

**FISCAL ADJUSTMENT, ECONOMIC GROWTH  
AND INFLATION IN TANZANIA  
(1967-2011)**

**John Michael Mtui**

**PhD (Economics) Dissertation  
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**FISCAL ADJUSTMENT, ECONOMIC GROWTH  
AND INFLATION IN TANZANIA  
(1967-2011)**

**By**

**John Michael Mtui**

**A Dissertation Submitted in Partial Fulfillment of the  
Requirements for the Degree of Doctor of Philosophy (Economics)  
of the University of Dar es Salaam**

**University of Dar es Salaam  
October, 2015**

**CERTIFICATION**

The undersigned certify that they have read and hereby recommend for acceptance by the University of Dar es Salaam a dissertation entitled: “***Fiscal Adjustment, Economic Growth and Inflation in Tanzania: 1967-2011***”, in partial fulfillment of the requirements for the degree of Doctor of Philosophy (Economics) of the University of Dar es Salaam.

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**DEDICATION**

*To my late father Michael Joseph Merishoki Mtui and  
my loving mother Teresia Michael Mtui*

## LIST OF ABBREVIATIONS AND ACRONYMS

|       |                                                       |
|-------|-------------------------------------------------------|
| ARDL  | Auto Regressive Distributed Lag                       |
| BoT   | Bank of Tanzania                                      |
| BIS   | Basic Industry Strategy                               |
| EAC   | East African Community                                |
| AfDB  | African Development Bank                              |
| ESAP  | Economic and Social Action Program                    |
| ERP   | Economic Recovery Program                             |
| ECM   | Error Correction Model                                |
| FFYP  | First Five Year Development Plan                      |
| FDI   | Foreign Direct Investment                             |
| GFR   | Government Financing Requirement                      |
| GCF   | Gross Capital Formation                               |
| GDP   | Gross Domestic Product                                |
| HIPC  | Heavily Indebted Poor Countries                       |
| LDCs  | Less Developed Countries                              |
| MDGs  | Millennium Development Goals                          |
| NCPI  | National Consumer Price Index                         |
| NESP  | National Economic Survival Program                    |
| NSGRP | National Strategy for Growth and Reduction of Poverty |
| OECD  | Organization for Economic Cooperation and Development |
| OGI   | Open General License                                  |
| PRSP  | Poverty Reduction Strategy Paper                      |
| SFYP  | Second Five Year Plan                                 |
| SIDO  | Small Industries Development Organization             |
| SSA   | Sub-Saharan Africa                                    |
| TDV   | Tanzania Development Vision                           |
| URT   | United Republic of Tanzania                           |

## **ABSTRACT**

The study analyses the effect of fiscal adjustment in promoting economic growth and the fight against inflation in Tanzania from 1967 to 2011. The study is underpinned by both descriptive and econometric analyses based on a dynamic autoregressive distributed lag error correction model. The study findings confirm that: public investment spending, public consumption spending, real exchange rate depreciation, private investments are growth enhancing. Economic and fiscal reforms of the mid 1980s and 1990s, respectively, augment economic growth in the long-run. Only lagged GDP, public consumption spending, real exchange rate and trade openness have significant effects on economic growth in the short-run. The long-run estimates of the inflation model indicate real GDP growth and nominal exchange rate have impact on inflation. Budget deficit is significant but seem to have a negative effect on price development. Thus, abstinence from cutting public investment spending and curtailing non-productive expenditures should be observed. Such measures as the adoption of Medium Term Expenditure Framework (MTEF) as a planning and strategy for reducing wasteful expenditure and the expenditure reprioritization and efficiency instituted through NSGRP should be sustained. Attainment of price stability in Tanzania hinges on stable economic growth and exchange rate. This requires a credible and sustained fiscal policy, supported by an appropriate exchange rate and monetary policies. Rationalization of public spending and expenditure efficiency are critical. To sustain GDP growth and thus price stability, there is a need to improve productivity.

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## CHAPTER ONE

### INTRODUCTION

#### 1.0 Background

After independence in 1961, Tanganyika inherited from the British colonial rule an economy dominated by peasant agriculture with poor infrastructure, a small manufacturing sector and poor social services. The economy was skewed towards production of traditional export crops. Manufacturing and agricultural sectors respectively, accounted for 4% and over 58% of the Gross Domestic Product (GDP). Traditional export crops, mainly coffee and sisal, accounted for 50% of the total foreign exchange earnings. Before and more so after the Arusha Declaration in 1967 the government was committed to developing and modernizing the economy in order to redress imbalances that existed in the economy.<sup>1</sup> This was undertaken through innovation of a centralized planning process.

The starting point was a First Five Year Development Plan (FFYP) of 1964-69 that emphasized rapid economic growth and self-sufficiency in middle and high-level manpower. The FFYP was followed by the Second Five Year Plan (SFYP) of 1969 to 1974 that targeted mechanization of agriculture and industrialization via Import Substitution Industrialization (ISI) Strategy (Bigsten and Danielsson, 1999). The FFYP targeted GDP growth rate of 6.7% per annum and attainment of self-sufficiency in skilled manpower by 1980. The plan also targeted to raise life

---

<sup>1</sup> All major means of production, distribution and exchange were put under public (government) ownership and control after the Arusha Declaration, which proclaimed the need for self-reliance and African socialism.

expectancy from between 35 to 40 years to 50 years by 1980. The SFYP growth target was slightly lower, set at 6.5%; and, the plan aimed at attaining 13.7% share of industrial output in GDP from the then 10.7%. Specifically, the SFYP targeted an industrialization growth of 11% for the manufacturing sector and investment was targeted to increase from 22% to 25% of the monetary GDP. Annual trade deficit was targeted to reach an average of 4% of the GDP by 1980. The banking system was required by the government to meet all financial needs of the public enterprises established by the government since 1967 to foster socialism and self reliance.

During the period 1975-80 greater emphasis was placed on structural transformation aimed at linking forward and backward the structure of domestic production to domestic demand and resource base in order to increase interdependence within the economy and reduce reliance on the external economy, both for production and consumption. The key to this thrust was the Basic Industry Strategy (BIS) of 1975 that led to an increase and widening of import substitution of final products and deepening of home production of intermediate and capital goods (Ndulu, 1994). The strategy created a strong industrial base in terms of installed capacity in Tanzania (Ndulu, 1994; Mbelle, 1994; and, Nyagetera, 1997). The government efforts to redress the imbalances in the economy led to an increase in the shares of investment in infrastructure and manufacturing sectors. During the period 1967-1970 the investment shares in infrastructure and manufacturing sectors averaged 43% and 15.4%, respectively. Between 1971 and 1980 the share of investment in the manufacturing sector increased to an average of 19.6%, while that of investment in economic infrastructure increased marginally to 44.8%. The heavy government

investment in infrastructure and manufacturing sectors was in line with a view that in order for the economy to develop it must scale up the shares of manufacturing and service sectors in GDP (Mbelle, 1994). Consistent with the objectives of the FFYP and SFYP, the government commitment was also evident in expanding education, health, urban development and provision of basic needs. Therefore, investment in public services, which averaged only 4.4% during the period 1967-75, rose to over 16% during 1976-80. However, investment in agriculture production was relatively low, averaging only 9% during the period 1967-70, and down to 7.2% in the period 1971-80. The investment was also skewed to state farms such that the private smallholders became marginalized (Ndulu, 1994).

Gross Capital Formation (GCF) demonstrated the increase in government bias to development expenditures. The ratio of GCF to real GDP averaged 21.1% during 1967-69, and it increased to 30.2% during 1970-74 and 28.1% during 1975-79. Gross Capital Formation grew at an average of 10.5% in 1967-69, 11% in 1970-74, and 4.9% in 1975-79 (Nyagetera, 1997). It is worth noting, however, that due to the economic crisis, the ratio of gross capital formation to GDP declined to an average of 21% during 1980-85 from over 28% recorded during 1975-79.

The annual Finance and Credit Plan was introduced in 1971 with the primary objective of directing available financial resources to priority areas. These included marketing and export of agricultural produce namely, parastatal marketing agencies (cooperatives, crop authorities and marketing boards), agriculture production (Ujamaa villages, parastatal agriculture producers and estates), mining and

manufacturing (parastatal manufacturing and mining enterprises) and transportation (parastatal transport firms). Thus, the large share of development expenditure came from bank borrowing. The priority sectors received over 70% of the total bank lending in 1970s. For example, the share of marketing and export of agricultural produce in total lending rose from an average of 36.6% during 1967-71 to an average of 40.1% during 1972-78 and 60.2% during 1979-88 (Nyagetera, 1997).

Inevitably, active government participation in the economy exploded total government expenditure throughout the 1970s and 1980s.<sup>2</sup> This was further compounded by oil price shock in 1973/74 and 1979, drought of 1974/75, break down of the East African Community (EAC) in 1977 and war against Uganda during 1978/79. As a result, by 1979, government expenditure, as a share of GDP had almost doubled to nearly 20% (Kaufman and O'Connell, 1994).

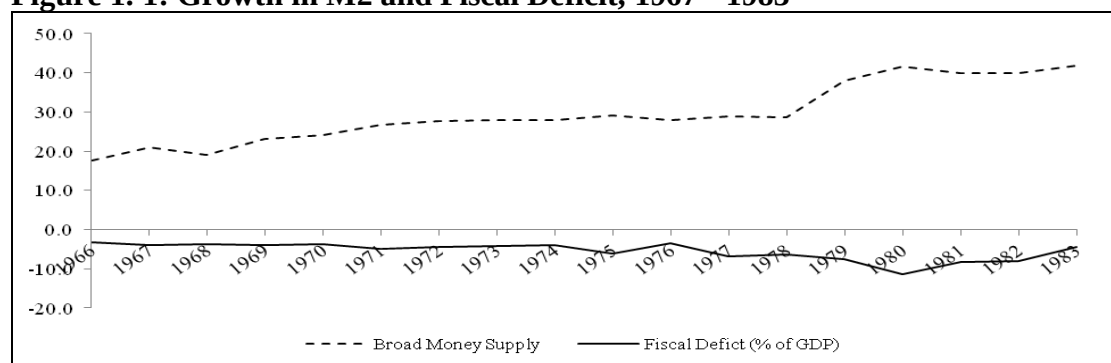
Escalation of government expenditures, coupled with a low revenues due to a narrow tax base, inefficient tax administration and tax collection lags, led to chronic budget deficits since the late 1970s and early 1980s (Kilindo, 1992, 1997; Osoro, 1997). Government deficit as a percent of GDP averaged -3.1% during 1967-70. It rose to -6.0% during 1971-75 and to over -7.0% during 1976-80. The deficits were financed by selling government papers to the Bank of Tanzania (BoT), a process referred to as 'monetization of the debt' or 'printing of money'. As a result, the monetary base and, consequently, money supply increased. Broad money supply (M2), which in

---

<sup>2</sup> However, the expenditures on general public services (include administration) and public debt in the late 1970s and early 1980s were growing at the expense of spending on social services (education and health).

Tanzania includes currency in circulation, demand deposits, savings deposits and time deposits, grew at an average rate of 15.5% during the period 1967-70. Between 1971 and 1975, growth of money supply rose to 20.1%, and during 1976-80 it reached 26.3% and recorded the highest rate of 46.9% in 1979. The growth rate of reserve money also followed the same trend, it averaged 17.7% during the period 1967-70, dropped slightly to 16.9% in 1971-75, and picked up to 24.8% during 1976-80. Indeed, it is evidenced in Figure 1.1 that before reforms of mid 1980s the high deficit years were associated with almost one to one (or with lags) growth in money supply that did not match the growth of real economic activities. Thus, it became inflationary. In this regard, like many other developing economies, Tanzania became associated with deficit monetization, which increased money supply and put pressure on prices.

**Figure 1. 1: Growth in M2 and Fiscal Deficit, 1967 - 1983**

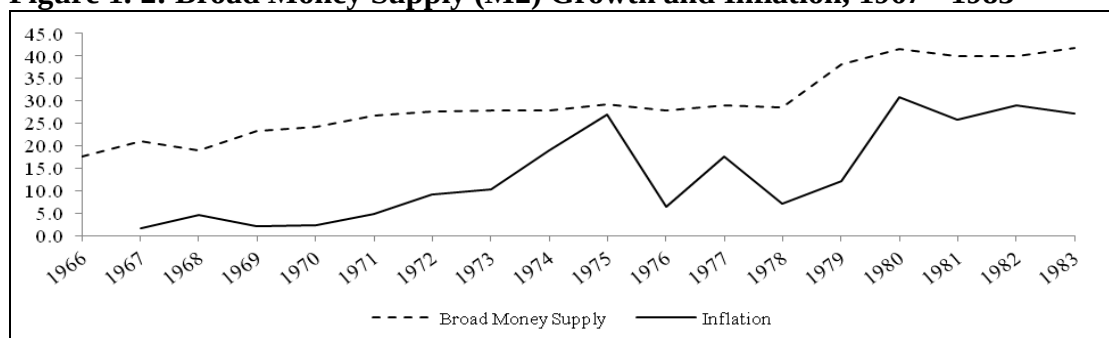


Source: Authors' Calculations

It appears that before the Bretton Woods supported reforms period, the increase in M2 due to monetization of fiscal deficits and external shocks accelerated inflation (Figure 1.2). While the inflation rate during the 1960s was comparable to the Tanzania's major trading partners (less than 5%), it averaged only 2.7% during 1967-

70, 14.0% during 1971-75, and 14.8% during 1976-80.<sup>3</sup> Inflation was volatile in the late 1970s fluctuating between 6.6% in 1978, and 30.3% in 1980. It was over 30% during 1981-85.

**Figure 1. 2: Broad Money Supply (M2) Growth and Inflation, 1967 - 1983**



Source: Authors' Calculations

Rwegasira (1976), Cury (1978) and Doriye (1990) stress that monetary accommodation to structural pressures, external shocks, and untimely internal policies played a significant role in exacerbating and sustaining inflation.<sup>4</sup> Lipumba (1991) views that monetization of fiscal deficits was instead a major source of inflation in Tanzania.

The real sector of the economy, however, responded positively during the 1960s until the mid- 1970s. Thereafter, output growth decreased drastically despite the huge investment undertaken by the government. Actual real GDP growth rates averaged 4.4% during 1967-75 but fell to 2.9% in 1976-80. The low real GDP growth rates resulted from poor growth rates of output in agriculture, manufacturing, mining and

<sup>3</sup> It is admitted in the literature that official inflation figures in Tanzania could be suppressed due to controls (price control 1973, and foreign exchange control) that were in place before the reform period (Lipumba, 1991).

<sup>4</sup> However, Rwegasira (1976) concludes that money supply variables remained weakly related to inflation, giving more weight to structural explanations.

construction sectors that were hit by both internal and external shocks during the 1970s. These shocks ranged from shortage of foreign exchange and low productivity, to low capacity utilization, which was constrained by high dependency on imported inputs and lack of perfect substitutes for domestic inputs (Ndulu, 1986). Other factors that contributed to poor performance of the economy in 1970s include poor internal policies such as collectivizing agriculture and villagilization, dissolving rural-cooperatives and parastatal agriculture monopolies.

The balance of payments in Tanzania was favorable until the mid-1970s and in 1977 due to the coffee boom, but deteriorated since 1978 through 1986 due to macroeconomic misalignment, especially the overvalued exchange rate and high rates of inflation. The exchange rate, however, was fixed during the period 1967 to 1986, characterized by frequent adjustments (devaluations/revaluation). Since the adjustments did not fully reflect the changes in the market fundamentals the parallel market for foreign exchange emerged. The exchange rate premium<sup>5</sup>, a good measure of pressures on foreign exchange market, grew over time. The exchange rate premium averaged 26% in the 1967-70 period, rose to 110% during the 1971-75 period in response to pressures of 1973-74 oil crisis, expansion of public sector, and capital flight, and rose further to 119% during the period 1976-80 (Ndulu, 1994). Economic mismanagement peaked during the late 1970s, with extensive quantitative restrictions and controls that severely affected the private sector and the whole

---

<sup>5</sup> Exchange rate premium is the difference between black market rate and the official rates in percentage.

economy. These led to low investment, shortages, corruption and widespread rent seeking activities.

By the early 1980s, the economy was experiencing severe economic crises. Fiscal deficits mounted, they were largely financed by bank borrowing. For example, during the 1980-86 period the budget deficit averaged 12% of GDP, and borrowing from the banking system financed about 50% of it. Monetary expansion averaged 31% and inflation rate was 30.5% during the 1980-86 period. Real GDP growth during the same period averaged 1.5% per annum, implying a negative real per capita growth rate, as the growth of the economy was less than the population growth of 2.8% (Kimei, 2002). The exchange rate premium during the period 1981-86 averaged 257%. The resource gap pressures during the period led to a decline in annual investment rate from 28% during 1976-80 to 18.1% during 1981-85, and a severe shortage of foreign exchange over the same period (Ndulu, 1994).

