0596***	0.001
$\Delta\log(INV)_{t-1}$	-0.0479	0.220	-	-
$\Delta\log(HC)_t$	-0.0683	0.649	0.0607***	0.005
$\Delta\log(HC)_{t-1}$	-0.1511	0.165	-	-
$\Delta\log(POPG)_t$	-0.1355*	0.086	0.0397	0.741
$\Delta\log(POPG)_{t-1}$	0.1979***	0.006	-	-
$\Delta\log(GC)_t$	-0.0045	0.939	-0.0436*	0.092
$\Delta\log(RER)_t$	0.0268	0.771	-0.0158	0.366
$\Delta\log(RER)_{t-1}$	0.1149*	0.068	-	-
$\Delta\log(INF)_t$	-0.0195**	0.026	0.0029	0.822
$\Delta\log(INF)_{t-1}$	0.0123	0.120	-	-
$\Delta\log(TRD)_t$	0.1432**	0.023	0.0270	0.358
$\Delta\log(TRD)_{t-1}$	-0.1113*	0.056	-0.0537*	0.054
$\Delta\log(AID)_t$	-0.0564	0.152	-0.0301*	0.082
ECM_{t-1}	-0.6504***	0.000	-0.2031**	0.022

	Malawi	Zambia
R-Squared	0.8564	0.7690
R-Bar Squared	0.6900	0.6738
S.E. of Regression	0.0267	0.0248
F-Stat	7.55 [0.000]	8.78 [0.000]
Residual Sum of Squares	0.0136	0.0179
DW-statistic	2.32	2.15
Akaike Info. Criterion	-86.19	-90.31
Schwarz-Bayesian Criterion	-66.21	-79.02

Note: *** 1% significance level; ** 5% significance level; * 10% significance level.

7.4.1 Empirical Analysis of ARDL-Based Results for Malawi

Panel 1 of Table 7.7 reports the estimated long run coefficients; while Panel 2 reports the estimated short run coefficients of the Malawi growth equation. As shown in Panel 2, the short run dynamics and the adjustment towards the long run equilibrium path are measured by the error correction term (ECM). The result shows that a 1% deviation from the equilibrium path is corrected in the next period at a rate of -0.65% and is statistically significant at the 1% significance level. This confirms the presence of a long run level equilibrium relationship between real GDP and the selected regressors (that is, investment, human capital, population growth, government consumption, the real exchange rate, inflation, international trade, and foreign aid). The regression results reveals a good fit represented by an estimated *R*-squared value of 0.86 and an adjusted *R*-squared value of 0.69.

Panel 1 of Table 7.7 presents the long run coefficient estimates. The results reveal that the key macroeconomic determinants that are significantly associated with long run economic growth in Malawi include the accumulation of physical capital (investment), human capital development, population growth, inflation, and international trade. The results reveal that the accumulation of physical capital is positively and significantly associated with the level of real GDP per capita at the 1% significance level. The results show that a 1% increase in the level of investment results in a 0.30% increase in the level of real GDP per capita. These results are supported by similar studies that found a positive relationship between investment and economic growth in the long run (see, among others, Dollar 1992; Fischer 1992; Anyanwu 2014).

The study results also reveal that human capital development is positively and significantly associated with the long run level of real GDP per capita and the results are statistically significant at the 5% significance level. The results show that a 1% increase in total enrolment leads to a 0.13% increase in the level of real GDP per capita in the long run. These results are supported by similar studies that have found that an educated society is good for economic growth in developing

economies (see, among others, Mankiw *et al.* 1992; Fischer 1992; Easterly and Levine 1997; Chen and Feng 2000; Radelet *et al.* 2001).

The study results also report a negative relationship between population growth and the long run level of real GDP per capita. The results show that a 1% increase in population growth results in a -0.12% decline in the level of real GDP per capita; and the results are statistically significant at the 5% significance level. These results are similar to other empirical growth studies that found a negative relationship between population growth and economic growth in developing countries (Most and Vann de Berg 1996; Anyanwu 2014).

The relationship between inflation and the long run level of real GDP per capita is negatively and significantly associated at the 5% significance level. The results reveal that a 1% increase in inflation in the long run leads to a -0.06% decline in the level of real GDP per capita. These results are in agreement with similar studies that have found a negative relationship between inflation and economic growth in developing countries (see Fischer 1992; Burnside and Dollar 2000; Chen and Feng 2000; Bayraktar 2006; Bhaskara-Rao and Hassan 2011, among others).

The study results also reveal that international trade is positively and significantly associated with the long run level of real GDP per capita at the 5% significance level. The results reveal that a 1% increase in international trade leads to a 0.43% increase in the level of long run real GDP per capita. These results are supported by similar studies that found a significant association between international trade and economic growth in developing countries (see, among others, Chen and Feng 2000; Burnside and Dollar 2000; Radelet *et al.* 2001; Barro 1999, 2003; Chang and Mendy 2012; Anyanwu 2014).

The study results did not find any significant association between economic growth and each of the following variables: government consumption, real exchange rate depreciation and foreign aid.