In response to the crisis, the government launched two 'homegrown' stabilization programs, namely, the National Economic Survival Program (NESP) in 1980/81 and the Structural Adjustment Program (SAP) of 1982/83 to 1984/85. The programs aimed at, among others, putting in place policies to contain the excess liquidity in the economy, improve the external sector balance, including increasing and judicious use of foreign exchange earnings as well as to improving industrial capacity utilization. However, the programs had a dismal effect on macroeconomic performance

(Bagachwa, 1992; Ndanshau, 2007).<sup>6</sup> The failures of the two home-grown reform programs forced the government to undertake a far-reaching adjustment under the Economic Recovery Program (ERP) implemented during the period 1986/87 to 1991/92. The ERP, which was implemented under the guidance and support of the IMF and World Bank, aimed at not only stabilizing the economy but also ensuring the resurgence of economic growth (BoT, 1991).

The ERPs, especially ERP I of 1986/87–1988/89, addressed issues relating to the size of the state sector, and areas of activity whose short-run objective was macroeconomic stability, especially price stability, through fiscal discipline. This was to be achieved through improved revenue generation and cuts in expenditures. In the long-run, growth was to be attained mainly through liberalization of the economy, dismantling of the state-led sector by privatizing the leading state-owned enterprises and deregulation of the financial sector.

The conventional wisdom in market-oriented reforms was to attain price stability and long-run economic growth by improving overall allocative and productive efficiency of the economy. Apart from price stability, the Economic and Social Action Program (ESAP), also referred to as ERP II (1989/90–1991/92), which followed ERP I, had three additional specific objectives, namely, improvement of the quality and quantity of social services, liberalization of the financial sector and privatization of public

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<sup>6</sup> Nevertheless it was possible to contain monetary expansion from an average of annual rate of 30% during 1978/79–1981/82 to 19% per annum in 1982/83–1984/85. However, in the period after 1984/85 the trends in monetary aggregates were not sustained despite the adoption of IMF package in June 1986 which had performance criteria on credit and monetary aggregates (Kimei 2002).

institutions. Further, in order to achieve stability during the ERP I and ERP II period, M2 was targeted to grow from 23% in 1985/86 to 10.5% in 1988/89 and thereafter.

The implementation of adjustment programs in Tanzania had some gains and sacrifices. While positive growth rates were realized, at least in the long-run, price stability proved elusive until 1995, when the BoT Act<sup>7</sup> was amended (Ndanshau, 2007). Further, government expenditures in real terms, did not decrease until 1993 (Doriye, 1995). This trend was influenced by an increase in discretionary recurrent expenditure, albeit with year-to-year variations dictated by the volume of debt servicing, growth of revenue and external budget support. During the period 1987-1993, both recurrent and development expenditure in real terms nearly doubled, an indication that adjustment took place on financing rather than on expenditure cut. Thus, unsuccessful expenditure control measures gave way to renewed bank borrowing which implied that the reduction of deficits monetization was conditioned on sustained revenue efforts and growing external budgetary support (Doriye, 1995).

Fiscal consolidation through revenue-enhancing measures depends on the initial level of revenue to GDP ratio. If the revenue-GDP ratio has reached 20% for developing countries it would be difficult to raise additional revenue to bridge the financing gap (Osoro, 1997). However, Tanzania still had a narrow tax base that does not capture the informal sector, and the situation is compounded by tax evasion in the formal economy as well as by exemptions.

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<sup>7</sup> The BoT Act of 1995 narrowed down from the multiple policy objectives to a single primary objective of price stability (BoT, 1997). It also marked the reintroduction of indirect monetary policy instruments.

On average, revenue to GDP ratio in Tanzania registered a declining trend during the period 1975-2005, as it declined from a peak of 19.8% in the second half of the 1970s to an average of 11% attained during 2000-2005, before reversing to 15.6% over the 2006 to 2011 period. Tax revenue followed a similar trend owing to the fact that non-tax revenue in Tanzania accounted for less than 10% of the total revenue. Government expenditure averaged 29.2% of GDP during 1974/75-1984/85, declined to 14.2% and 13.0% in the second half of 1980s and 1990s, before reversing to 17.6% and 24.6% in 2000/01-2004/05 and 2006/07 to 2009/10, respectively. Total government expenditures were increasing, while the revenue was still declining such that the fiscal deficit widened from -1.3% recorded in 1995/96-1999/2000 to -6.6% of GDP in the first half of the 2000s. However, both recurrent and development expenditures registered similar trend in nominal terms. In terms of growth rates, recurrent spending portrayed a smooth and positive trend, but development expenditure portrayed a trend that had cases of negative growth rates of up to -20.6% in 1986/87, and -57.6% (1994/95), -83% (1995/96) and -20.5% in 2000/01. This is an indication that fiscal consolidation instituted by the government often resorted to reduction of productive outlays instead of unproductive recurrent spending.

The reduction of credit expansion also proved difficult from the late 1980s to the first half of the 1990s. During 1987-93, Net Credit to Government (NCG) accounted for a significant share of increase in M2 the growth rates of which exceeded the programmed rates. This was a result of difficulties encountered in controlling credit expansion to non-central government public sector institutions, the parastatals, crop marketing boards and cooperative unions (which were re-introduced in 1984) due to

fundamental structural weaknesses in those institutions. In addressing the problem of domestic credit expansion, the government launched the financial sector reform, parastatal sector reform and privatization during the ERP II period. Given the reforms, the net credit to the government, which averaged 36.5% of total broad money (M2) during 1994-1999, decreased substantially to 13.2% in the period 2000-2005 due to the cash budget system and the credit policy of zero government borrowing from the central bank instituted by the Bank of Tanzania (BoT) in 2000/01.

It can be argued that with average broad money growth rate of 32% during 1986-95 and the GDP growth rate of about 4%, *ceteris paribus*, inflationary pressures hovered around 30% during the period. Since 1995, inflation decreased consistently mostly due to the contractionary monetary policy stance that decreased the growth rate of broad money. Notably, the inflation rate decreased from an average of 30% during 1980-95 to 12.8% during 1996-2000. In 2000, at 5.9%, the inflation rate was the lowest rate recorded in twenty-eight years, and it dropped further to 4.8% during 2001-05. However, during the 2006-2011 period, it reversed to 9.5%. This outcome was possible through credibility and stance of the Bank of Tanzania enshrined in the BoT Act of 1995.

### **1.1 Motivation for the Study**

In development context, fiscal policy serves both as an instrument of macroeconomic stabilization and as an instrument to achieve growth and poverty reduction objectives. In Tanzania, during the late 1980s and 1990s fiscal policy was used

largely to achieve macroeconomic stability, a goal set in orthodox stabilization program implemented during the period, which have been concerned exclusively with getting the ‘fundamentals’ right, mainly through fiscal adjustment.<sup>8</sup> The emphasis on price stability was not directly in favour of economic growth, consistent with orthodox theory, instead price stability was to lead to economic growth. This view had been challenged by many scholars and institutions including Collier and Gunning, (1999), Adam and Bevan, (2001), IMF, IEO (2003), and World Bank and IMF (2007), who strongly maintain that the stabilization package implemented since the early 1980s that prompted governments to slash expenditures across the board to meet the prescribed targets for fiscal deficit, have borne negative impact on investment and economic growth in the developing countries.<sup>9</sup> The programs’ mid-term review in the 1990s indicated increased social costs including a rapid deterioration of living standards and acceleration of poverty due to high unemployment rates emanating from downsized and retrenchment from the public sector and cuts in the delivery of basic social services (World Bank, 1990)

The new-structuralists also argue that the fiscal adjustments, as advocated by the orthodox (monetarist school), often impinge more on growth, especially in developing countries where the tax base is narrow, with undeveloped capital markets as an alternative source of investible funds (Agénor and Montiel, 1999). Even the IMF (2004) contends that the possibility that a declining share of public investment in GDP during economic stabilization could have adverse impact on economic

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<sup>8</sup> Fiscal adjustment or fiscal consolidation refers to expenditure switching and reduction or revenue enhancing measures aimed at sharp government deficits reduction.

<sup>9</sup> For OECD countries, Roubini and Sachs (1989) observe that public investment is often quickly and drastically cut during periods of restrictive fiscal policy.

growth over the longer term, is a legitimate cause for concern. This view is also supported by Fofack (2010) who maintains that while the stabilization programs resulted in a reduction of government deficits in numerous countries, they also were accompanied by significant economic costs, not least because the narrow tax base in the region limited the prospects of expanding the revenue side of government budgets, and attempts to raise revenues through high taxes negatively affected investments and long-run economic growth.

## **1.2 Statement of the Problem**

Tanzania has gone through two types of policy regimes. The first, fiscal dominance regime, defined as the extent to which government deficits condition growth of money supply. The regime existed in Tanzania during the implementation of Ujamaa and self-reliance policy between 1967–1986 period. The fiscal dominance regime occasioned increased government investment in productive and indirectly productive sectors of the economy in order to address economic imbalances of the 1960s. The active government investments in productive economic activities were financed from its own coffers. However, the government revenue could not match expenditures due to the narrow tax base, poor tax administration and underdeveloped financial markets. As a result, budget deficits were highly exogenous, deficits monetization by the Bank of Tanzania was routine, and monetary policy was subordinate to fiscal policy. Consequently, expansion in liquidity ensued and this is claimed to have exerted an upward pressure on prices during the period 1967 to early 1980s, caused financial repression, crowded out private investment and created uncertain and

volatile investment environment. The outcome was a fall in the rate of economic growth in the 1970s and early 1980s.

By the mid-1980s, the government started to implement structural adjustment programs initiated and supported by the Bretton Woods Institutions that emphasized development of a market economy and, among others, targeted attainment of fiscal discipline (internal balance), in order to curb inflation. The main assumption that underlay the structural adjustment program is that the government was a problem, it was behind fiscal dominance, exchange controls, fixed exchange rates, price controls, administered interest rates and financial planning that caused inflation and poor economic growth.<sup>10</sup> The orthodox solution to the macroeconomic crises therefore, was to eliminate fiscal dominance and put in place a market economy regime.

The stabilization programs implemented in Tanzania and other developing countries rest on the theory that there exists a link between fiscal policy, economic growth and inflation. However, there is lack of information on the evolution and contribution of economic reforms, especially fiscal adjustment or consolidation policies, to the observed price stability and economic growth in Tanzania. To-date, there is lack of knowledge from empirical studies that, among others, show whether the observed disinflation in Tanzania solely resulted from fiscal adjustment, the extent to which the implemented fiscal adjustment policies, as a kingpin of SAPs, impacted on price

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<sup>10</sup> Government activities such as discretionary interventions into the markets through regulations, tariffs, subsidies and quotas, give rise to significant economic inefficiencies with distortions in macroeconomic variables, corruption and rent seeking activities, to mention a few.

stability and economic growth during the economic reform period in Tanzania. The knowledge gap makes it difficult to appreciate the policy impact on macroeconomic fundamentals and potential or limitations specific to the macroeconomic stabilization objective.

### **1.3 Objectives of the Study**

On the basis of the background and problem of the study, the broad objective of this study is to establish the effect of fiscal adjustment on macroeconomic performance in Tanzania. Specifically, the study seeks to establish the effectiveness of fiscal consolidation on economic growth, and the impacts of fiscal adjustment in the fight against inflation.

### **1.4 Research Questions**

The study addresses two broad research questions:

- i) To what extent has fiscal consolidation implemented impacted on economic growth in Tanzania?
- ii) To what extent has fiscal adjustment contributed to the observed disinflation process in Tanzania?

### **1.5 Significance of the Study**

It is more than a quarter of a century since the launch of economic reforms in 1986. Some gains were made after slippages in the early reform years. Inflation rate decelerated from 33.3% registered in 1985 to 27.4%, 21% and 7.9% recorded in 1995, 1996, and 1999, respectively, with the period 2000-2011 registering an annual

average inflation rate of 7.2%. However, the successful measures to fight inflation by altering fiscal balances did not lead to sustained increase in GDP growth until the 2000s.

Notable, however, is the lack of empirical evidence on effect of stabilization policy on macroeconomic and sectoral performance in Tanzania. This study, therefore, is useful on several grounds. First, from a policy perspective, it provides a better understanding of the scope and limitations of fiscal policy, particularly public expenditure policies in shaping the process of economic growth and development in Tanzania, which is an important component of the National Strategy for Growth and Reduction of Poverty (NSGRP) (cluster one) and in achieving the Millennium Development Goals (MDGs).

Second, fiscal benchmarks are part and parcel of support programs from Bretton Woods institutions. An assessment of the fiscal stance during liberalization is necessary, since it will determine the need for future discretionary policy actions. Therefore, the study will inform the policy process in order to arrive at the target levels that are healthy to output growth. Third, in the context of monetary union aspired by the East African Community, fiscal policy will be the main domestic instruments for short and medium term structural adjustment tools. Thus the study will inform and enrich the fiscal policy process. Third, there is a dearth of empirical literature on post-reform performance and the trends in macroeconomic variables, especially the fiscal consolidation in relation to price stability and growth in Tanzania. Lastly, many studies have been done on cross-sectional and panel data

studies which are not able to address this issue satisfactorily and thus highlight the importance of country specific studies. This study also fills that gap.

## **1.6 Hypotheses**

The following hypotheses are tested in this study:

- i) Fiscal adjustment impacted positively on economic growth during the study period; and,
- ii) The reduction of budget deficit and economic growth reduces inflation.

## **1.7 Scope of the Study**

The study is limited to the relative contribution of fiscal instruments, particularly government expenditure, economic growth and price developments in Tanzania. Secondary data is used covering the period 1967-2011.

## **1.8 Organization of the Study**

This study is organized in six chapters. Apart from this chapter, Chapter 2 dwells on both theoretical and empirical literature on fiscal policy, fiscal adjustment/consolidation, economic growth and inflation. Chapter 3 provides a detailed background on the Tanzanian economy, including trend and relations in fiscal variables, real income growth and inflation. The methodology used in this study is discussed in Chapter 4. Chapter 5 presents the empirical analysis and findings of the study, while concluding remarks and policy implications based on the study findings are presented in Chapter 6.

## CHAPTER TWO

### LITERATURE SURVEY

#### 2.0 Introduction

This chapter reviews both theoretical and empirical literature on fiscal policy, economic growth and inflation. Section 2.1 covers the theoretical and empirical literature on fiscal policy and economic growth. Section 2.2 examines the inflation-growth nexus, while 2.3 dwells on fiscal adjustment and economic growth. Section 2.4 reviews theoretical and empirical literature on fiscal deficit, money supply and inflation and Section 2.5 summarizes the chapter.

#### 2.1 Fiscal Policy and Economic Growth

##### 2.1.1 Theoretical Literature

Government's deliberate actions towards spending and levying taxes aimed at influencing macro-economic variables so as to achieve desired macroeconomic objectives is referred to as fiscal policy. Fiscal policy, therefore, is the means by which a government adjusts its levels of spending in order to influence the course of economic growth and development of the economy. In the short term, fiscal policy is used to mitigate fluctuations in output and employment –‘counter-cyclical policy’. Thus, fiscal policy is used to enhance aggregate demand during downturns and reducing demand during upturns (Dornbusch and Fischer, 1990; IMF 2006; Daniel *et al.*, 2006). For example, large fiscal stimulus packages that were adopted in most advanced and some developing countries in the aftermath of global economic and financial crisis of the 2008 were counter-cyclical (Fofack, 2010). The overall

objectives of fiscal policy include sustainable economic growth, high employment, low inflation and balance of payments equilibrium.<sup>11</sup>

Neoclassical growth models (Ramsey, 1928; Solow, 1956; Swan, 1956; Cass, 1965; and Koopmans, 1965) dominated the debate on the determinants of long-run growth, including the role of government policy and lack of convergence in per capita incomes across countries until the 1980s. The models predict that over time economies converge to the same steady-state independent of the initial conditions if all parameters, such as, saving rate, population growth rate, and technology are identical. The neoclassical models, however, load the entire long-run growth to exogenous technical progress that is unaffected by the economy's preferences on accumulation, that is the saving rate. The models also assert that the policy-induced variables, such as tax or government spending, have level rather than growth effects. That is, policy interventions that influence the savings rate or incentive to invest in physical or human capital would raise the growth rate temporarily as the economy grows to higher level of the balanced growth path, but in the long-run the growth rate returns to its initial level due to diminishing marginal product of capital (Kneller *et al.*, 1999; Romer, 2000; Gemmell, 2001). The one-sector neoclassical predictions are grounded on the assumptions of diminishing returns to capital and exogenous production of technology, which turns out to be the main weakness of the standard neoclassical growth models (Barro and Sala-i-Martin, 2004).

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<sup>11</sup> Economic growth is the process whereby there is a steady long-term increase in real GDP and improvement in living standards. The movement in real GDP is the best widely used measure of the level and output growth (Samwelson and Nordhaus , 1998)

The endogenous growth models, also referred to as new growth theories pioneered by Romer (1986), Lucas (1988) and Robelo (1991), instead came with the relationship that offsets the diminishing marginal productivity of capital hypothesis as well as endogenizes the role of technology by introducing human capital, innovations, externalities and government policies. In contrast to the physical capital in traditional neoclassical models, the physical capital in endogenous growth model is augmented by human capital to have non-diminishing-returns, which propel economic growth indefinitely. The endogenous growth theories assume constant or increasing returns to scale in factors that can be accumulated such as capital. Accordingly, technological progress occurs as a purposeful economic activity through research and development (R&D), inventions are rewarded with an ex-post monopoly power through patent rights to cover for high cost of initial investments and new ideas, technology or innovations have externality, that is, knowledge spillover effect. The endogenous growth models of Barro (1990), Barro and Sala-i-Martin (1992), Devarajan *et al.* (1996), Mendoza *et al.* (1997) explicitly incorporated channels through which fiscal policy can determine not only the output level but also the steady-state growth rate by using the ‘Ak model’.

The Ak framework is the simplest model that generates growth endogenously where production is linear in the broad concept of capital (Pagano, 1993). It simply states that per capita output is a function of capital per worker. It assumes the existence of a representative, infinite-lived household in a closed economy that seeks to maximize

utility.<sup>12</sup> The Ak function is based on the hypothesis that all inputs are reproducible, particularly, the state of knowledge such that:  $y = Ak$ , where,  $y$  is output per worker and  $k$  is capital per worker ( $K/L$ ), with  $K$  representing a broad concept of capital that encompasses physical and human capital, while  $L$  is labour.

The assumption of constant returns becomes more plausible when capital is viewed broadly to include human and physical capital. In the Ak framework, the long-run per capita growth rate ( $\gamma$ ) is maximized by the expression:

$$\gamma = \frac{\dot{c}}{c} = (A - \rho - \delta_k) \frac{1}{\sigma}, \quad A > \rho > A(1 - \sigma) \quad (2.1)$$

where  $c$ ,  $\rho$ ,  $\delta$  and  $\sigma$  are consumption, discount factor, capital depreciation and elasticity of substitution, respectively<sup>13</sup>, and  $A$ , represents marginal product of capital ( $\partial y / \partial k = A$ ). The expression  $A > \rho > A(1 - \sigma)$  implies  $\gamma > 0$ , and  $A > 0$ ,  $\rho > 0$  and  $\sigma \geq 1$ , guarantees that the attainable utility is bounded.

Equation (2.1) suggests that the economy is always at a position of steady-state growth where all variables ( $c$ ,  $k$ , and  $y$ ) grow at the rate  $\gamma$  (Barro, 1990). It follows that long-run per capita growth ( $\gamma$ ) is related positively to the net marginal product of capital ( $A - \delta_k$ ), and negatively to the time preference ( $\rho$ ) and elasticity of substitution

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<sup>12</sup> According to Barro, (1990) the household maximize the overall utility given by  $U = \int_0^\infty u(c) e^{-\rho t} dt$ , where,  $c$  is consumption per person and  $\rho > 0$  is the constant rate of time preference and an isoelastic utility function:  $u(c) = \frac{c^{1-\sigma} - 1}{1-\sigma}$ , where  $\sigma > 0$  so that marginal utility has the constant elasticity  $-\sigma$

<sup>13</sup> The greater is  $\rho$ , the more the household values current consumption relative to future consumption.  $\sigma$  is the coefficient of relative risk aversion, it determines the household's willingness to shift consumption between different periods –this is a family of utility functions with constant relative risk aversion (CRRA). If  $\sigma$  is close to zero, utility is almost linear in consumption and the household is willing to accept large swings in its consumption to take advantage of small differences between its discount rate and the rate of return it gets on its savings. The higher  $\sigma$  the more the household must be compensated for differing consumption.

( $\sigma$ ). In this model, government influences on growth are transmitted through two channels: a) the complementary effects of public services to the private sector production function, and b) the effects of taxation on incentives or disincentives to capital accumulation in the private sector.

By using the 'Ak' framework Barro (1990) derives the growth impact of government spending on long-run growth. The public service enters the model as supplier of complementary productive input to private production. It is this productive role that creates potentially positive linkages between government expenditure and growth. The production function is subject to constant returns to scale in government purchases ( $g$ ), and broader concept of capital (human and physical capital), ( $k$ ), when used together but diminishing returns in  $k$  with fixed  $g$ . The production function is written as:

$$y = f(k, g) = k\left(\frac{g}{k}\right), \quad f' > 0 \quad f'' < 0 \quad (2.2)$$

where  $k$  is producers' per capita amount of aggregate capital and  $g$  is corresponding per capita quantity of government purchases.  $f'$  and  $f''$  are 1<sup>st</sup> and 2<sup>nd</sup> derivatives.

By using Cobb-Douglas technique, the long-run per capita growth rate ( $\gamma$ ), is expressed as:

$$\gamma = [(1 - \tau)A\left(\frac{g}{k}\right)(1 - \eta) - \rho] \frac{1}{\sigma}, \quad 0 < \eta < 1 \quad (2.3)$$

where  $\tau$  is the tax rate,  $[A(\frac{g}{k})(1-\eta)]$  is the net marginal product of capital,  $\eta$  stands for elasticity of output per capita ( $y$ ), with respect to per capita government spending ( $g$ ) for a given  $k$ , and all other variables are as defined before.<sup>14</sup>

Equation (2.3) shows that public spending is complementary to private production. Thus, different government sizes, that is, different values for  $g$  and corresponding  $t$  have two effects on growth rate ( $\gamma$ ). First, income tax impacts adversely on the marginal product of capital and reduces per capita growth ( $\gamma$ ). Secondly, an increase in  $g$  raises marginal product of capital. However, Mishkin (1995), among others, uses a simple IS-LM framework to show that an expansionary fiscal policy, that is increase in government spending or decrease in taxes, impacts positively on the equilibrium level of aggregate output through aggregate demand.

Barro and Sala-i-Martin (1992) consider growth models that incorporate public services ( $g$ ), and  $n$  producers, each producing output ( $y$ ), with balanced budget, financed by a proportional tax on output at a rate  $t$ , lump sum taxes ( $Lt$ ), resulting in the following production function:

$$y = Ak^{1-\alpha}g^{\alpha}, \quad 0 < \alpha < 1 \quad (2.4)$$

and the government budget constraint:

$$ng + c = Lt + \pi y, \quad (2.5)$$

where  $c$  represents non-productive government provided consumption good and  $n$  is the number of producers in the economy.

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<sup>14</sup> See Barro (1990) and Barro and Sala-I-Martin (1992) for a complete derivation of the model.

With an isoelastic utility function, the following long-run growth rate ( $\gamma$ ) is derived:

$$\gamma = \lambda(1-\tau)(1-\alpha)A^{1/(1-\alpha)}\left(\frac{g}{y}\right)^{\alpha/(1-\alpha)} - \mu \quad (2.6)$$

where  $\lambda$  and  $\mu$  are constants that reflect parameters in the utility function.

Equation (2.6) shows that growth rate ( $\gamma$ ) is inversely related to the rate of proportional taxes ( $\tau$ ), and positively related to government expenditure ( $g$ ), but not affected by lump sum taxes ( $Lt$ ), and unproductive expenditure ( $c$ ). Barro and Sala-i-Martin (1992) also note that an optimal tax policy depends on the characteristics of services. If public-provided services are private goods (rival and excludable) or public goods (non-rival and non-excludable), the first best solution with the highest growth rate could be achieved through lump-sum taxation. The introduction of proportional tax rates on public-provided services that are subject to congestion, such as transport facilities and public utilities (rival but non-excludable goods), restores the economy on the optimal path from distortions resulting from excessive use of the public goods by private agents. However, Barro and Sala-i-Martin (1992) caution that, whether expenditure items are to be categorized as productive or unproductive is still debatable.

Unlike the study by Barro (1990), which assumes all government spending to be productive, Devarajan *et al.*, (1996) derive growth impact of fiscal variables by disaggregating productive and unproductive expenditures. The study further notes how a shift in the mix between productive and unproductive expenditure affects the

long-run growth rate of an economy. Thus, productive expenditure is defined as the component of public expenditure that when increased raises the steady-state growth rate of the economy. Expenditures are categorized as unproductive when they enter the utility function of the private agents as consumption expenditure without affecting the steady-state growth rate. It is worth noting that some types of public spending complement private investment while others displace it. Moreover, Devarajan *et al.*, (1996) note that a shift in favor of more productive type of expenditure may not raise the growth rate if its initial share is too high.

In traditional Keynesian macroeconomics, public expenditures, even of a recurrent nature, can contribute positively to economic growth through multiplier effects on aggregate demand. The Keynesians allude that increased government spending or tax reduction tend to pull the economy out of recession, and a reduction in spending or hike in taxes slows down the economy. Johnson (1999) also notes that not all expenditure classified as recurrent is less productive than certain expenditures called capital. Rather, he cites cases of investments in health and education, which constitutes investments in human capital, to be more productive in terms of contribution to GDP than some projects in infrastructure in developing countries. Along those lines Gemmell (2001) and Emre (2006) note that even when all government expenditure is productive, it generates negative growth effects if it is financed by distortionary taxes at sufficient large tax/expenditure levels.

According to Gemmell (2001), there are five main ways in which fiscal policy affects growth in endogenous growth models. First, government expenditure

enhances private sector production by complementarities that arise between public and private investments. Second, government can influence innovation, research and development (R&D) that enhances productivity in the economy. Third, it can influence factor accumulation, either indirectly via incentive effect on private accumulation or directly via public investment in physical or human capital. Fourth, the government can influence income redistribution by altering savings rates, providing social insurance, overcoming capital markets imperfections, and helping to enforce private property rights. Lastly, government fiscal actions can possibly crowd-in or crowd-out productive private investment.

Generally therefore, theory has it that fiscal policy may impact on economic growth through two channels. First, productive expenditures that influence marginal product of private capital and enhance growth, and unproductive expenditures that do not affect private marginal product of capital, and therefore have no effect on growth. Second, distortionary taxation that weakens incentives to invest in physical and human capital. Thus, taxation and economic growth are inversely related. Non-distortionary taxation does not affect incentive to invest in the broad concept of capital and has no impact on growth. Furthermore, the endogenous growth models predict that an increase in productive spending financed by non-distortionary taxes will increase growth. Increase in non-distortionary spending financed by non-distortionary taxes would be growth-neutral. However, if distortionary taxes are used the impact on growth would be negative (Benos, 2005). Literature also underscores inability of developing countries to raise enough financial resources through taxes,

leaving money creation window or inflationary finance as the only reliable source of investible funds.

### **2.1.2 Inflationary Finance and Economic Growth**

Consolidation of the total expenditure and revenue of the government gives the government's budgetary financing or government financing requirement (GFR). Thus, development expenditure less the sum of recurrent or public savings (that is  $G - T$ ) and non-recurrent revenue accruing to the government gives us the government or public sector borrowings requirement (PSBR), also referred to resource gap.<sup>15</sup> Therefore, recurrent surplus or public savings is part of domestic financing sources of the development expenditure. However, in developing countries, where public savings are very small or negative, the PSBR has essentially been a major component in government development expenditures. The volume of government development expenditure in developing countries has therefore been synonymous with the GFR (Nyagetera, 1997).

The PSBR can be financed by money creation or running the printing press (printing money), running down foreign reserves, and issuance of external and internal interest bearing debt. However, money creation or inflationary finance is considered the most convenient means of financing the budget deficit, especially in developing economies.<sup>16</sup> According to Easterly and Shmidt-Hebbel (1993), this view builds on

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<sup>15</sup> That is, development expenditure –  $[(G - T) + \text{non-recurrent revenue}] = \text{PSBR}$ .

<sup>16</sup> Inflationary finance or inflationary tax is also called “public finance view of inflation”, a process by which governments raise seignorage revenue to finance its spending. Seignorage is the real revenue

several arguments. One argument is that growth in public revenue in developing countries is restricted by six factors: a) low per capita income and poverty that limits the base on which direct taxes can be imposed; b) inefficient tax administration; c) underdeveloped financial markets such that most financing of fiscal deficits is done by the central bank; d) existence of constraints in external borrowing; e) existence in developing countries of low willingness of the public sector to hold public debt; and, f) existence of political realities that do not allow high tax rates. Granted, therefore, inflationary financing is a residual tax used to redress financial gap in government budgetary financing requirement.

Aghevli (1977) argues that the authorities can augment private capital formation through inflation tax, if they believe that the private rate of discount is greater than the social rate, and if due to imperfections in the capital markets, the private rate of return on investment falls short of social rate of return. Johnson (1989) notes further that inflation tax can be an investment financing-instrument in developing countries because a good fraction of investment expenditure with the highest social marginal returns has to be made by governments and the public enterprises. The argument for positive effect of inflation on economic growth in developing countries has also been made in the context of structuralism. The structuralists hold that a positive relation

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appropriated by the government by means of base money creation. Agénor and Montiel, (1999) define seignorage revenue  $S_{rev}$ , as the sum of increase in the real stock of money  $\Delta m$ , (the real balance effect) and the change in the real money stock due to inflation  $\pi m$  (the inflation tax effect). That is,  $S_{rev} = \Delta m + \pi m$ . Inflation tax is the total capital loss that inflation inflicts on holders of real money balances. However, the inflation tax has two components, the rate of inflation ( $\pi$ ) which is the tax rate and the real stock of money ( $m$ ) which is the base of the tax. The revenue from seignorage equals revenue from monetization (Anand and van Wijnbergen, 1989). Seignorage is positive even if inflation is zero as long as people want to increase their real money holding. Only when the real growth rate of the economy is zero (static stead-state) will the two coincide.

between inflation and growth, at least up to a certain rate of inflation, is inevitable due to various rigidities and inelasticities in the economic environment of developing countries.

Anand and van Wijnbergen (1989) and Fischer and Easterly (1990) are also in favour of inflationary finance or seignorage revenue under the arrangement of debt dynamics and sustainability. If the ratio of public debt to GDP is denoted by  $d$ , the determinants of a change in public debt would be primary deficit ( $pf$ ), seignorage ( $S_{rev}$ ), real interest rate ( $r$ ) and real growth of GDP ( $y$ ), as expressed in equation 2.7.

$$\Delta d \equiv \left( \frac{pf}{GDP} - \frac{S_{rev}}{GDP} \right) + (r - y)d \quad (2.7)$$

The identity in (2.7) indicates that only non-interest deficit over and above money creation would change the public debt, while nominal interest expenditures on debt would have to be financed with new debt. However, the debt ratio declines either with inflation or with real GDP growth in case there is no new debt. Thus, if the primary deficit is over and above the seignorage and if the real interest rate exceeds the real growth rate of the economy, the debt to GDP ratio will explode. The solvency condition for debt sustainability requires the current stock of debt to be less than the sum of the present value (PV) of future primary surplus and seignorage. Therefore, zero seignorage for a given path of government expenditure means the PV of taxes alone has to satisfy the solvency condition, which would compromise debt sustainability.

Kilindo (1992) argues that the effects of inflationary finance on prices depend on the type of expenditure. If inflationary tax revenues are spent on development projects that contribute to real output growth, it would have less effect on price development, but if the inflationary tax proceeds are used to subsidize inefficient and loss making government parastatals, they would definitely be inflationary.

Early arguments against inflationary finance focused mainly on the welfare cost of inflation in terms of distributive aspects to the holders of real balances, whereas, the argument in favor of inflation is pinned on the real effect of government expenditure financed by inflation tax (Bailey, 1956; Friedman, 1971; Phelps, 1973). For example, Aghevli (1977) makes a case for moderate inflation, suggesting that the benefits of inflationary finance in augmenting private capital formation may outweigh the welfare costs on holders of real balances. Thus, without collection lags and with inefficient tax system, a moderate use of the inflation tax to finance government investment enhances growth (Choundry, 1992). However, experience in small open economies show that widening deficits have been accompanied by spiraling debt and inflation, which raises a question on whether an optimal amount of inflation tax can be used by the government in pursuit of its growth objective.