The short-run results presented in panel 2 of Table 7.7 reveal that the key macroeconomic determinants that were significantly associated with the growth of real GDP per capita in Malawi include the growth of investment, population growth, real exchange rate depreciation, inflation, and international trade. The results show that the growth of investment in the current period is positively and significantly associated with the growth of real GDP per capita and is statistically significant at the 5% significance level. A 1% change in the growth of investment in the current

period leads to a 0.09% increase in the growth rate of real GDP per capita. The positive relationship between investment and economic growth is supported by similar studies in the empirical growth literature (Mankiw *et al.* 1992; Acikgoz and Mert 2014).

The results show a mixed association between population growth and economic growth in the short run where a significant negative association in the current period and a significant positive association in the previous period are reported. The results show that while a 1% increase in population growth in the current period leads to a -0.14% decline in the growth of real GDP per capita; a 1% increase in population growth in the previous period leads to a 0.20% increase in the growth of per capita real GDP. Overall, the relationship between population growth and economic growth is positive and statistically significant at the 10% and 1% significance levels, respectively. The study results are supported by empirical evidence where population growth has been found to be positively associated with economic growth (see, among others, Sachs and Warner 1997; Radelet *et al.* 2001).

The empirical results point to a positive association between the depreciation of the real exchange rate in the previous period and real GDP per capita growth in Malawi, and the results are statistically significant at the 10% significance level. A 1% depreciation of the real exchange rate in the previous period was found to lead to a 0.11% increase in the growth rate of real GDP per capita in the short run. The results confirm the importance of having a stable exchange rate regime with moderate volatility, and this has been confirmed by similar studies (see, among others, Vieira *et al.* 2013).

The relationship between inflation and real GDP per capita growth in the short run was found to be negative and statistically significant at the 5% significance level. The results reveal that a 1% increase in the growth of inflation in the current period leads to a -0.02% decline in the growth rate of real GDP per capita. This outcome is supported by a number of empirical growth studies that have also found a negative association between inflation and economic growth in developing countries (see, among others, Fischer 1992, 1993; Burnside and Dollar 2000; Barro 1999, 2003; Bayraktar 2006; Bhaskara-Rao and Hassan 2011).

The results further reveal mixed results with regard to trade and economic growth both in the current and previous period: these results are statistically significant at the 5% and 10% significance levels, respectively. The results show that a 1% increase in the growth of trade in the current period leads to a 0.14% increase in real per capita GDP growth; while a 1% increase in

the growth of trade in the previous period leads to a -0.11% decline in economic growth. Overall, the results reveal a net positive association between trade and economic growth in Malawi – consistent with similar empirical growth studies that have also found a positive association (see, among others, Fischer 1993; Barro 1999, 2003).

The study did not, however, find a significant relationship between the growths of human capital development, government consumption, foreign aid and real GDP per capita growth in the short run.

7.4.2 Empirical Analysis of ARDL-Based Results for Zambia

Panel 1 of Table 7.7 also presents the estimated results of the long run coefficients; while panel 2 presents the estimated short run coefficients for the Zambian growth equation. The results in panel 2 reveal that in the short run, the adjustment process measured by the Error Correction Term (ECM), is between 0 and -1 and is statistically significant at the 5% significance level. This implies that the growth of real GDP per capita in Zambia converges monotonically towards its long run equilibrium path at a rate of -0.20%, and confirms the long run equilibrium relationship between real GDP per capita and the regressors. The underlying ARDL model reveals a good fit represented by an estimated R –squared value estimated as 0.77 and an adjusted R –squared value of 0.67.

The long-run results in panel 1 for the Zambian growth equation shows that the key macroeconomic determinants that are associated with the long run level of real GDP per capita include the accumulation of physical capital (investment), human capital development, and foreign aid. The results reveal that there is a positive and significant association between investment and the level of real GDP per capita; and the result is statistically significant at the 5% significance level. The results show that a 1% increase in the level of investment leads to a 0.29% increase in the level of real GDP per capita. The result supports similar growth studies conducted in developing countries that have found a positive association between investment and growth (see, among others, Bleaney *et al.* 2001; Anaman 2004; Asheghian 2009). The study results also show that human capital development is positively and significantly associated with the long run level of real GDP per capita: these results are statistically significant at the 1% significance level. They reveal that a 1% increase in school enrolment leads to a 0.30% increase in the level of real GDP per capita. These results support similar studies that found a significant positive association

between education and economic growth in developing countries (see, among others, Knight *et al.* 1993; Chen and Feng 2000; Anyanwu 2014).

The study results also show a negative and significant relationship between foreign aid and the long run level of real GDP per capita: these results are statistically significant at the 10% significance level. The results show that a 1% increase in foreign aid leads to a -0.15% decrease in the long run level of real GDP per capita. These results are consistent with similar studies that found a negative relationship between foreign aid and economic growth, particularly in Zambia (Most and Vann de Berg 1996) and other studies that found a negative relationship between foreign aid and economic growth in Sub-Sahara African countries (Chang and Mendy 2012; Anyanwu 2014).

The long-run results have also revealed no significant relationship between population growth, government consumption, real exchange rate depreciation, inflation, international trade and the long run level of real GDP per capita in Zambia.

The short-run results in panel 2 of Table 7.7 reveal that the key macroeconomic determinants that had a significant association with the growth of real GDP per capita in Zambia include investment, human capital development, government consumption, international trade and foreign aid. The results reveal that the relationship between the growth of investment and the growth of real GDP per capita is positive and statistically significant at the 1% significance level. The results show that a 1% increase in the growth of investment leads to a 0.06% increase in the growth of real GDP per capita in the short run. These results are consistent with existing empirical economic growth studies that have also found a positive relationship between investment and economic growth (see, among others, Freire-Seren 2002).

The study also report a positive association between the growth of human capital development and the growth of real per capita GDP and the results are statistically significant at the 1% significance level. The results show that a 1% increase in the growth of total enrolment leads to a 0.06% increase in the growth of real GDP per capita. The results are consistent with the theoretical and empirical underpinnings that postulate a positive relationship between human capital development and economic growth particularly in developing countries (Mankiw *et al.* 1992; Chen and Feng 2000; Anyanwu 2014).

However, the relationship between the growth of government consumption and real GDP per capita growth was found to be negative and statistically significant at the 10% significance level. The results show that a 1% increase in the growth of government consumption leads to a -0.04% decrease in the growth of real GDP per capita in the short run. These results are consistent with a number of empirical studies that found a negative relationship between government consumption and economic growth (see, among others, Barro 1999, 2003; Bhaskara-Rao and Hassan 2011).

In terms of the role of international trade, the study results reveal a negative association between the growth of international trade and real GDP per capita growth in the short run, with the results proving statistically significant at the 10% significance level. The results reveal that a 1% increase in the growth of international trade in the previous period leads to a -0.05% decrease in the growth of real per capita GDP. These results are consistent with similar empirical growth results that found a negative relationship between the variability in the terms of trade and economic growth (see, among others, Mendoza 1997). However, these results are contrary to other findings where trade is beneficial for growth (see, among others, Barro 1999, 2003; Burnside and Dollar 2000; Radelet *et al.* 2001; Bhaskara-Rao and Hassan 2011).

The results also show that foreign aid is negatively and significantly associated with the growth of real GDP per capita. These results are significant at the 10% significance level: they show that a 1% increase in foreign aid leads to a -0.03% decrease in the growth of real GDP per capita in the short run. These results are also in agreement with outcomes of growth studies conducted in developing economies where foreign aid was found to be negatively associated with economic growth (see, among others, Most and Vann de Berg 1996; Chang and Mendy 2012; Anyanwu 2014).

The study also found no significant relationship between population growth, real exchange rate depreciation, inflation and the growth of real GDP per capita in the short run.

7.4.3 Post-Estimation Diagnostic Test Results for Model 2

In this section, the following post-diagnostic tests are reported – cumulative sum of recursive residuals (CUSUM) and cumulative sum of squares of the recursive residuals (CUSUMSQ) test; Breusch-Godfrey serial correlation test; Breusch-Pagan-Godfrey test for heteroskedasticity; Ramsey RESET test; Normality test; and ARCH test.

Table 7.8 reports the post-estimation diagnostic results for Model 2.

Table 7.8: Post-Estimation Diagnostic Tests – Model 2

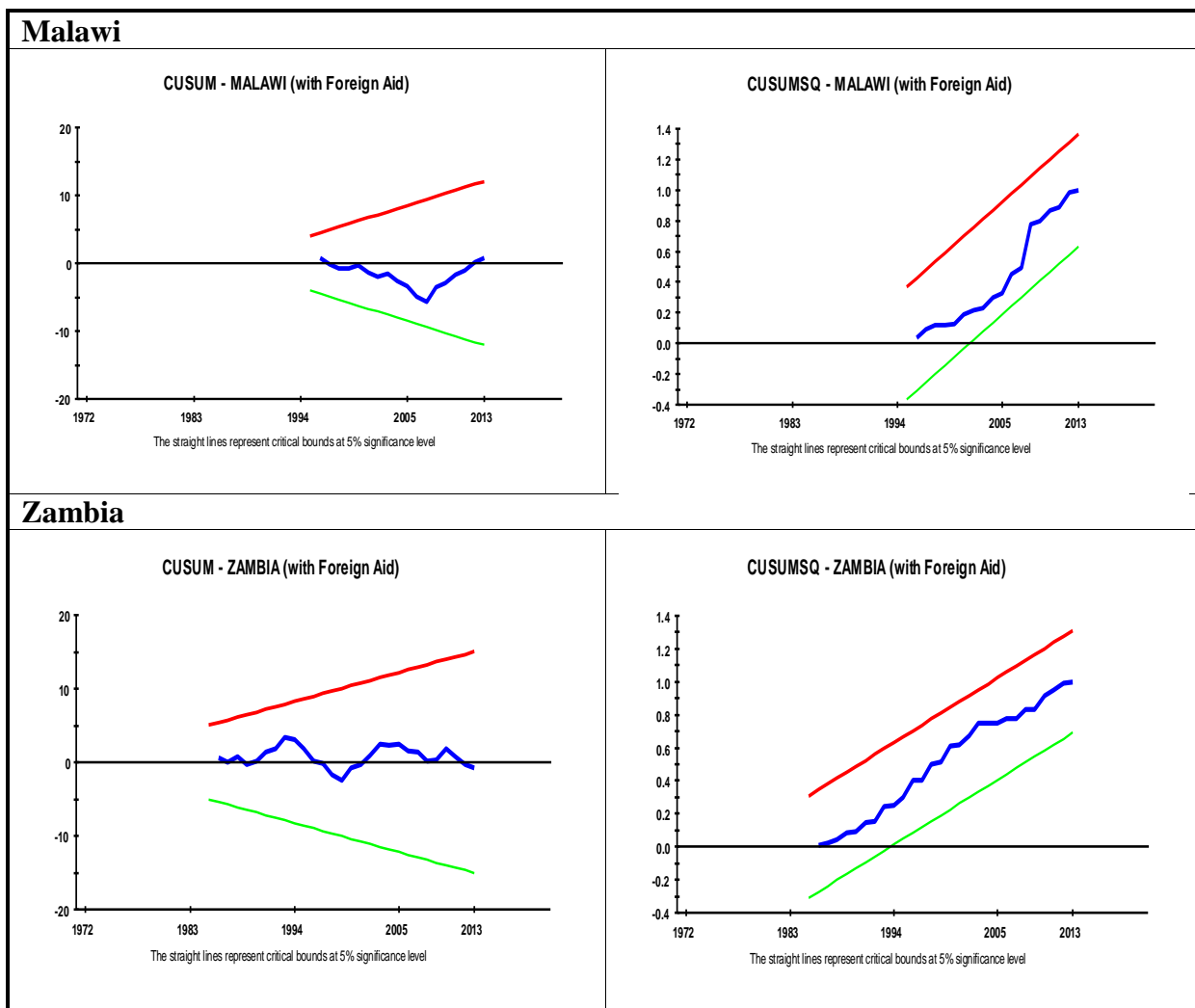
Null Hypothesis (F-statistic)	Model 2: With Foreign Aid	
	Malawi	Zambia
Breusch-Godfrey Test: No Serial Correlation	1.18 [0.291]	0.54 [0.469]
Breusch-Pagan-Godfrey Test: No Heteroskedasticity	0.92 [0.344]	0.00 [0.981]
Ramsey RESET Test: Functional Form	2.85 [0.251]	1.51 [0.230]
Normality: CHSQ (2)	2.33 [0.312]	1.36 [0.506]
ARCH Test: Heteroskedasticity (no ARCH terms)	0.32 [0.580]	0.70 [0.409]