Despite the arguments supporting inflationary finance some limitations have been observed. According to Fischer and Easterly (1990) seignorage revenue depends on: demand for base or high-powered money; real rate of growth of the economy and elasticity of demand for real balances with respect to inflation and income. If income elasticity of the demand for base money is unitary, the growth rate of base money

beyond the annual real growth rate of the economy, given stable money demand function, will be inflationary. However, seigniorage revenue rises with inflation, and reaches the seigniorage maximizing inflation rate beyond which the revenue declines. This happens because with a high rate of inflation, people hold less money than before to avoid the inflation tax, and hence low real balances. This mechanism, which is reminiscent of the so-called Laffer curve, states that steady-state seigniorage, first, rises, depending on the shape of the money demand function, and then falls with higher inflation. Thus, the revenues from inflation tax increases as inflation rises (tax rate), while the real money demand (tax base) falls with increased inflation, which reduces the revenue.<sup>17</sup> The yield from inflation tax is, therefore, maximized at the point where the inflation elasticity of real money demand equals one. At this point, increase in revenue from the rise in the rate of inflation equals the revenue decrease from the decline in money demand (Cagan, 1956; Phelps, 1973).

Beyond the seigniorage maximizing inflation rate, assuming zero growth rate of income, the process becomes unstable. The economy is positioned on the ‘wrong side’ of the Laffer curve, and reduced money demand produces a stronger decline in real cash balances due to inflationary expectation (Friedman, 1971; Cagan, 1956). The ensuing inflation can harm economic growth in different ways. According to Rousseau and Wachtel (2002), direct effects include high transaction and information costs in an inflationary environment that inhibit investment and entrepreneurship and

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<sup>17</sup> It is usually assumed that the money market is always in equilibrium and the demand for real money balances is a monotonic decreasing function of the expected rate of inflation.

thus economic development. Through an indirect channel, inflation affects economic growth by limiting long-term financing for capital formation and growth.

### **2.1.3 Review of the Empirical Literature: Studies Outside Tanzania**

There has been a notable increase in interest on a need to verify and understand the linkages between fiscal policy and economic growth in and outside developing countries. However, the empirical literature in pinning down the fiscal policy-growth nexus within the endogenous growth framework is rich in developed countries. Also notable, while some of the studies that exist are country-specific, others are cross-country with mixed findings using cross sectional, time series and panel data.

Devarajan *et al.*, (1996) use panel data from 43 developing countries over the 1970 to 1990 period to establish the correlation between public expenditure and growth as well as to determine the components of public expenditure that were more productive in the sample countries. They find that an increase in the share of current rather than capital expenditure, had positive and significant growth effects, results that defied the endogenous growth hypothesis. However, employing data for 21 developed countries the same study finds that capital expenditure enhance growth in line with endogenous growth theory. The study defends its findings from developing countries by arguing that productive expenditures may be unproductive if used in excess.

A study by Fuente (1997), also examines the effect of public spending and taxation on growth for a sample of 21 Organization for Economic Co-operation and Development (OECD) countries over the 1965 to 1995 period. The results show that

government expenditure positively impacted on growth through public investment on infrastructure.

Kneller *et al.*, (1999, 2001), using panel data for 22 OECD countries during the 1970 to 1995 period improved on results obtained by Devarajan *et al.*, (1996), Mendoza *et al.*, (1997), and Fuente (1997). The study made two significant break-throughs in growth models. Firstly, they test predictions of the endogenous growth models by looking at the structure of both taxation and expenditures. Secondly, they comprehensively take into account the implicit financing assumption associated with the government budget constraint. The study observes that productive government expenditure enhances growth, while unproductive spending retards it; and distortionary taxation impairs growth, while non-distortionary taxation does not.

Benos *et al.*, (2005) use an unbalanced panel data set for 16 OECD countries over the 1970 to 1997 period to test the effects of public spending on growth. The findings indicate that government spending on education, health, and fuel or energy displayed a hump-shaped relationship with per capita growth, while public expenditures on housing, social security, transport and communication portrayed a U-shaped relation. The study concludes that growth effects of public spending on education and other social spending are stronger the poorer a country is, while expenditure on health shows a weak growth effect.

Bose *et al.* (2003) examine the growth effects of public expenditure at aggregate and sectoral levels for 30 developing countries over the 1970 to 1990 period. The study is

sensitive to initial conditions and biases from partial studies by including both sides of the budget constraint. The findings indicated that education is positively and strongly correlated with growth in both aggregate and sector-wise. The shares of government capital and private investment are positively and significantly correlated with economic growth, while the growth effects of recurrent expenditure is insignificant.

Kweka and Morrissey (2000) review 21 empirical studies on government spending and growth, three from developing countries, 8 from mixed advanced and developing countries, 3 country specific (UK, South Africa and Greece), 6 OECD countries, and one case study from G7 countries with a long data that spanned the period 1885 to 1987. The estimation techniques used in all clusters range from cross-section (7 countries), panel (9 countries) to time series (5 countries). The study finds that government investment spending Granger-caused growth in most OECD countries. The findings from country specific studies indicate that total government spending impacted positively on private consumption in UK, whereas military spending had positive externality to growth in South Africa. In Greece, military/defense spending impacted negatively on growth, while government consumption expenditure was neutral. In LDCs the results are mixed. One case study indicate that consumption spending enhanced growth, while investment spending is growth retarding. Others indicate that consumption spending retards growth. Surprisingly, one study in the LDCs shows that public investment spending impacts negatively on growth. In the study, however, they observe that consumption expenditure is positively related to growth, and, in particular, appears to be associated with increased private

consumption. Expenditure on human capital investment is insignificant in the regressions, probably because any effects would have very long lags.

Adam and Bevan (2005) examine the relation between fiscal deficits and growth for a panel of 45 developing countries, of which 8 are from Sub-Saharan Africa (SSA) and 13 are from the rest of Africa. According to the study the impact of deficit on growth depends on the financing mix and the outstanding debt stock. There is a positive effect of deficits on growth when financed by limited seigniorage, and growth-inhibiting if financed by domestic debt. The study also estimates a threshold deficit after grants level, at around 1.5% of GDP above which it inhibits growth.

Notably, there have only been few attempts to establish the relationship between fiscal policy and growth in specific countries in SSA. Amin (1998), using time series technique identifies components of public expenditures that need to be protected and sustained for growth in Cameroon. The study finds the following: that public expenditures on infrastructure, education and health crowd-in private investment, productive government spending enhances the efficiency and productivity of the private sector, and that the causality runs from government expenditure on infrastructure to private investment and growth. A study by M'Amanja and Morissey (2005) in Kenya reports similar results.

In Nigeria, Ekpo (1994) studies the contributions of public expenditure to economic growth in Nigeria over the period 1960 to 1992. The findings of the study provide support for fiscal policy-led growth through crowding in private investment resulting

from government expenditure on infrastructure. However, Aregbeyen (2007) establishes a positive and significant correlation between government capital and public investment and economic growth, while current consumption expenditures impact negatively on growth in Nigeria. The study also notes that increase in government budget deficits do not automatically guarantee rapid economic growth. Nurudeen and Usman (2010) use co-integration and error correction methods to analyze the impact of government expenditure on economic growth in Nigeria over the period 1970 to 2008. The paper reveals that government total capital expenditure, total recurrent expenditures and expenditure on education have negative effects on economic growth, while expenditures on health, transport and communication are growth-enhancing. Ogbole *et al.*, (2011) use time series data and the Granger-causality analysis to establish public spending-growth nexus for Nigeria during the 1970 to 2006 period. The coefficients of private investment and exports are significant, but negative for private investment.

Generally the survey of empirical literature leads to the conclusion that the evidence is inconclusive on the nature of the relationship between fiscal policy and growth in developing countries. While government consumption clearly tends to correlate negatively with the growth performance in developed countries, the evidence is weak for developing countries (Devarajan *et al.*, 1996; Landau, 1986). However, investment spending have been found to retard growth in some studies in developing countries (Devarajan and Vinaya, 1993).

It should be noted that empirical results are sensitive to the type of data set used, countries included in the sample, period and method of estimation as well as measures of the public activity (Barro, 1990; Bose *et al.*, 2003). It is difficult to determine which particular items of expenditure should be categorised as investment and which should be categorised as consumption in developing countries (Kweka and Morrissey, 2000). The findings are likely to differ across countries and time, even when the same estimation technique is used (M'Amanja and Morrissey, 2005). The reasons advanced for such diversity include: different measures used to proxy fiscal policy, often total government spending, government consumption or total government revenue as shares of GDP (Baro 1990); and different model specifications, estimation techniques; and the sample size and quality of data. Aregbeyen (2007) notes that, contrary to the admonition that economies to be studied should have something in common, especially in cross-country growth studies and regressions, there is a broad lumping of countries with clearly marked differences.

#### **2.1.4 Studies Specific to Tanzania**

Tanzania has few case studies on fiscal policy and growth. The study by Osoro (1997) tests the causality between public spending and public revenue as well as the hypothesis that high deficits lead to increased spending for the period 1965 to 1991. The study draws a number of conclusions. In Tanzania public spending drives revenue, and thus one of the causes of the deficits in Tanzania is rapid growth in public spending. It calls for tax broadening and expenditure reduction measures. Kilindo (1997) uses econometric analysis for the period 1970 to 1991. The study finds that Tanzania, like most developing countries relies on inflationary finance to

meet part of its investment expenditure in government and public enterprises. However, the study notes that there would be a positive gain if the expenditure is on development projects which contribute to real output, otherwise it would be inflationary if it is used to subsidize inefficient parastatals. However, the two studies in Tanzania did not link fiscal policy and growth directly.

In another study, Moshi and Kilindo (1999) use econometric analysis to quantify the influence of government policy on private investment during the 1970 to 1992 period. The study indicates that public investment, especially on infrastructure, exerts a positive and significant effect on private investment in Tanzania and that fiscal policies adopted by the Government of Tanzania since the commencement of economic reforms in 1986 enhanced private investment and growth. The study also concludes that foreign exchange availability positively affects private investment. It finds that the policies adopted by the Government of Tanzania since 1986 enhanced private investment in the economy.

Kweka and Morissay (2000) use time series data analysis techniques to investigate government spending and growth evidence in Tanzania for the period 1965 to 1996. The study finds that increased productive public expenditure (physical investment) appears to be inversely related to economic growth, while consumption expenditure is related positively to economic growth and it enhances private consumption. The study reports lack of evidence on the impact of human capital on growth and weak contribution of private investment to growth in Tanzania. Kayandabila (2008) examines the effects of foreign aid, fiscal policy and growth in Tanzania over the

period 1965 to 2004 by using time series techniques. The study concludes that in the short-run foreign aid, productive government expenditure and non-tax revenue are correlated with economic growth. Thus, realization of a self-sustained growth entails scaling-up of the government budget in favour of productive expenditure, namely, education, health and other growth-enhancing services.

### **2.1.5 Gaps in the Literature**

A large part of the previous empirical studies on fiscal policy and growth are on developed countries. However, in some cases developing countries are included in panel data studies with the aim of increasing the number of available observations for statistical reasons. This methodology contradicts the admonition that economies to be studied in cross-country growth studies and regressions should have something in common (Aregbeyen, 2007). It needs to be emphasized that only studies on OECD countries share common features of technological development, fiscal policy and growth and the size of government spending such that the findings of the panel study could be generalized more comfortably across the board (Kneller *et al.*, 1999). In developing countries, and Africa in particular, the scenarios are quite different. In Africa the share of government expenditure in GDP is generally higher than in other regions. This is because governments have remained the major drivers of investment owing to the lack of domestic capital, narrow tax base, inefficient tax administration and underdeveloped financial markets (Collier and Gunning, 1998; Aregbeyen, 2007).

## 2.2 Inflation–Growth Nexus

### 2.2.1 Theoretical Literature

Macroeconomic policy, among others, aims at high economic growth with low inflation. High inflation has adverse effects on economic efficiency and growth through greater uncertainty about future and, grater dispersion of relative prices. In either case, allocative signals sent out by the price system are flawed and hence economic agents find it difficult to make optimal decisions and thus depress investment and growth (Ma, 1998). High inflation continues to be one of the major development constraints in most developing economies.

More often, literature on inflation-growth relationship tries to address three key questions. First, is there a robust inverse relationship between inflation and growth? Second, is there a ‘kink’ in the relationship such that, at very low levels of inflation, the relationship is positive, but at higher levels of inflation the relationship is negative? Third, does inflation have to reach some minimum ‘threshold’ before the growth effects become harmful? Fischer (1993), Barro (1995) and Espinoza *et al.*, (2010) argue that at the operational level, there is a recognition that the growth-inflation relationship depends on the level of inflation. At some low levels, inflation may be positively correlated with growth, by “greasing the wheels” of the economy or as a signal of overheating, but at higher levels, inflation is likely to be harmful to growth. Structuralists believe that inflation is essential for economic growth (Mallik and Chowdhury, 2001).

The inflation-growth nexus is characterized by several distinct schools of thought, classical theory, Keynesian, Monetarism, Neo-classical, Neo-Keynesian and New-classical theories. Gokal and Hanif (2004) survey the different paradigms. These paradigms are reviewed here.

The classical theory maintains that growth is self-reinforcing due to increasing returns to scale. Savings create investment and economic growth, while income distribution is the major determinant of the speed of economic growth. Profits decline not because of a drop in marginal productivity, but due to competition for workers, which bid up the wages. Thus, the inflation-growth relationship in the classical context is implicitly suggested to be negative through high production costs which impacts adversely on the firm's profitability.

The traditional Keynesian model, however, frames the inflation and economic growth relationship in the context of aggregate supply (AS) and aggregate demand (AD) curves. In the long-run the economy is assumed to be in a steady-state. The adjustment of AS and AD curves yields a path with initial positive relationship between inflation and growth. The inflation-growth path turns negative towards the late part of the adjustment path of AS and AD. The initial positive relationship is caused by two factors: first the time-inconsistency problem. That is, producers produce more output due to the perception that only prices of their products have increased, while in reality overall prices would have increased. Second, some firms could be bound by agreements to supply goods at later dates at an agreed price. The negative relationship between inflation and output growth in the latter part of

adjustment is framed under stagflation which occurs when inflation rises as output falls or remains stable. The model maintains that there is only a short-run trade-off between output growth and inflation. Monetarists argue that in the long-run equilibrium values of real variables such as GDP are independent of the growth rate in money supply, suggesting neutrality of money.

The Neo-classical models are framed from two grounds. First, the “Tobin effect” thesis suggests that high inflation causes economic agents to substitute money for real and interest earning assets which increase capital accumulation and promotes economic growth. Thus, inflation and output growth are positively related. Second, the “Stockman effect” thesis operates through substitution between labour and leisure time. It alludes that workers shift away from labour to leisure as the real value of wages is eroded by inflation. Since the marginal product of capital is positively related to quantity of labour, a drop in the supply of labour definitely would reduce return to capital, steady-state quantities of capital and output growth.

In the Neo-Keynesian setting, inflation depends on the level of actual output and the natural rate of unemployment. If the output gap is positive and unemployment rate is below the natural rate, all else equal, the economy will accelerate towards higher inflation and unemployment rates with declining output.<sup>18</sup> The negative gap means excess capacity, where inflation decrease as output grows, creating disinflation with

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<sup>18</sup> The output gap is the difference between actual GDP and the potential output (optimal level of production given the institutional and natural constraints)

positive output growth. Zero output gap at the natural rate of unemployment will not change inflation (vertical Phillips curve).

New-classical theory maintains that since capital and money are complementary and inflation is tax on capital, an increase in inflation discourages savings and thus slows capital accumulation and economic growth.

The Phillips curve, however, demonstrates a non-linear and inverse relationship between inflation and unemployment growth. A trade-off appears from low unemployment, which has been associated with high inflation, and vice versa in the 1950s. The implications of the 1970s where the inflation-unemployment curve was shifting up and to the right, made unemployment become associated with higher levels of inflation. That is, stagflation cast doubt over the reasoning of the Phillips Curve. Monetary economists, such as Friedman (1968) and Phelps (1967) proposed an expectations-augmented Phillips Curve to explain the phenomenon of stagflation.<sup>19</sup> They assert that in the short-run there is still a negative relationship between inflation ( $\pi$ ) and unemployment for a given inflation expectation, which acts as a shift variable in the model. With zero inflation expectations, the model collapses to the original Phillips curve, while with positive inflationary expectations ( $\pi^e > 0$ ), the Phillips curve tends to shift upwards. Where actual and expected inflation are the same ( $\pi = \pi^e$ ), the long-run Phillips curve relationship is attained.