*Note: for all p-values: *** 1% significance level; ** 5% significance level; * 10% significance level.*

As illustrated in Table 7.8, the results reveal that the null hypotheses for all post-diagnostic tests at the 5% significance level cannot be rejected. This implies that the estimated ARDL models in all study countries are correctly specified and the parameter estimates are unbiased.

Figure 7.2 illustrate the CUSUM and CUSUMSQ results for Model 2. The CUSUM test reveals parameter stability while the results of the CUSUMQ test reveal variance stability.

Figure 7.2: CUSUM and CUSUMSQ Tests for Model 2



As illustrated in Figure 7.2, the CUSUM as well as the CUSUMSQ for Model 1 are within the 5% critical lines and the results are suggestive of coefficient stability in all study countries.

7.5 Conclusion

This chapter has empirically investigated the key macroeconomic determinants of economic growth in three SADC countries, namely: Malawi, Zambia and South Africa during the period 1970-2013. The study used the recently developed Autoregressive Distributed Lag (ARDL) approach to co-integration to estimate both short and long run elasticities. Two ARDL models were used in this analysis. The first ARDL model (Model 1) examined the key macroeconomic determinants of economic growth, excluding foreign aid, in the three SADC countries under study. The second ARDL model (Model 2) investigated the key macroeconomic determinants of economic growth where foreign aid was included, in Malawi and Zambia. South Africa was not

subjected to empirical analysis under Model 2 setting due to lack of sufficient time-series data for foreign aid.

In Model 1, the study results revealed that the key macroeconomic determinants that were significantly associated with economic growth in Malawi include the following: investment human capital development, population growth, inflation and international trade. In the short run, the results revealed that investment, human capital development and international trade are positively and significantly associated with economic growth, while inflation is negatively and significantly associated with economic growth. In the long run, the results revealed that investment, human capital development and international trade are positively and significantly associated with economic growth, while population growth and inflation are negatively and significantly associated with economic growth. In Zambia, the study results revealed that the key macroeconomic determinants with a significant association with economic growth include investment, human capital development, government consumption and international trade. In the long run, the study results revealed that investment and human capital development are positively and significantly associated with economic growth, while government consumption has a negative and significant relationship with economic growth. In the short run, the results showed that investment and human capital development are positively and significantly associated with economic growth, while government consumption and international trade are negatively and significantly associated with economic growth. In South Africa, the study results revealed that the key macroeconomic determinants that have a significant relationship with economic growth include investment, human capital development, population growth, government consumption, inflation, and international trade. The long-run results revealed that economic growth is positively and significantly associated with the accumulation of physical capital, human capital development, and international trade, and negatively and significantly associated with population growth, government consumption, and inflation. The results showed that in the short run, investment is positively associated with economic growth, while population growth and government consumption are negatively and significantly associated with economic growth.

The results in Model 1 have also revealed that investment is positively and significantly associated with economic growth in the three study countries, both in the short and long run, regardless of whether it is a low-, lower-middle, or upper-middle economy, signifying the importance of the accumulation of physical capital. The results also show that human capital development is positively and significantly associated with economic growth, both in the short and long run, for

Malawi and Zambia, and for South Africa in the long run. Government consumption was found to be both negatively and significantly associated with economic growth in Zambia and South Africa, in terms of both short and long run time-spans.

In Model 2, the study found that the key macroeconomic determinants that are significantly associated with economic growth in Malawi when foreign aid is included are the following: investment, human capital development, population growth, real exchange rate depreciation, inflation, and international trade. In the short run, the study results showed that investment, population growth, real exchange rate depreciation, and international trade are positively and significantly associated with economic growth, while inflation is negatively and significantly associated with economic growth. In the long run, the results revealed that investment, human capital development, and international trade, are positively and significantly associated with economic growth, while population growth and inflation are negatively and significantly associated with economic growth. In Zambia, the study results have revealed that the key macroeconomic determinants that are significantly associated with economic growth include investment, human capital development, government consumption, international trade, and foreign aid. The short-run results revealed that the accumulation of physical capital and human capital development are positively and significantly associated with economic growth, while government consumption, international trade, and foreign aid are negatively and significantly associated with economic growth. The long-run results revealed that the accumulation of physical capital and human capital development are positively and significantly associated with economic growth, while foreign aid is negatively and significantly associated with economic growth.

The overall results in Model 2 also show that investment is positively and significantly related with economic growth in Malawi and Zambia, both in the short and long run. Human capital development is positively and significantly associated with economic growth in Zambia, both in the short and long run, while in Malawi human capital development is positively and significantly associated with economic growth only in the long run.

CHAPTER 8

CONCLUSION AND POLICY IMPLICATIONS

8.1 Introduction

This chapter concludes the study on the investigation of key macroeconomic determinants of economic growth in three study countries in SADC, namely: Malawi, Zambia, and South Africa. The chapter also summarises the policy challenges and implications of the study findings and makes recommendations based on the study findings in the earlier chapters. Furthermore, additional areas of research are discussed. This chapter, thus, is divided as follows. Section 8.2 presents a brief summary of the study. Section 8.3 discusses the main findings of the study while Section 8.4 discusses the main conclusions and policy implications derived from the study. Section 8.5 summarises the limitations of the study and identifies additional areas for further research.

8.2 Summary of the Study

In this study, the theoretical and empirical underpinnings relating to the key macroeconomic determinants of economic growth have been explored from the time of the classical school of thought era in the 18th Century until the present. In particular, the relevance of key macroeconomic determinants in propelling economic growth has been investigated in three SADC countries. In seeking to fulfil this objective, three specific objectives have been pursued in the countries focused on in this study, as follows: (i) to empirically investigate the key macroeconomic determinants of economic growth in the selected three SADC countries; (ii) to empirically investigate the impact of the key macroeconomic determinants affecting economic growth in the selected three SADC countries; and (iii) to empirically examine the key policy implications, as well as provide policy recommendations upon which economic strategies may be based, both in terms of short and long run periods. Recommended strategies will stem from the study results.

The study used three specific individual countries in SADC as case studies in order to explore further the general relationships between the key macroeconomic determinants and economic growth. These three countries in SADC include: Malawi, Zambia and South Africa. The justification of including these three countries was based on the social and economic characteristics of the experiences that these countries underwent during the period 1970-2013. In

particular, these countries are at different levels of development: for example, Malawi can be classified as a low-income economy, Zambia as a low middle-income economy and South Africa as an upper middle-income economy.

The study used a number of econometric techniques to explore the relationship between the key macroeconomic determinants and economic growth that were investigated in the study countries. First, the study used the recently developed Autoregressive Distributed Lag (ARDL) model to empirically investigate the key macroeconomic determinants influencing economic growth in these study countries during the period 1970-2013. The Autoregressive Distributed Lag (ARDL) bounds-testing approach to co-integration developed by Pesaran and Shin (1999) and Pesaran *et al.* (2001) was used to test the existence of long run level relationships between economic growth and the key macroeconomic determinants of economic growth. Second, since the ARDL bounds-testing approach to co-integration assumes that all variables are either integrated of order one or zero, three unit root tests were employed to ensure that all variables used were not integrated of an order that is more than one. The stationarity tests used include the 1979 Augmented Dickey-Fuller (ADF) test; the Elliott *et al.* (1996) Dickey-Fuller Generalised Least Squares (DF-GLS) test; and the Perron (1990) structural break unit root tests. In addition, the study used growth diagnostics to examine key macroeconomic drivers and policy reforms in the respective countries as a precursor to the empirical investigation.

Within the ARDL framework, two models were used to investigate the key macroeconomic determinants of economic growth in the study countries. Model 1 was based on a specification that included the following variables: the accumulation of physical capital (investment), human capital development, population growth, government consumption, real exchange rate depreciation, inflation, and international trade. Given the importance of foreign aid in Malawi and Zambia, Model 2 was estimated: however it did not include South Africa as data was not readily available on foreign aid for the period 1970-1993.

8.3 Main Empirical Findings of the Study

The overall empirical findings in the three study countries reveal the following results:

- 1) In Model 1, the study results revealed that the key macroeconomic determinants that are significantly associated with economic growth in Malawi include: investment human capital development, population growth, inflation and international trade. In the short run,

the results reveal that investment, human capital development and international trade are positively and significantly associated with economic growth, while inflation is negatively and significantly associated with economic growth. In the long run, the results revealed that investment, human capital development and international trade are positively and significantly associated with economic growth, while population growth and inflation are negatively and significantly associated with economic growth.