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<sup>19</sup> The original Phillips curve is  $\pi = \alpha U, \alpha < 0$ , where  $\pi$  and  $U$  represent inflation and unemployment rates, respectively, while the expectations-augmented Phillips Curve is  $\pi = \alpha U + \beta \pi^e, \alpha < 0, \beta > 0$ , where  $\pi^e$  is inflation expectations, and  $\beta$  is expectation adjustment parameter.

If  $\beta = 1$  (expectations are fully carried through), the long-run Phillips curve must be vertical, which means there is no trade-off between inflation and unemployment in the long-run.<sup>20</sup>

### 2.2.2 Empirical Literature

Several empirical studies have been carried out to establish inflation threshold points.<sup>21</sup> The results differ substantially across countries (Hussain, 2005; Ghosh and Phillips, 1998). It is noted that, threshold points depend on the level of economic development, degree of capital mobility and the structure of the economy or the exchange rate regime in place (Ghosh, 2001).

The study by Sarel (1996) uses panel data for a sample of 87 countries over the period 1970 to 1990, and it investigates the inflation-growth nexus with a fixed effect technique framework. The study finds the threshold level to be 8%, above which inflation impact negatively and significantly on growth. Nell (2000) considers a single-digit inflation to be stable and positive to growth, Ghosh and Phillips (1998) suggest that low inflation rate at around 2 to 3% a year or lower is generally associated with faster growth, but rapid disinflation may also retard economic growth at least in the short-run.

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<sup>20</sup> It is maintained in this set up that the formation of inflation expectations is backward looking or adaptive. That is, not all information is available to economic agents during their formation of price expectations:  $\pi_t^e = \lambda \pi_{t-1} + (1 - \lambda) \pi_{t-1}^e$ , Where  $\lambda$  and  $(1 - \lambda)$  are adjustment parameters of weights. It states that the expected rate of inflation at time  $t$  is only a weighted average of actual inflation rate and the expected inflation rate in the previous period, the equation which is commonly interpreted as an appropriate measure of inflation inertia, such that if  $\lambda = 1$ , then  $\pi_t^e = \pi_{t-1}$ . This definition of backward-looking inflation expectations is used as a proxy for inflation inertia.

<sup>21</sup> Inflation-threshold point is a cut-off point beyond which inflation is detrimental to growth.

The study by Barro (1995) uses regression equations to estimate effects of inflation on growth in a large sample of 100 countries over the period 1960 to 1990. By using instrumental variables (IV) technique the study finds a negative relationship between inflation and growth. A 10% inflation rate reduces growth rate of GDP real per capita by 0.2 to 0.3% per annum, and it is accompanied by a drop in investment-GDP ratio of about 0.4 to 0.6%. Ghosh and Philips (1998) use panel regression for 145 countries from 1960 to 1996. The study concludes that inflation and growth are positively correlated at between 2% to 3% rates of inflation. The relationship is reversed and convex at higher inflation rates, where economic growth declines rapidly at inflation rates of 10% to 20% per annum, but less rapidly at inflation rates of 40% to 50%.

Khan and Senhadji (2001) use econometric analysis using data from 140 developed and developing countries for the period 1960 to 1998. The study finds an inverse relationship between inflation and growth, citing inflation threshold above 1% to 3% in developed countries, and 11-12% range for developing countries. Espinoza *et al.*, (2010) use a smooth transition mode in a panel of 165 countries and data spanning the period 1960 to 2007 to revisit the inflation-growth nexus. The study concludes that for emerging market economies and oil exporting countries, inflation above 10% adversely affects growth, while for advanced countries, the threshold is much lower.

Country specific studies include Fabayo and Ajilore (2006) for Nigeria during 1970 to 2003. The study finds that a threshold level of 6% was ideal for Nigeria, and that

an inflation rate below the threshold level strongly reinforces growth, while that above the threshold level retards economic growth. Another study by Adeleke (2012) uses econometric techniques over the 1970 to 2009 period. The study finds unidirectional causality, moving from inflation to real GDP, with no response from output growth to inflation. The inflation-growth nexus was found to be negative at 8% threshold level. The study indicates that the threshold level is not permanent, it keeps on changing as the structure of the economy evolves.

In summary, it is evident from empirical studies on inflation growth-nexus that there is no consensus on a threshold level above which inflation deters economic growth. Such divergent views are even wider in individual countries case studies. However, most studies cite a single-digit zone to be the ideal level.

## **2.3 Fiscal Adjustment and Economic Growth**

### **2.3.1 Theoretical Literature**

Macroeconomic instability including huge debts, high levels of inflation, economic stagnation, and huge recurrent public deficits have been conspicuous in developing countries since 1970s. The debt and fiscal crises in particular forced many developing countries to undertake adjustment programs. The immediate aim of these programs was to stabilize the economy by eliminating the main sources of macroeconomic imbalances. To help restore growth, these programs included structural reforms in the areas of trade, financial, agricultural and public sector management policies. These reforms, designed to improve resource allocation and broaden the scope of market mechanisms, were heavily criticized for their alleged

ideological bias and poor design (Faini and de Melo, 1991). Nonetheless, fiscal policy came to be an essential component of adjustment programs. On the one hand the recovery of fiscal discipline was viewed as a prerequisite to macroeconomic stabilization. On the other, the reform of existing fiscal incentives was viewed as a fundamental step in eliminating the major growth-retarding constraints.

The main tool in orthodox approach to stabilization has been fiscal adjustment viewed as necessary for sustained money growth compatible with low inflation and public sector solvency (Agenor and Montiel, 2008).<sup>22</sup> Moreover, fiscal indicators such as budget deficits and the level of government spending as well as macroeconomic performance indicators, such as inflation, the current account balance and economic growth influence each other in both directions (Schmidt-Hebbel, 1995). The IMF approach to fiscal adjustment focuses on the role that sound and sustainable government finance play in promoting macroeconomic stability and growth, whose achievement and maintenance requires adjusting fiscal policy and strengthening fiscal institutions (Segura-Ubiergo *et al.*, 2006).

Strengthening public sector savings has been one of the major objectives of the fiscal consolidation, with the aim of making available additional domestic resources to support productive public investments, especially infrastructure and human capital to complement private sector activities (Nishishabi *et al.*, 1992). Fiscal consolidation is

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<sup>22</sup> Fiscal adjustments or fiscal consolidations are therefore, instances of sharp government budget deficits reduction attained through expenditure reduction, switching or revenue enhancing. Fiscal consolidation requires a sustained adjustment in the fiscal balance, covering revenue and expenditure measures deemed necessary, as recurrent public deficits, regardless of its sources and composition, impede growth (Fofack, 2010).

important if it can achieve long-term goals of economic growth and lasting poverty reduction, while shading off fiscal vulnerabilities, such as building up public debt.

The growth effect of fiscal consolidation is an issue of policy concern in the short-run. The growth impact of a large-scale adjustment would depend on the composition of the measures adopted and will change over time. In the absence of any offsetting policies, growth is likely to slow down in the short-run due to the withdrawal of demand. However, over the medium term period, the benefits of fiscal consolidation are likely to dominate. Structural reforms could help offset the negative impact of fiscal consolidation and raise medium-term potential growth. In this context, policies aiming at raising productivity of the services sector through deregulation or increasing competition and labor market flexibility could support fiscal consolidation through higher tax revenues.

According to Segura-Ubiergo *et al.*, (2006) fiscal adjustment affects economic activities through three channels. These are resource allocation, income distribution and stabilization. The first two channels capture the effects of tax composition and public expenditure on relative price and factor returns, while stabilization refers to the impact of fiscal policy on short-term macroeconomic activity. The long-term (the supply side) effects of fiscal adjustment depend on its impact in the main growth determinants through resource allocation, income distribution and stabilization. This also depends on factor accumulation and technological progress. That is, the efficiency in utilizing the existing stock of resources, accumulation of physical,

human and other forms of capital. Technological progress is also subjected to an absorptive capacity of a country.

The demand side or short-term effects of fiscal policy are conditioned on, among other factors, changes in fiscal balance, specific changes in public expenditure and taxation as well as its financing. The expectations of economic agents hinge on the mode of financing and its medium-term effect on debt sustainability and overall macroeconomic stability.

Schmidt-Hebbel (1995) shows that the long-term expansionary effects of fiscal consolidation on growth work through two channels. The first channel is fiscal space as well as saving for higher domestic public investment. The second channel is through reduction in financial and money market distortions as well as macroeconomic instability. In the first channel, the reduction of fiscal deficit entails a combination of higher saving through cuts in public consumption spending as well as low but effective public investment that is complementary to private investment. In the second channel fiscal adjustment can contribute to growth through improvement in financial intermediation and macroeconomic stability, which enhances resource allocation and raises the quantity and quality of private investment. Thus, fiscal adjustment has been associated with higher growth primarily through two channels. The reduced government borrowing requirements, which curtails the need to monetize budget deficits, and a credibility effect that signals a political commitment to long-term fiscal sustainability and macroeconomic stability (Segura-Ubiergo *et al.*, 2006).

Moreover, composition of fiscal adjustment matters for macroeconomic stability and growth. Literature shows that improved fiscal position through reduction in government wage bill and public transfers rather than increasing revenues and cut-in public investment, can foster economic growth even in the short-run (Gupta *et al.*, 2005). Thus, expenditure-based adjustment that succeeds in cutting the least productive spending tend to last longer and can be expansionary, while those that focus entirely on tax increases and cuts in public investment tend to be short lived and counterproductive (Alesina and Perotti, 1995; Alesina and Ardagna, 1998).

In a stagnating economy fiscal adjustment is a necessary catalyst for higher economic growth, whose success is conditioned on, among other factors, broader public sector reform and strengthening of monetary policy by immunizing it from fiscal demands (Schmidt-Hebbel, 1995). The fiscal consolidation and growth relationship is also influenced by a country's initial conditions in terms of whether it has reached a certain level of macroeconomic stability or not. It is hypothesized that there is a one-to-one correspondence between economic growth and macroeconomic stability, which is viewed as a prerequisite for sustainable economic growth (IMF, 1987; Fofack, 2010). Thus, expenditure reduction in countries that have not yet achieved a certain degree of macroeconomic stability are likely to be expansionary and growth-enhancing than countries that have already achieved macroeconomic stability. Increase in public spending in an unstable economic environment, even if potentially productive may not have a salutary effect on growth. By contrast, countries in post-stabilization that have attained a certain level of macroeconomic

stability can have flexibility over expenditure priorities, and the ensuing deficits could raise rather than reduce economic activity (Gupta *et al.*, 2005).

While the standard Keynesian theory predicts that fiscal consolidation is recessionary, notably through its adverse affect on aggregate demand, the supply-side theorists disagree. Supply side theorists assert that if a credible program of government spending cut such as tax cuts and decrease in interest rates accompany fiscal adjustment, consolidation can have crowding-in effects on private investment and consumption that can eventually be expansionary and stimulate economic growth.<sup>23</sup> The contractionary effects of deficit reduction depend on incidence of the economy's market rigidities and externalities. The theory behind expansionary fiscal contractions centers on two aspects. First is the expectations view, which suggests that if forward-looking consumers and investors anticipate long-run tax reductions because of a cut in public expenditure today, they may increase expenditure now and offset the direct effects of fiscal contractions. The second view suggests that fiscal consolidation that results from cutting public spending, especially transfers and the government wage bill, rather than increasing taxes are more likely to be successful and expansionary (Agenor and Montiel, 2008). Thus, this strand of literature suggests that there are circumstances in which expansionary fiscal policy cannot be used to pull an economy out of recession, in both industrial and developing countries, particularly when levels of public debt are already high (Baldacci *et al.*, 2003; Alesina and Ardagna, 2010).

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<sup>23</sup> This is also called expansionary fiscal contraction

Generally, the theoretical framework highlighted above assumes that fiscal policy can affect the long-run and the short-run growth rate via savings behavior as well as human and physical capital formation. However, initial macroeconomic and fiscal conditions dictate the pace of growth trajectory. These include among others the size of the industrial sector and the levels of macroeconomic instability. Correlation between fiscal adjustment and growth is stronger for countries that need to achieve macroeconomic stability, but less clear for those that have already achieved macro-stability (Segura-Ubiergo *et al.*, 2006).

### **2.3.2 Empirical Studies: Studies outside Tanzania**

Study by Schmidt-Hebbel (1995) uses cross-country econometric evidence drawn from a large sample of 93 countries (36 from Africa, 21 from Latin America Countries (LAC), 17 other Less Developed Countries (LDCs), and 19 from OECD to find the relationship between fiscal adjustment, macroeconomic performance and long-term growth over the period 1960 to 1990. The findings of the study indicate that the LDCs (mostly Asian economies) display more macroeconomic stability than African and LAC, with growth performance at the same level as OECD countries. Public deficits are sensitive to short-term domestic and foreign shocks, thus low public deficits and central bank independence contribute significantly to macroeconomic stability and economic growth.

Calamitsis *et al.*, (1999) use panel data for a sample of 32 countries in Sub-Saharan Africa for the period 1981 to 1997 to estimate the impact of structural adjustment on economic growth. The results indicate that per capita real GDP growth is positively

influenced by economic policies that raise the ratio of private investment to GDP, promote human capital development, lower the ratio of the budget deficit to GDP, safeguard external competitiveness and stimulate export volume growth. The study concludes that the growth recovery in Sub-Saharan Africa (SSA) since the mid-1990s is explained by improved performance in private investment, human capital development, reduction in budget deficit, stimulated export volume and external competitiveness.

The study by Gupta *et al.*, (2005) assesses the effects of fiscal adjustment and expenditure composition on economic growth in a sample of 39 mostly low-income Sub-Saharan African countries during 1990 to 2000 by using an econometric model. The study comes with a number of conclusions. First strong budgetary positions are generally associated with higher economic growth in both the short and long run terms. Secondly, fiscal consolidations achieved through curtailing current expenditure are more conducive to growth than those on public investment. Thirdly, fiscal adjustments tend to have the most positive effects on growth when they lead to a reduction in the domestic borrowing requirement of the government. Lastly, that the fiscal consolidation-growth nexus is also influenced by a country's initial fiscal conditions. That is, whether a country has reached a certain degree of macroeconomic stability or not.

Segura-Ubiergo *et al.*, (2006) analyze the relationship between fiscal adjustment and real GDP growth in a panel of 26 transition economies during 1992 to 2001 by using cross-country regressions. The study finds a positive and statistically significant

relationship between fiscal adjustment and growth. In particular the key findings are that the correlation between fiscal adjustment and growth seems stronger the higher the initial level of the deficit, and that when fiscal adjustment exceeds about 10% of GDP, the positive impact on growth begins to decline. Also, the correlation between fiscal adjustment and growth is stronger for those countries that need to achieve macroeconomic stability. However, for countries that have already achieved macroeconomic stability, the correlation between fiscal adjustment and growth is less clear. The analysis of country experiences suggests that fiscal adjustment is likely to have been associated with higher growth in transition economies primarily through two channels. The first channel is reduced government borrowing requirements, which reduced the need to monetize budget deficits, and the second is through enhanced policy credibility, which signaled a political commitment to long-term fiscal sustainability and macroeconomic stability.

Studies by Perotti (2011) and Cottarelli and Jaramillo (2012) note that, in cases where a sharp tightening of fiscal policy has been accompanied by an economic expansion, the output expansion typically reflects exchange rate depreciation and a relaxation of monetary conditions rather than confidence effects per se arising from fiscal tightening. Thus, in the absence of an independent exchange rate or monetary policy, fiscal consolidation is likely to be accompanied by lower economic growth.

## 2.4 Fiscal Deficit, Money Supply and Inflation

### 2.4.1 Money Supply and Inflation: Theory

Inflation is a process of continuous rise in general price level (Laidler and Parkin, 1975). The rate of change of the general price level, normally expressed as a percent per annum is inflation. A doubling of all prices, for example, means halving the value of money. In the discussion of the causes of inflation and its remedial actions, literature is often organized around the traditional cost-push versus demand-pull theories, as well as structuralist explanations.<sup>24</sup> Demand-pull theories can either be the monetarist approach (quantity theory), which emphasizes the causative role of monetary changes, or non-monetary impulses as emphasized by Keynesian. Monetarism has its roots in the classical economic theory whose theoretical foundation was presented by Friedman (1968, 1970) in the quantity theory of money (QTM). In demand-pull or excess demand theory, inflation occurs because aggregate demand is “pulled” above (or is in excess of) what the economy is capable of producing (or supplying) in the short-run. As a result, domestic market for goods and services experiences a continuous increase in the price level emanating from continuous periods of excess demand.