In Zambia, the study results revealed that the key macroeconomic determinants that are significantly associated with economic growth include: investment, human capital development, government consumption and international trade. In the long run, the study results revealed that investment and human capital development are positively and significantly associated with economic growth, while government consumption is negatively and significantly associated with economic growth. In the short run, the results revealed that investment and human capital development are positively and significantly associated with economic growth, while government consumption and international trade are negatively and significantly associated with economic growth.

In South Africa, the study found that the key macroeconomic determinants that are significantly associated with economic growth include, among others, investment, human capital development, population growth, government consumption, inflation, and international trade. The study found that in the short run, investment is positively and significantly associated with economic growth, while population growth and government consumption are negatively and significantly associated with economic growth. However, in the long run, the study found investment, human capital development and international trade to be positively and significantly associated with economic growth, while population growth, government consumption, and inflation are negatively and significantly associated with economic growth.

In all three study countries only investment was found to be positively and significantly associated with economic growth, both in the short and long run. Human capital development was positively and significantly associated with economic growth in the long run in all study countries.

- 2) In the secondary model (Model 2), the study results revealed that the key macroeconomic determinants significantly associated with economic growth in Malawi include investment, human capital development, population growth, real exchange rate depreciation, inflation, and international trade, among others. In the short run, the results revealed that investment, population growth, real exchange rate depreciation, and international trade are positively and significantly associated with economic growth, while inflation is negatively and significantly associated with economic growth. However, the long-run results revealed that investment, human capital development, and international trade are positively and significantly associated with economic growth, while population growth and inflation are negatively and significantly associated with economic growth.

In Zambia, the study found that the key macroeconomic determinants significantly associated with economic growth include: investment, human capital development, government consumption, international trade, and foreign aid. The study results revealed that in the short run, investment and human capital development are positively and significantly associated with economic growth, while government consumption, international trade, and foreign aid are negatively and significantly associated with economic growth. However, in the long run, the study found investment and human capital development to be positively and significantly associated with economic growth, while only foreign aid is negatively and significantly associated with economic growth.

In the two countries that were analysed based on Model 2, the outcome of the relationship between economic growth and foreign aid was mixed. Foreign aid was found not to be a key macroeconomic determinant of economic growth in Malawi, irrespective of whether the model was estimated in the long run or in the short run. However, in Zambia, foreign aid was found to be a significant negative macroeconomic determinant of economic growth, both in the short- and long-run. This either implies that reducing foreign aid in Zambia would lead to economic growth, both in the short and long run, or improving the effectiveness of development aid would lead to economic growth. Although this negative relationship was not anticipated, it is not unusual as these results are consistent with empirical findings where foreign aid was found to be negatively associated with economic growth especially in Zambia (Most and Vann de Berg, 1996) and other studies have also found a similar negative relationship in Sub-Saharan African countries (Chang and Mendy 2012; Anyanwu 2014).

The study results in Model 2 also revealed that investment is a robust macroeconomic determinant of economic growth as it was positively and significantly associated with economic growth in both study countries, both in the short and long run. Human capital development was found to be positively and significantly associated with economic growth in both study countries in the long run.

- 3) The study results also revealed that the accumulation of physical capital is positively and significantly associated with economic growth, both in the short and long run, in all three study countries regardless of whether Model 1 or Model 2 is used. These results are consistent with a number of empirical studies that have confirmed the robustness of investment as an important traditional driver of economic growth, both theoretically (Solow 1956; Romer 1986; Lucas 1988) and empirically (Levine and Renelt 1992; Mankiw *et al.* 1992). These results are also consistent with empirical findings from studies that have investigated the role of investment in developing countries (see, among others, Knight *et al.* 1993; Bleaney *et al.* 2001; Freire-Seren 2002; Acikgoz and Mert 2014; Bayraktar 2006; Asheghian 2009; Anyanwu 2014). Thus, physical capital (investment) is found to be a key macroeconomic determinant of economic growth, irrespective of the country's level of development. Therefore, the hypothesis that investment is one of the positive key macroeconomic determinants of economic growth in the three SADC countries of study cannot be rejected.

The study results have also confirmed the traditional role of human capital development in all study countries as being positively and significantly associated with economic growth particularly in the long run regardless of whether Model 1 or 2 is used. The study results are also consistent with the findings in the existing empirical literature on the traditional role that human capital development plays on economic growth (see, among others, Lucas 1988; Mankiw *et al.* 1992) and in particular in developing economies (see, Fischer 1992; Easterly and Levine 1997; Chen and Feng 2000; Radelet *et al.* 2001, among others). Thus, the hypothesis that human capital development is one of the positive key macroeconomic determinants of economic growth in the three SADC countries cannot be rejected.

The relationship between population growth and economic growth was found to be mixed when the two models were used. The long-run results revealed a negative and significant relationship between population growth and economic growth in Malawi and South Africa. However, a positive and significant association between population and economic growth was found in Malawi when Model 2 was estimated. Similar studies have also found a negative relationship, particularly in developing countries (see, among others, Checherita-Westphal and Rother 2012; Anyanwu 2014) while others have also found a positive relationship (see, Sachs and Warner 1997; Radelet *et al.* 2001, among others). Thus, the hypothesis that population growth exhibit threshold effects in the three SADC countries cannot be rejected.