Sources of demand-pull and, therefore, demand-pull inflation could be traced to changes in monetary or fiscal policy or a change in private spending behavior, which shift aggregate demand curve. In monetarist QTM context, there are two approaches in which inflation is considered, namely static and dynamic. In the static approach, it

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<sup>24</sup> In practice, it is not always easy to decompose the observed inflation into demand-pull and cost-push components. The process is dynamic and the shocks to prices are mixed and inertial in inflation may also cause future inflation.

is assumed that velocity and income levels (potential and actual) are given, and thus price changes only when money stock is changed. That is, the general price level is solely an increasing function of money supply such that excess money supply, other things being equal, exerts an upward pressure on demand for the goods and services, leading to a build up of prices. In this regard, the QTM avows that inflation is determined by the rate of growth of money supply. In extreme interpretation, the monetarist school maintains that “*inflation is always and everywhere a monetary phenomenon*”, meaning that, it can only be explained by monetary factors. It follows that since the rate of growth of money is a policy-determined variable, under the strict quantity theory approach the rate of inflation also becomes policy-determined (Friedman, 1968; Gupta, 1988). If for any policy reason the stock of money is increased *ceteris paribus*, the demand for goods and services will also increase and thus, exert an upward pressure on prices, if output cannot be increased to meet the growing demand. The dynamic approach assumes the growth of real income, and thus only excess money supply above the real growth of the economy is inflationary.

In the Keynesian theory, the pressures of excess demand generate inflation as an economy approaches and exceeds the maximum attainable level of output with short-run wage rigidities. At the maximum attainable output, if aggregate demand increases, for example due to autonomous expenditure, output cannot follow and the only way the goods market clears is by a rise of prices. However, the price increase is a one-time rise that does not lead to inflation, which is a sustained increase in prices. Increased prices in the short-run raise profits for firms, with unchanged nominal wages real pay decreases. As a result, aggregate demand will go down and

thus closes the inflationary-gap. To be inflationary, the process entails upwards adjustment of the money wages, which raises aggregate demand again and thus the inflationary-gap re-emerges. If the wage-price lag mechanism continues to work, an inflation spiral occurs, which can only be defeated by reducing aggregate demand through increased taxation and/or cuts in government spending. Keynesian economists treat demand-side shocks as a primary cause of inflation (Kibritcioglu, 2001).

Monetarists and Keynesians differ in explaining the sources of excess demand. While the Keynesians emphasize non-monetary impulses, such as changes in autonomous real expenditure components of government and private investment (and exports for an open economy), the monetarists emphasize the causative role of monetary changes (Gordon, 1976). Notably, some commentators however, point to supply-side developments in explaining inflation. This structuralist school of thought contends that supply side constraints and cost push factors drive up prices of specific goods and services. The structuralists explain the long-run inflationary trend in developing countries in terms of structural rigidities, market imperfection and social tensions. Such rigidities include inelastic nature of food supply relative to demand (Malthusian approach), constrained import capacity due to limited foreign exchange, administered prices, wages, and import prices, natural and man-made calamities, transport and raw material deficiencies and uncalled for inefficiencies such as mismanagement of industries and parastatals which exacerbate the response to weak structures (Kirkpatrick and Nixon, 1976; Thirwall, 1974; Aghevei and Khan, 1977). Monetary accommodation of the structural deficiencies tends to worsen the situation.

While the structuralist explanation of inflation have been cited as more relevant in developing countries, the monetarist approach in inflation surfaces in both developed and developing countries. In the 1950s, the theory of cost-push inflation appeared and largely refused the demand-pull theories and emphasized instead, autonomous increase in some important components of cost as the true sources of inflation. The cost-push theories, therefore, attribute inflation to non-monetary supply side effects that changes the unit cost and profit mark-up components of the prices of individual products (Humphrey, 1998). The push forces operate through institutional factors such as wage push from labour unions facing an inelastic demand curve for labour and/or profit-push (mark-up) generated through administered pricing. In particular, the cost-push theory maintains that an increase in prices of factors of production (wage, rent, profit, and interest rate) is the major cause of inflation. It is worth noting that the monetarist explanation alone is inadequate in explaining the inflation phenomenon in developing countries fully. Thus, empirical studies mostly blend monetarist and structuralist as well as exogenous factors in attempting to explain sources of inflationary pressures in developing economies.

#### **2.4.2 Fiscal Deficit and Money Supply: Theory**

Persistent low recurrent savings relative to developmental roles of the state in developing countries has inevitably increased budget deficits and the public debt. However, macroeconomic effects of fiscal deficits depend on how it is financed since each major type of financing corresponds to economic imbalances, if used excessively. Excessive money creation to finance deficits leads to inflation; foreign

reserve use is associated with the onset of exchange rate crises; foreign borrowing may result into an external debt crisis; and, domestic borrowing may not be accessible due to narrow financial markets or if feasible, crowds-out private investment and consumption due to higher real interest rate; external borrowing may lead to current account deficit and real exchange rate appreciation, the outcomes that impact negatively on economic growth (Anand and van Wijnbergen, 1989; Fischer and Easterly, 1990; Easterly and Schmidt-Hebbel, 1991; Schmidt-Hebbel, 1995; and Gupta *et al.*, 2002)

Given limitations of deficit financing, some options are not easily accessible especially in developing countries. This leaves deficit monetization or “printing money” as the only easily accessible window of finance for developing countries. Printing money is the only option that even a weak government can enforce (Gupta *et al.*, 2002). By printing money the central bank may finance the government deficit through a number of ways. These are direct credit to the government; purchase of the government debt (bonds) by the central bank at the time of issue; or the central bank buying government debt held by the public through, among others, open market operations (OMO). Through printing money the equivalent amount of reserves are injected into the economy and thus exerts an upward pressure on money supply (Piontkvsky, 2001).

Government deficits and its financing have received more attention since the late 1960s due to its serious after-effects of monetary expansion. According to Friedman (1968) monetary authorities could control the inflation rate, especially in the long-

run, by controlling money supply and budget deficits could be inflationary only to the extent that they are monetized. Sargent and Wallace (1981) argue that if the government reduces the rate of printing money, and instead increases borrowing, it would definitely increase the public debt. Thus, either deficit would be higher in future or if it were to keep it constant the central bank would be obliged to print more money, which is inflationary, at least in the long-run.

The literature also points to self-perpetuating process embodied in budget deficit, money supply and inflation, the so-called ‘Oliver-Tanzi effect’. That is both government revenue and expenditure are affected by inflation, and expenditure adjusts more rapidly than revenue to a change in the price level, which widens the budgetary deficit. Thus, government expenditures are adjusted upward almost automatically to keep pace with inflation while revenues adjust at a slower pace. Given the lag structure in revenue and expenditure, even if the government is in a balanced budget, in the long-run a deficit would be created (Kilindo, 1992).

It is also noted that if the time path of government spending and taxes are exogenous, bond-financed deficits are unsustainable because the resulting high interest rates and eroded credibility due to indebtedness problem would eventually force the central bank to monetize the deficit and thus increase money supply. The framework which links money supply and the budgetary process is the government budget constraint.

The government budget constraint (GBC) provides the link between expenditures and alternative sources of financing. Anand and van Wijnbergen (1989), Donbusch

and Fischer (1990), Sachs and Larrain (1993), Agénor and Montiel (1999), and Piontkvsky *et al.*, (2001) derived the relationship between fiscal deficits and money creation in a small open economy where the central bank lends to the central government only. The consolidated budget of the central government is presented as in equation 28.

$$\Delta BL + \Delta D + E\Delta F = P(g - t) + iD + i^f EF + i_c BL \quad (2.8)$$

where,  $\Delta$  indicates a rate of change.

The left hand side of equation (2.8) lists the sources of government revenue, through accessing credit from the central bank ( $BL$ ), issuing domestic debt ( $D$ ), or foreign debt ( $F$ ). The right hand side shows the expenses of the public sector. Where,  $[g-t]$  is primary (non-interest) fiscal deficit, constituted of real public spending ( $g$ ), on goods and services, including current and capital expenditure, real tax revenue (net of transfer payments) ( $t$ ), domestic interest rate ( $i$ ), foreign interest rate ( $i^f$ ), the interest rate paid by the government on central bank loans ( $i_c$ ), which is less than domestic interest rate ( $i_c \leq i$ ), the nominal exchange rate ( $E$ ) and domestic price level ( $P$ ).

The central bank balance sheet in the economy is given by  $M = BL + ER - NW$ , where,  $M$  is the nominal stock of base money,  $R$  is the stock of foreign reserves (foreign currency deposits),  $E$  is the exchange rate, and  $NW$  is central bank's accumulated profit or equivalently, it's net worth. Profits of the central bank consist of the interest received on its loans to government, its interest earnings on foreign reserves and capital gains from revaluation  $[(\Delta E)R]$  where  $\Delta E$  is a change in

exchange rate:  $NW = i_c BL + i^f ER + (\Delta E)R$ . Consolidating government and the central bank budget constraints yield the overall public sector deficit.<sup>25</sup>

$$\Delta BL + \Delta D + E \Delta F - NW = P(g - t) + iD + i^f E(F - R) - (\Delta E)R \quad (2.9)$$

Substituting  $\Delta BL = \Delta M - E(\Delta R) - (\Delta E)R + NW$  in equation (2.9) gives,

$$\Delta M + \Delta D + E(\Delta F - \Delta R) = P(g - t) + iD + i^f E(F - R) \quad (2.10)$$

Defining net public foreign debt as  $F^f = F - R$  yields:

$$\Delta M + \Delta D + E(\Delta F^f) = P(g - t) + iD + i^f EF^f \quad (2.11)$$

Equation (2.11) is the budget constraint of the consolidated public sector which shows that there are three ways to finance a budget deficit.<sup>26, 27</sup> First, is borrowing from the central bank, that is, increasing monetary base ( $\Delta M$ ). Second is increase of public's (foreign and domestic) holdings of debt ( $\Delta D$ ). Third, is running down foreign exchange reserves (loss of foreign exchange reserves) at the central bank ( $\Delta F^f$ ). However, Piontkvsky *et al.*, (2001) disaggregate further the financing modes to five. These include borrowing from the central bank or “monetization” of the

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<sup>25</sup> Note that, the integration of the central bank and government accounts yields a net debt i.e. foreign debt minus net foreign assets of the central bank ( $F^g - R$ ), and the central bank credit to government is offset by government deposits held at the central bank, since it is a claim of one public entity over the other.

<sup>26</sup> This set up excludes non-tax and foreign grants as sources of revenue, notwithstanding its importance in developing economies.

<sup>27</sup> However, the effects of large public deficits depend on: the scope of domestic and foreign financing; degree of diversification of financial markets, which determines the choice between money or bond financing and the composition of the deficit as well as expectation about future government policies on reducing the deficit (Agénor and Montiel, 1999).

deficit ( $\Delta M$ ); borrowing from the rest of the banking system ( $\Delta D$ ); borrowing from the domestic non-bank sector ( $\Delta D$ ); borrowing from abroad, or running down foreign exchange reserves ( $\Delta F^f$ ); and accumulation of arrears (deferred payments). Each mode of financing depends on the financial system and its development. However, it is common for developing countries to borrow from the central bank to finance its resource gaps due to its easiness in access.

Borrowing from the central bank, also called “printing money” or “monetization” of the deficit always leads to the growth of monetary base and thus money supply. Through monetization, the equivalent amounts of reserves are injected into the economy. Suppose a nominal deficit is defined as  $P(g - t)$  where  $P$  is the price level and  $(g - t)$  is the real deficit which is financed by treasury bonds sale to the public (domestic and foreign) and the central bank credit to government. It follows from (2.11) that:

$$\Delta M + \Delta D + E(\Delta F^f) = P(g - t) \quad (2.12)$$

Following the assumptions of Purchasing Power Parity (PPP) and the QTM (Sachs and Larrain, 1993), when the government borrows from the central bank in a fixed exchange rate regime, the money supply will increase. In order to defend the exchange rate parity, interventions in the foreign exchange market will be inevitable and thus reverses the money supply increase, at the expense of foreign exchange reserves. The foreign exchange shortage may force the country to devalue its

currency, and thus, cause more inflation. In this case, a change in total nominal deficit  $P(g-t)$  will be the same as change in the foreign exchange reserves ( $\Delta R$ ):

$$E(\Delta R) = P(g - t) \quad (2.13)$$

In a floating exchange rate regime, however, governments with high indebtedness tend to face difficulties in borrowing either domestically or externally, and often have foreign reserves shortage due to prolonged periods of large deficits. The only feasible option in such a situation is to borrow from the central bank. That is, if  $D = 0$  and  $F = 0$ , equation (2.12) becomes:

$$\Delta M = P(g - t), \quad (2.14)$$

That is, a change in money supply is equivalent to nominal deficit, which is presented in real terms as:

$$\frac{\Delta M}{P} = (g - t) \quad (2.15)$$

The real value of deficit  $(g-t)$  is equal to change in the real value of money supply (assume stable money multiplier such that the base money equals money supply) and the budget deficit is financed by seigniorage revenue ( $S_{rev}$ ):

$$S_{rev} = \frac{\Delta M}{P} = \mu m = \Delta m + \pi m \quad (2.16)$$

where  $\mu = \Delta M / M$  denotes the rate of growth of nominal stock of monetary base,  $m$  is real money balances, and  $\pi$  is inflation rate. The expression  $\mu m$  defines total seignorage as the product of the rate of nominal money growth ( $\mu$ ) and the real money balances ( $m$ ) held by the public ( $\mu$  is often referred to the tax rate and  $m$ , a tax base). The last expression shows the value of resources extracted by the government as the sum of the increase in real stock of money ( $\Delta m$ ), and the change in the real money stock that would have occurred with a constant nominal money stock due to inflation ( $\pi m$ ). In this set up, inflation acts just like a tax because people are forced to spend less than their income and pay the difference to the government in exchange for extra money.

When the government finances a deficit by printing money, the public offsets the effects of inflation by maintaining constant real balances (purchasing power) by increasing the holding of nominal balances. Thus, under a pure floating exchange rate regime, the budget deficit ends up in inflation, and higher deficits entail higher inflation rates. The resultant new inflation, therefore, increases again the government deficit which is financed by further money creation (Aghevli and Khan, 1977).

### **2.4.3 Empirical Literature: Studies Outside Tanzania**

Empirical studies on money and inflation are organized in three broad groups. These are those which focus on monetary approach and point to the clear relationship between money and prices; those which use a public finance approach and indicate that monetary expansion occurs in response to fiscal deficits; and those which

analyze structure and cost-push factors, highlighting the importance of oligopolistic pricing and other structural rigidities.

Since the work by Harberger (1963) the monetarist model has provided the theoretical framework in a number of empirical studies analyzing inflation in developing economies.<sup>28</sup> In a simple Harberger model, only excess money supply drives prices and thus inflationary. Thus, given the short-run supply side constraints, an expansionary monetary policy will result in higher prices. Tegen (1985) uses a monetarist model in six developing African economies, with special attention on the underlying lag-length and testing exogeneity of money supply, including structural stability. By using quarterly data, the monetarist model fits the data well. The study by Sain, (1982) finds that a monetary explanation of inflation does not fully account for inflation in six Asian countries. The study by Khan and Knight (1981), while still in the monetarist spirit, incorporate traded and non-traded goods prices along with exchange rate movements into a model of inflation process. The study finds that inflation is explained by both monetary and non-monetary factors. London (1989), in a study of selected 23 African countries finds that in addition to monetary factors, inflation is explained by structural and institutional factors, including inflationary expectations.

Until 1970s, studies regarding monetary aspects of the inflationary process in developing countries generally accepted the monetarist model. However, Parkin (1977), Rwegasira (1976), Saini (1982), London (1989), among others, affirm that

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<sup>28</sup> The stability of demand for real money balances is the main assumption in modeling inflation.

characterization of inflation as fundamentally a monetary phenomenon, especially in developing countries is unsatisfactory. The studies suggest that the monetarist model that takes into account prevailing conditions as opposed to the simple Harberger framework, would successfully capture the main elements of inflation in developing economies. Moreover, the Cagan (1956) unidirectional nature of causality between money and prices was put into question. It is more appropriately to view the causation between money and prices as running both ways (Sargent and Wallace, 1981).

An extensive body of theoretical literature has been developed to examine the relationship between budget deficits and inflation. There is a view that the primary cause of inflation in developing countries is recourse to money creation in the face of limited borrowing to finance large fiscal deficits –the ‘public finance view’ of inflation (Anand and Van Wijnbergen, 1989; Agenor and Montiel, 1999). Essentially, this is a variant of the structuralist approach (Simwaka, 2011). Thus the debate about causes of inflation in the literature is generally between the monetarist and structuralist approaches (Ocran, 2007).