Government consumption, which is expected to be a burden on growth through the crowding-out effect, was found to be negatively and significantly associated with economic growth in Model 1 in Zambia and South Africa, both in the short and long run. These results are consistent with findings in the empirical growth literature that cite a negative association between government consumption and economic growth (see, among others, Barro 1999, 2003; Bhaskara-Rao and Hassan 2011). Therefore, the hypothesis that government consumption is negatively associated with economic growth in the three SADC countries cannot be rejected for Zambia and South Africa: however it is rejected in Malawi.

Inflation, which is a tax on the economy, was found to be negatively and significantly associated with economic growth in Malawi (both in the short and long run) regardless of the Model used. The relationship was significant South Africa only in the long run. These results are consistent with empirical findings where the relationship between inflation and growth is negative particularly in developing countries (see, among others, Fischer 1992; Burnside and Dollar 2000; Chen and Feng 2000; Bhaskara-Rao and Hassan 2011; Anyanwu 2014). The study did not find any significant relationship between inflation and economic growth in Zambia, both in the short and long run. Thus, the hypothesis that inflation is a negative key macroeconomic determinant of economic growth in the three SADC countries cannot be rejected, except for Zambia.

The depreciation of the real exchange rate, which is a measure of the stability of capital markets and market distortions (Dollar 1992; Barro 2003; Rodrik 2008), was found to be

positively and significantly associated with economic growth only in the short run in Malawi when foreign aid was included (Model 2) and no significant association was found in all study countries when foreign aid was excluded (Model 1), both in the short and long run. These results support the notion of threshold effects where real exchange rate stability (fewer distortions or variability in the real exchange rate) is expected to positively contribute to economic growth (see, among others, Elbadawi *et al.* 2012; Vieira *et al.* 2013). Thus, the hypothesis that real exchange rate depreciation is a key macroeconomic determinant that is negatively associated with economic growth in all three SADC countries is rejected.

International trade, which is an important source of diffusion of capital and knowledge, revealed mixed results: it was found to be positively and significantly associated with economic growth in Malawi, both in the short and long run regardless of the model used, and South Africa (in the long run). However, the results revealed a negative and significant association between international trade and economic growth in Zambia only in the short run regardless of the model used. These results are also consistent with the empirical growth literature that reports on a positive association (see, among others, Burnside and Dollar 2000; Chen and Feng 2000; Radelet *et al.* 2001; Bhaskara-Rao and Hassan 2011), while in others the relationship can be found to be negatively associated with economic growth (see, among others, Mendoza 1997). Thus, the hypothesis that trade is a positive key macroeconomic determinant of economic growth in the three SADC countries cannot be rejected in Malawi and South Africa: however, the hypothesis is rejected in Zambia.

8.4 Conclusions and Policy Recommendations

The following conclusions and recommendations can be drawn based on the empirical findings of the study.

- 1) The study findings show that the accumulation of physical capital (investment) is positively and significantly associated with economic growth in all three SADC countries, namely, Malawi, Zambia and South Africa, both in the short and long-run regardless of the model used. Thus, it is recommended for policy makers in these three SADC countries to develop policies and economic strategies that focus on creating incentives that attract investment in all forms, both in the short run and in the long run. Such incentives should, at the same time, aim to reduce disincentives that may lead to capital flight. An important

source of investment for economic development and income growth has been found to emanate from private and foreign direct investment. The latter, according to the empirical literature constitutes an important factor facilitating the diffusion of technological skills, international trade integration, the promotion of competition, and local enterprise development (OECD 2002). The study has revealed that FDI net inflows in the three countries show that Malawi registered an average of 1.3% of real GDP p.a. during the period 1960-2013 while Zambia recorded an average of 2.7% of real GDP p.a. during the period 1971-2013. However, South Africa recorded an average of a mere 0.7% of real GDP p.a. during the period 1960-2013 (World Bank 2015c). Conversely, gross domestic savings as an important source of domestic private investment have been low, especially for Malawi that registered an average of 6.5% of real GDP p.a. during the period 1960-2013. Zambia and South Africa, on the other hand, have recorded an average of 23.2% and 24.4% of real GDP p.a. respectively during the same period. Thus, specific investment strategies that are recommended for these three countries should focus on attracting FDI, while also encouraging domestic savings.

- 2) The study results have also revealed that human capital development is important for economic growth in all three study countries particularly in the long run regardless of the model used. As such, the authorities in these three SADC countries are recommended to pursue policies that include incentives that will promote and improve the quality of education at primary, secondary and tertiary. Specifically, it is important for authorities in these countries to adopt education policies that will focus on promoting more than mere basic skills through the provision of basic education. This low level of education merely promotes imitation rather than innovation: rather there needs to be a drive to create incentives that promote post-primary education as this has been found to lead to increased ability in terms of technological adaptation skills and innovation (see Papageorgiou 2003 among others).
- 3) The study results further showed a negative and significant relationship between population growth and economic growth in Malawi and South Africa when Model 1 was used. It is, therefore, recommended that economic strategies that improve the productivity of the labour force in these countries should be adopted, while strategies that seek to reduce population growth are also implemented. Some of the suggested strategies for adoption by both Malawi and South Africa include the following: encouraging human rights-based

policies that empower women to make their own reproductive choices; creating gender-sensitive employment that allows more women to participate in the labour market; providing government rebates to households that have smaller families; encouraging family health planning, especially for those with children in schools; also encouraging girls to continue with post-primary education, and universal coverage for effective provision of contraceptives (Engleman 2012).

- 4) The study results show that government consumption is negatively and significantly associated with economic growth in Zambia and South Africa, both in the short and long run when Model 1 was used. Thus, it is recommended that fiscal policies to be adopted in Zambia and South Africa should focus on reducing government's role and at the same time increase the role of the private sector in the provision of goods and services. One effective strategy that both governments can adopt is to investigate, identify and counter distortionary or wasteful government spending. This approach has the advantage of reducing unwanted spending and thus can contribute towards reducing public debt. Potential areas for investigation include commercialisation or privatisation of loss-making state enterprises or parastatals.
- 5) Inflation was found to be negatively and significantly associated with economic growth only in Malawi, both in the short and long run regardless of whether Model 1 or 2 was used, and South Africa only in the long run when Model 1 was used. It is, therefore, recommended that economic incentives that aim at reducing the growth of domestic prices should be adopted, especially in Malawi and South Africa. There are three policy tools that the authorities in Malawi and South Africa can adopt in order to reduce inflation. Firstly, through monetary policy, authorities can raise domestic lending rates in order to discourage the growth of aggregate spending. Secondly, some supply-side policies such as commercialisation or privatisation of loss-making state enterprises, as also financial and trade deregulation can be encouraged so as to enhance productivity and competitiveness in the long run. Thirdly, especially for South Africa, authorities can focus on reducing wage growth: in addition the influence of labour unions could be somewhat curtailed.
- 6) The study results revealed a positive association between real exchange rate depreciation and economic growth in Malawi only in the short run when Model 2 was used, whilst this relationship was non-existent in all countries when Model 1 was used. The positive

association revealed real exchange rate stability in Malawi during the study period. Thus, it is recommended that exchange rate policies that focus on ensuring exchange rate stability or policies that aim at maintaining the purchasing power parity be adopted in Malawi. Such strategies may include reducing current account imbalances, together with a discouraging of currency speculation via permanent policies that can promote a free-floating exchange rate regime, and that can reduce reserve requirement volatility.

- 7) The study results also suggested that the relationship between international trade and economic growth is not the same in all three study countries. The study results have found a positive and significant relationship in Malawi, both in the short and long run regardless of whether Model 1 or Model 2 is used, and a positive and significant relationship in South Africa only in the long run. In Zambia, the relationship was found to be negative and significantly associated with economic growth only in the short run regardless of the Model employed. Thus, trade policies that aim at increasing exports and their competitiveness should be adopted in Malawi and South Africa as well as trade reforms in Zambia that aim at reducing risks. More specifically, the authorities in Malawi and South Africa could promote trade strategies that encourage export growth through the provision of export tax exemptions and duty rebates on essential intermediate inputs. In addition they could encourage Export Processing or Free Trade Zones, and create trade promoting institutions or centres. For Zambia, their dependence on the mining sector that is subject to recurrent recessions and booms points to a need to encourage economic diversification in its economy. This entails identifying which sectors in the economy have a comparative advantage on the world market and that are able to attract the required private and foreign direct investment that is needed.
- 8) The study results have also revealed that foreign aid, which is an important complement to low levels of domestic savings, was negatively and significantly associated with economic growth in Zambia, both in the short and long run. As such, it is recommended that foreign aid policies to be adopted in Zambia should focus on improving the effectiveness of development aid. The 2005 Paris Declaration on Aid Effectiveness as well as the 2008 Accra Agenda for Action both emphasized the need for partner countries that are recipients of development aid to commit to certain key principles, namely: country ownership; alignment of development aid to country goals; agreements to harmonise development agencies' and governments' interventions and for them to accept mutual

accountability; and finally, management aligned to ensuring of results. However, much as these principles are essential in ensuring the effective governance of development aid, a more pragmatic approach would be to channel development aid towards interventions that have proven records of success in terms of providing a positive internal rate of return.

8.5 Limitations of the Study and Areas for Further Research

Although the study has made significant efforts to make sure that the study results are analytically defensible, a few limitations may have affected the study, as is the case in many scientific research studies. The envisaged limitations of the study are twofold.

First, due to data unavailability, the annual time-series data used by the study ranged from 1970-2013, thereby representing a sample size of 44 observations. Though in some cases data were available for selected key macroeconomic variables as far back as 1960, this was not the case for some variables, especially with regard to foreign aid data for South Africa. As such, the inclusion of other equally important macroeconomic variables in the empirical analysis was affected by the lack of sufficient data points. It has also been found, in the empirical growth literature, that the more data points are added, the more the empirical results are affected in terms of both magnitude and sign (see, among others, Bernanke and Gurkaynak 2001). Thus, for a replication of this study in the future it would be interesting to compare the results presented in this study and those of a future research investigation that adds more data points or considers different time periods.

Second, the use of annual time-series data leads to some degree of loss of parameter precision. Normally, studies of this kind would largely benefit from the use of either monthly or quarterly data. Unfortunately, some macroeconomic factors such as real GDP, population growth, and trade variables for the study countries did not have quarterly data. Thus, the study ultimately resorted to the use of annual time-series data. It would, therefore, be interesting to compare the results in this research with future studies that will use either monthly or quarterly data.

Much as these limitations may to some extent have affected the empirical results of the study, it is assumed that the impact would be too negligible to significantly influence the empirical results of the study.

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