Evidence of significant statistical links between fiscal deficits, money and inflation are mixed. A comprehensive analysis using single-equation regressions and vector autoregressive (VARs) by King and Plosser (1985) in 13 industrial countries does not find evidence on deficit and money growth relationship in all countries studied, except USA. Catao and Terrones (2005) use panel data to analyze the relationship between fiscal deficits and inflation in 107 countries. They reveal a strong positive

relationship between budget deficits and inflation among developing and advanced countries characterized by high-inflation, but not among low-inflation advanced countries. The study by Habibullah *et al.*, (2011) use an error correction model (ECM) framework over 1950 to 2009 for 13 Asian developing countries. The study finds existence of a long-run relationship between inflation and budget deficits.

In terms of causality, studies by Dutton (1971), Aghevli (1977) and Aghevli and Khan (1977, 1978), support self-generating process of deficit-induced inflation and inflation-induced deficits. Barnichon and Peiri (2008) examined the sources of inflation in 17 Sub-Saharan Africa countries by using panel cointegration technique. The study concludes that output-gap and real money-gap exert significant impacts on inflation in the sample countries. Saleh (2003) notes that even without monetization, deficits could still be inflationary through crowding out private investment and reducing the rate of growth of real output for a given level of aggregate demand and thus increase the price level.

By using multivariate cointegration and error correction model (ECM), several studies have tested the long-run relationship between inflation, money supply and budget deficit in individual country studies. However, findings have been mixed. Studies by Chaundry and Ahmed (1995) and Agha and Khan (2006) for Pakistan, conclude that inflation is affected by the governments' bank borrowing for budgetary support as well as monetization of fiscal deficits. Mukhtar and Zakaria (2010) use quarterly time series data to analyze the relationship between budget deficits money supply and inflation for the period 1960 to 2007 in Pakistan. The results suggest that

in the long-run inflation is not related to budget deficit but only to the supply of money, and there is no causal link between money supply and the budget deficit. In Turkey, Metin (1995) uses sectoral analysis approach and econometrics analysis and finds that fiscal variables dominate the inflationary process. The study notes further that disequilibrium in the labour market had insignificant effects on inflation, while money market imbalances had short-run effects. Akcay *et al.*, (1996), and Lim and Papi (1997) show that deficits monetization was inflationary in Turkey, while in Indian Ashra *et al.*, (2004) does not find any long-run systematic relationship between fiscal deficits and money supply.

The literature on inflation is very extensive in both cross-country and country specific studies in Africa. Chhibber *et al.*, (1989) include both monetary and structural factors in modeling inflation in Zimbabwe. The study finds out that monetary growth, foreign prices, exchange and interest rates, unit labour cost and real output are the main drivers of inflation in Zimbabwe. Chhibber and Shafik (1990), use a similar model for Ghana, suggesting that the growth of money supply is the major determinant of price growth in Ghana. While the parallel market exchange rates play a significant role in the general price developments, official exchange rates and wages exert negligible impact on inflation in Ghana. However, Sowa and Kwakye (1993) and Sowa (1994) use econometric analysis in Ghana, and conclude that supply side constraints are the main determinants of inflation in Ghana. Thus, the study by Chhibber and Shafik (1990) over emphasized monetary factors at the expense of supply side factors.

Ocra (2007) uses cointegration and ECM over the 1960 to 2003 period, and finds that growth in money supply and government of Ghana treasury bill rates, exchange rate depreciation and inflation inertia are the short-run determinants of inflation in Ghana. However, inflation inertia is singled out as a dominant factor. Adu and Marbuah (2011) use ECM model for the period 1965 to 2009. The study finds that changes in real output, nominal exchange rate, broad money supply, nominal interest rate and fiscal deficit play a dominant role in inflationary pressure in Ghana. The study concludes that, inflation in Ghana is explained by both structural and monetary factors.

Egwaikhide *et al.*, (1994) use an econometric approach to model the monetary variables and exchange rate relationships in a single equation model for Nigeria. The study concludes that money supply impacts positively on prices. The parallel market exchange rate mirrors inflation more than official exchange rate. Oladipo and Akinbobola (2011) investigate the nature and direction of causality among budget deficit and inflation in Nigeria over the period 1970 to 2005. The study finds out that there is no causal relationship from inflation to budget deficits, but the relationship from budget deficit to inflation is significant, which implies a uni-directional causality from budget deficit to inflation. In Kenya Ndung'u (1994) uses an econometric approach to conclude that monetary variables are the major determinants of inflation in the short-run. Duravell and Ndung'u (2001), used a dynamic ECM model of inflation for Kenya over the period 1974 to 1996. The study finds out that money supply and interest rates affect prices only in the short-run. The

exchange rate, foreign prices, and terms of trade have long-run effects on inflation, while inertial is important determinant of inflation in Kenya up until 1993.

Estimating an ECM using quarterly data for the period 1996 to 2009 the study by Sichei and Wambua (2011) in Kenya conclude that long-run proximate determinants of prices in Kenya are from money market (money supply, output or supply shocks, domestic interest rates) and foreign sector (exchange rate, foreign prices and terms of trade). In the short-run inflation is influenced by excess money supply, disequilibria in foreign sector, output gap, foreign inflation, changes in nominal wages, effective exchange rate and a rise in crude oil prices. Inertial is also cited to impact inflation in Kenya.

Andersson and Sjo (2000) use an error correction model using data from Zambia, and find that a combination of money supply and the exchange rate factors Granger cause price level. Nachege (2005) by using multivariate cointegration analysis and ECM, points to a strong and statistically significant long-run relationship between budget deficits and seigniorage in the Democratic Republic of Congo (DRC). The study further reveals that long-run inflationary impact of budget deficit is strong when the output growth is included in inflation and monetary growth equations. In Ethiopia Wolde-Rufael, (2008) uses bound test approach to cointegration based on annual data for the period 1964 to 2003. The empirical evidence reveals that there is a long run cointegrating relationship among inflation, money and budget deficits. Contrary to the experience of many other developing countries, the Ethiopian case does not show that budget deficits are a major source of growth of money supply.

The study by Simwaka *et al.*, (2011) use cointegration analysis to examine the relative importance of monetary factors in driving inflation in Malawi by using quarterly data for the period 1995 to March 2011. The findings indicate that although inflation in Malawi is a monetary phenomenon, exchange rate pass through plays a relatively more significant role in fueling cost-push inflation, while improved production helps to reduce inflationary pressure.

A study by the AfDB (2011) in East African economies reveals that the main driver of short-run inflation in Ethiopia and Uganda is a surge in money supply, while in Kenya and Tanzania oil price seems to drive inflation, although money growth has also made a significant contribution to the recent inflation in the two countries. The study further notes that the inflationary pressures in Ethiopia reflect deficit monetization, while the growth in private sector credit is the main source of pressure in broad money supply in Kenya and Uganda. Econometric analysis indicates that an effect of the world food prices is low in Tanzania (9%) but higher in Uganda and Ethiopia (13%). However, in Tanzania changes in domestic cereal production seems to have a large impact on inflation in the long-run.

#### **2.4.4 Studies Specific to Tanzania**

There have been several studies on the causes of inflation in the wake of structural adjustment and stabilization in Tanzania since the mid 1980s. There are studies which cite structural factors, improper internal policies and domestic production dependence on imported inputs, including oil, as the sources of imported and cost-induced inflation before economic recovery programs. Some, view the primary cause

of inflation in the country to be money creation in the face of limited borrowing to finance large fiscal deficits – the “public finance view” of inflation. Also a weak tax base, government overspending, parastatal inefficiencies and a large public bureaucracy which amplify the deficits in Tanzania have been cited. Others support the view that exchange rate pass-through is a major factor in inflationary developments owing to the import dependence of the country.

The study by Rwegasira (1974) links deficits and inflation for the period 1963 to 1972. The findings indicate that the central bank financing of expansionary government expenditure during the period is inflationary. In addition, inelastic agricultural output coupled with dwindling import capacity due to shortage of foreign exchange create shortage of goods and services and thus exert an upward pressure on prices. Furthermore, Rwegasira (1976) models money supply growth-inflation nexus in Tanzania. The study concludes that changes in income velocity strongly explained movements in the general price levels and balance of payments before 1969. Co-movement between money supply and the prices in the period after 1969 has been driven by monetization of deficits. The study further finds that monetary variables are weakly related to inflation, suggesting that structural factors have a strong inflationary impact in Tanzania. Hyuha and Osoro (1982) carried out a more analytical interpretation of Rwegasira (1976) by using a large sample size. The findings indicate that the general price level is inversely related to growth rate of real income and rate of interest (borrowing), directly and strongly related to growth of money supply unlike the findings from Rwegasira, 1976, imported inflation, and expected inflation.

Studies by Curry (1978) and Malima (1980) link inflation development in Tanzania to structural rigidities especially supply side constraints. Low production and productivity due to parastatal inefficiencies coupled with excessive money supply growth drive inflation in Tanzania. Ndulu (1975), Rwegasira and Kannewarf (1980), and Ndeshobola (1983) cite population pressures, external shocks, poor domestic policies, monetary accommodation, structural factors such as exchange rate depreciation and supply side bottlenecks as the factors that exacerbate and sustain inflationary pressures in Tanzania.

Ndulu and Hyuha (1984) point to factors that increase aggregate demand to have exacerbated the underlying structural inflation in Tanzania. These include credit expansion to maintain high rate of investment in the public sector, while productivity decline due to capacity constraints and a growing saving–investment gap. In another study, Ndulu and Hyuha (1989) cite some key structural constraints such as inelastic nature of food supply relative to growing demand, an import capacity that has lagged behind targeted growth rates and a weak structure of the economy that is prone to external shocks. Also the dominance of food weight in the National Consumer Price Index (NCPI) make food prices dictate the movements of the overall consumer price index.

The study by Kilindo (1992) uses econometric analysis to investigate reactions of government deficits to inflation for the period 1970 to 1988. The study finds that it is inadequate to regard money creation as exogenous with inflation in Tanzania since

the government through the central bank made money creation respond to inflation. The causal link between budget deficit, money supply and inflation was via monetization of the budget deficits, while the reverse link existed through huge deficits created by inflation and called for more central bank borrowing, which increased money supply and further inflation. The study further noted that government expenditures adjusted upward (faster) and almost automatically to keep pace with inflation, while revenues adjusted at a slower pace. The study also noted that even with balanced budget, deficit would be inevitable due to lagged structure of revenue. Other factors, such as structural bottlenecks and high import prices put pressure on the budget and thus inflation due to monetary accommodation.

Moreover, Mtui (1996), by using econometric analysis for the period 1970-1996 pointed to monetary factors, expected inflation, and exchange rates (parallel and official rates) as the major factors for price development during the period, while output growth had the strongest dampening effects on inflation in Tanzania. By using econometric analysis Ndulu (1997) found strong evidence of inflation inertia in Tanzania owing to lack of credibility. The study cited inflationary pressure from imported inflation and monetary expansion, while real growth had dampening effects on inflation in Tanzania.

The most recent studies on inflation in Tanzania include Rutasitara (2004), Mwase (2004), Solomon and Wet (2004), and Ndanshau, (2007). By using econometric analysis Rutasitara (2004) examined the major determinants of inflation in Tanzania with a particular focus on exchange rate regime changes for the period 1967 to 2002.

The study finds that inflation in Tanzania has been driven by monetary and fiscal factors, as well as structural constraints. In addition, prices in Tanzania have been driven by imported inflation and regime change from controlled (suppressed inflation) to the market based with full pass-through to prices. The study also notes that the parallel exchange rate had stronger effect on inflation in Tanzania until 1990s and improved GDP growth slowed down inflation. The study by Solomon and Wet (2004) by using cointegration analysis examines deficit-inflation nexus in Tanzania. The study finds the causal link that run from the budget deficit to inflation and cites monetization of budget deficit to be the main source of inflationary pressure in Tanzania.

Mwase (2006) examines the effects of exchange rate pass through to consumer prices by using structural Vector Autoregressive (VAR) models for the period 1990 to 2005. The study finds that exchange rate pass-through to inflation in Tanzania has been weak since the late 1990s. This implies that, observed depreciation of the currency during the period had less impact in domestic prices. However, the study caution that a decline in pass-through should not be interpreted as exchange rate fluctuations had less significance in explaining macroeconomic fluctuations in Tanzania. Ndanshau (2009) by using dynamic autoregressive distributed lag ECM, tests monetarist model of inflation during 1967 to 2005 period. The study concludes that the monetary factors could not fully explain inflation in Tanzania. Instead output growth and exchange rate exerts a relatively stronger influence on inflation.

## 2.5 Summary

The new growth theory postulates clearly the theoretical link between fiscal policy and growth, with emphasis on disaggregating tax revenue and government expenditures into distortionary and non-distortionary, between productive and non-productive expenditures, as well as expenditure composition, which are important for growth. Due to narrow tax base, inefficient tax administration and underdeveloped financial markets, LDCs resort to printing money (inflationary finance) to bridge the resource gaps. Contrary to standard Keynesian approach there is also a growing body of research mostly in industrial countries which suggests that there are circumstances in which expansionary fiscal policy cannot be used to pull an economy out of a recession, particularly when the economy is fiscally distressed. The composition of fiscal consolidations matters in fostering growth, and countries in post-stabilization era can have more room over expenditure priorities by allocating more resources to important targeted reform areas.

However, the literature underscores the role of government through public spending in augmenting private capital formation, especially in developing countries due to limited sources of revenue. Fiscal adjustment, which is a key component in orthodox structural adjustment programs supported by the IMF and World Bank, called for expenditure cuts or improved revenue mobilization. In order to meet the benchmarks, developing countries often cut expenditures across the board, which may impact negatively on some important components of growth projects.

The empirical literature on fiscal policy and growth offers little agreement on the existing relationship. However, the bulk of empirical literature find a significant negative effect of public consumption on growth, while the effects of public investment expenditures are found to be positive but less robust. The impact of deficit on growth depends on the financing mix and the outstanding debt stock. In particular, deficits are growth enhancing if financed by limited seigniorage, otherwise are inflationary.

Fiscal consolidations achieved through curtailing current expenditure are more conducive to growth than those on public investment, fiscal adjustments tend to have the most positive effects on growth when they lead to a reduction in the domestic borrowing requirement of the government, and fiscal consolidation-growth nexus is also influenced by a country's initial fiscal conditions. That is, whether a country has reached a certain degree of macroeconomic stability or not.

On inflation, monetary factors play dominant role in the long-run, in the short-run structural factors including food shortages affect prices. The inflationary effect of government deficits depends upon the means by which the deficit is financed and the impact of the deficit on aggregate demand. Fiscal deficit financed by the banking system, especially central bank has been an important driver of money growth and inflation in Tanzania.

The chapter has reviewed the impact of fiscal adjustment on growth and inflation. Specifically, it looks at the overall implications of fiscal consolidation, and some

aspects of fiscal component of a disinflationary program in Tanzania. This requires an appraisal of the trend in both fiscal and other macroeconomic variables in relation to growth and inflation deceleration in country. Chapter three is therefore intended to bridge the gaps that exist in the literature.

## **CHAPTER THREE**

### **FISCAL DEVELOPMENT, ECONOMIC GROWTH, AND PRICE MOVEMENTS IN TANZANIA: AN OVERVIEW**

#### **3.0 Introduction**

This chapter presents an overview of trends and components in major macroeconomic variables in Tanzania. It also follows the government macroeconomic policy changes since 1967. In particular the chapter traces the status of economic performance before and after the economic reforms implemented in the country since the mid 1980s. The chapter is organized in four sections. Section 3.1 centers on resource base, and evolution of the development plans and reform programs. Section 3.2 gives an overview of trends in macroeconomic performance, including fiscal performance. Price developments and proximate causes of inflation are components of sections 3.3 and 3.4, respectively, while section 3.5 summarizes the chapter.

#### **3.1 Resource Base, Development Planning and Economic Reforms**

##### **3.1.1 Resource Base**

Tanzania has vast natural resource potential in mining, agriculture, fisheries, forestry and tourism, that could catalyze the pace of country's economic development if well tapped. A small percent of these resources is tapped, leaving idle a huge amount of resources and thus denying the country a wide range of investment opportunities. In addition, the geographical location makes Tanzania a natural get-way to a number of land locked countries. This factor offers opportunity for Tanzania to serve as a

regional logistic hub to growing economies of land locked countries and in establishing economic processing zones.

The openness of the economy is greatly reflected by the fact that most economic activities heavily rely on imported inputs. Foreign exchange earnings depend on the export performance of primary commodities, with the current trend indicating a shift from traditional to non-traditional commodity exports. Therefore, shocks in the external sector such as slumps in commodity prices, decline in terms of trade, economic depressions and financial crises have an adverse impact on the economy. Furthermore, over reliance on rain-fed agriculture have detrimental effects on production for exports as well as domestic food supply.

### **3.1.2 Development Plans and Economic Reforms**

The recent macroeconomic history of Tanzania can be broadly grouped into three periods: first, the 1967 to 1985 period, based on socialist principles, epitomized by nationalization and wide spread controls of markets for products and resources as well as huge public investment programs in building parastatals; second the period 1986 to 1995, marked by the first generation reform efforts, and third, the 1996 to 2011 period, which witnessed a significant change in the economy, propelled by the second generation reforms.

#### *The 1967-1985 period*

At independence in 1961, Tanzania inherited a poor and foreign dominated economy with very limited social and economic infrastructure. The country had two distinct

features, namely a large traditional rural economy (growing food and cash crops) that supported over 80% of the population and a small capital-intensive modern urban manufacturing and service sectors.

Led by Mwalimu Julius Nyerere's philosophy of "people-centered development" the country adopted a tradition of formulating and implementing long term and medium term development plans since independence. The First Three Year Plan (1961-1964) aimed at fighting against illiteracy, poverty and weak health care system. The First Five Year Plan (FFYP) of 1964-1969 was revised in 1967 after nationalization of major means of production through the Arusha Declaration. The plan emphasized rapid economic growth and self-sufficiency in middle and high-level manpower. The Second Five Year Plan (1969-1974) had specific policies for implementation of Arusha Declaration.<sup>29</sup> The plan targeted mechanization of agriculture and industrialization through Import Substitution Industrialization Strategy (ISI) with the aim of attaining an annual growth rate of 11% for the manufacturing sector, increased investment in the sector from 22% to 25% of the monetary GDP, and average annual trade deficit of 4% of GDP. The plan also called for a zero growth of imports of consumer goods in line with self-sacrifice and self-reliance ideas (Edwards, 2012). In 1972, the government launched the Basic Industrialization Strategy (BIS) to accelerate creation of an industrial base in the context of import substitution industrialization. The Small Industries Development Organization (SIDO) was created to foster small-scale industrial firms for light manufactured

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<sup>29</sup> A legacy of Julius Nyerere after Arusha Declaration was a pervasive state sector, extending into virtually all areas of economic activity (Bigstern and Danielsson, 1999).

goods. The Third Five year Development Plan was launched in July 1976, although it was not implemented.

By early 1970s the economy was highly regulated. The government introduced import and exchange control measures including annual foreign exchange plan, and the annual finance and credit plan supported by a system of administered interest rates, devised as the main instrument of monetary policy in 1971. The Open General License (OGL) was introduced in 1972 to describe the list of products to be imported, while the Foreign Exchange Plan was devised to control the use of foreign exchange in accordance with national priorities. The National Price Commission (NPC) was formed in 1973 to administer prices for food and essential industrial items in order to shelter low income groups from the effects of inflation as well as preventing arbitrage among manufacturers and trades.

The Bank of Tanzania (BoT) was established by the Bank of Tanzania Act of 1965 and started operation in 1966 after the break-up of the East African Currency Board (EACB). The Act empowered the BoT to perform all traditional roles of the central bank. The BoT Act of 1965 was amended in 1978 to include a developmental role, which was to provide finance and offer guarantee facilities to banks and other financial institutions. The law also mandated the Bank to supervise banks and other financial institutions, the provision which was not in the BoT Act of 1965.

Financial parastatals were formed after Arusha Declaration, and these include the National Bank of Commerce (NBC) in 1967, the only commercial bank until 1984

when CRDB (formed in 1971) was transformed to a commercial bank. The National Insurance Company (NIC) was the only insurance company in mainland Tanzania, with Tanzania Development Finance Limited (TDFL), as a private institution and Tanzania Investment Bank (TIB) and Tanzania Housing Bank (THB), as the public institutions to provide industrial and mortgage finance. The system created either monopolies or oligopolies along the line of operations.

As a result of nationalization the number of public enterprises increased to 425 by 1984, from 42 public enterprises in 1967 (Moshi, 1998). However, widespread state ownership and intervention undermined economic performance. Instead of making positive contribution to the government coffers, the public enterprises were a drain on the national budget (Moshi, 1998). Controlled prices including interest rates, exchange rates and goods prices, inefficient and loss making public institutions, among others, were the main sources of macroeconomic imbalances that led to the economic crisis of the late 1970s and early 1980s.

Home-grown recovery programs, namely National Economic Survival Program (NESP) of 1981–1982 and Structural Adjustment Programs (SAPs) in 1982/83–1984/85 period were an attempt to unravel the crisis. The NESP initiative sought, through government intervention and intensification of the control regime to close the resource gap (Muganda, 2004), while the SAPs targeted, among others, restoration of macroeconomic balance, improved incentives, and a modest devaluation. The SAP could not be implemented in full due to failure of the government of Tanzania to reach an agreement with IMF and World Bank, mainly

due to disagreement on the level of devaluation required to remove the overvaluation and the subsequent exchange rate management policy (Lipumba, 1990). Nevertheless, the SAP package was useful in containing credit expansion set in motion since late 1970s (Kimei, 2000). For example growth of broad money supply decreased from 46.9% recorded in 1979 to 19.5% in 1982, further to 17.8% and 3.7% in 1983 and 1984, respectively.

#### *The Reform period: 1986-1995*

In a quest to recover from the crisis, the first generation reforms were instituted and implemented during the 1986 to 1995 period to address major distortions in the economy. These included, among others, gradual trade liberalization; measures for privatization and entry of private and foreign firms to the market in order to enhance competition; requirement of the public banks to take a commercial approach in lending to parastatals; price reforms, especially exchange rate and removal of commodity price control; and budget restrictions on the flow of subsidies, equity and other transfers to parastatals. There were a number key elements of the first generation reforms as presented by Edwards (2012). First was realignment of relative prices to encourage productive activities, including exports and strengthening of economic incentives. Secondly a progressive shift away from direct controls and interventions towards greater reliance on market forces. Third was restoration of fiscal and monetary discipline. Fourth was rehabilitation of the economic and social infrastructure and, Fifth was undertaking structural and institutional reforms to enhance efficiency of the economy and encourage expansion of private savings and investment.

The policy measures adopted in the 1984/85 budget are considered to have carried crucial commitments that led to an agreement with the IMF and World Bank to support the Economic Recovery Programs (ERPs) in July 1986.<sup>30</sup> The ERPs, especially ERP I (1986/87–1988/89), addressed issues related to the size of the state sector and areas of activity whose short-run objective was macroeconomic stability, especially price stability, through fiscal discipline. The ERP II (1989/90–1991/92) had three additional specific objectives, namely, improvement of the quality and quantity of social services, liberalization of financial sector, and privatization of public institutions.

#### *The Period from 1996*

Notable the short term programs of the early 1990s did not give satisfactory results due to absence of guiding development philosophy. Since 1996 deeper reforms, that is, the second-generation reform efforts were put in place in order to deepen the stabilization process. The Tanzania Development Vision (TDV) 2025 was launched in 1999 (and revised in 2010). The vision intends to transform Tanzania into a middle-income status country with a per capita income of US\$ 3,000 by 2025. By design, the TDV is operationalized in a series of five-year development plans. However, the prevalence of abject poverty in 1990s necessitated adoption of the short and medium term poverty reduction strategies as safety nets for the poor. Thus, the three year National Poverty Eradication Strategy (NPES) was formulated in 1998, operationalized by the Poverty Reduction Strategy Paper (PRSP). After three

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<sup>30</sup> The policy measures included reduction of a number of government ministries and replacement of cooperatives with crop authorities to ease government expenditure, a devaluation of the shilling by 26%, substantial increase in producer prices of major export and food crops, removal of subsidies in fertilizer and maize flour, and trade liberalization (Lipumba, 1989).

years of successful implementation of PRSP the government adopted a results and MDGs based strategy, known as the National Strategy for Growth and Reduction of Poverty (NSGRP) in 2005/06–2009/10 or popularly known in Kiswahili as MKUKUTA. NSGRP is informed by the aspirations of TDV 2025 and committed to the MDGs, with the aim of sustaining and scaling up achievements as well as addressing the challenges to growth and poverty reduction agenda.

Tanzania's financial and monetary system is significantly different from that of the pre-1986 era. The period from 1990 to 1996 is cited as very crucial in the Tanzanian financial sector reform process. During the period the Banking and Financial Institutions Act (BFIA) of 1991 was enacted, which liberalized the banking industry. Private banks became formally allowed in 1992 but began operations in 1994. Privatization of the large state-owned banks started with Credit and Rural Development Bank (CRDB) in 1996, followed by National Bank of Commerce (NBC) and National Microfinance Bank (NMB), respectively, in 2000 and 2005. Interest rates and foreign exchange markets were progressively liberalized with operations of bureau de change effected in 1992 followed by a weekly foreign exchange auction system introduced by the BoT in 1993. The Interbank Foreign Exchange Market (IFEM) replaced the auction, in 1994, auctioning of Treasury bills was introduced in 1993. A number of policies in that regard were enacted, including among others, the Bank of Tanzania Act of 1995 which granted the central bank more autonomy in management of monetary policy that was reduced to a single objective, namely price stability and was to be attained by use of indirect monetary policy instruments and enhanced supervision of banks. Further, the Loans and

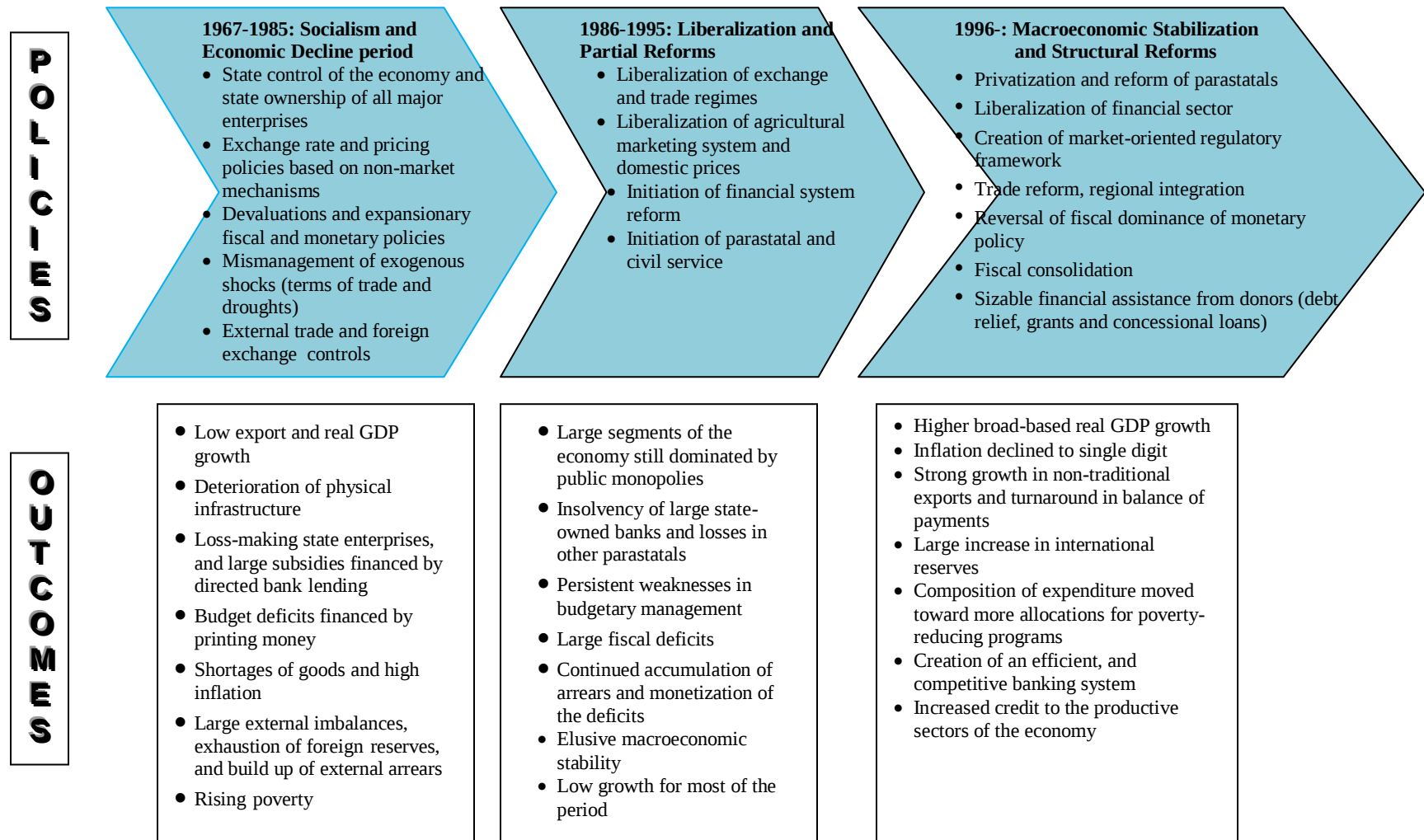
Advances Realization Trust (LART) was established in 1991 to take over non-performing assets of state-owned banks earmarked for restructuring. The Parastatal Sector Reform Commission (PSRC) was also formed in 1993 to coordinate and implement the privatization process, and the Capital Market and Securities Authority (CMSA) was established in 1995 to serve as an alternative source of capital for private sector investment.

Financial sector reforms aimed at fostering competition and efficiency in supply of financial services that would narrow the spread between lending and deposit interest rates and strengthening mobilization and allocation of financial resources. However, Financial Sector Assessment in 2003 revealed that the sector remained relatively small and access to bank credit was limited and thus inhibit its ability to adequately support economic growth. The Second Generation Financial Sector Reforms (SGFSR) were therefore, launched thereafter, with the intention being to comprehensively address various constraints in the sector with a view to enhance financial deepening and improve access to financial services by economic agents. The recent rescue package for the sector, following the global financial crisis, did also demonstrate the government's commitment in supporting the financial sector. Nonetheless, efforts in financial sector reforms led to significant structural changes, notably the relatively rapid expansion in private sector credit.

In general, economic and structural reforms that the country implemented since the mid 1980s consolidated the achievements in terms of stable fiscal regime with low inflation, prolonged period of high GDP growth rates, and political stability. Figure

3.1 presents different paradigms that the country drifted through since 1967, including policies that were adopted and their outcomes.

**Figure 3.1: Tanzania: The Chronology of Transformation**



Source: Nord *et al.*, 2009

## 3.2 Macroeconomic Performance

### 3.2.1 Real Economic Activity

After independence in 1961, Tanganyika was determined to foster economic growth and reduce income poverty, illiteracy and disease. The economy remained fairly open and highly dependent on revenue from traditional commodity exports, while encouraging peasant agriculture and mild industrial development. The pre-Arusha Declaration period of 1961–1967 was characterized by low inflation, satisfactory balance of payments and steady growth of real GDP. Tanzania continued to record modest real GDP growth during pre-crisis period 1967-1978. On average economic activities grew by 4.2% and 4.0% for the period 1967 to 1970 and 1971 to 1978, respectively (Table 3.1). During the same period, per capita income grew by 0.8% per annum. The growth of the economy was propelled by public administration as well as contributions from agriculture and manufacturing sectors.

**Table 3 1: Selected Macroeconomic and Social Indicators (Pre-Crisis period 1967-1978)**

|                                                   | 1967  | 1968  | 1969  | 1970  | 1971  | 1972  | 1973  | 1974  | 1975  | 1976  | 1977  | 1978  |
|---------------------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Real GDP growth (%)                               | 4.0   | 5.2   | 1.8   | 5.8   | 4.2   | 6.7   | 3.1   | 2.5   | 5.9   | 6.4   | 0.4   | 2.1   |
| Population Growth (%)                             | 3.0   | 3.1   | 3.1   | 3.2   | 3.2   | 3.3   | 3.3   | 3.3   | 3.2   | 3.2   | 3.2   | 3.1   |
| Real GDP Per capita growth (%)                    | (1.2) | 4.4   | 0.0   | 3.1   | 0.9   | 4.4   | 0.4   | (0.2) | 2.1   | (0.7) | (2.6) | (1.3) |
| Gross fixed capital formation (% of GDP)          | 18.9  | 18.4  | 16.3  | 22.9  | 26.8  | 23.6  | 22.6  | 21.6  | 20.8  | 29.0  | 29.4  | 33.8  |
| External Debt (% of GDP)                          |       |       |       | 16.4  | 93.8  | 93.4  | 96.7  | 87.5  | 83.3  | 80.7  | 83.2  | 79.6  |
| Official exchange rate (TZS/US\$, period average) | 7.14  | 7.14  | 7.14  | 7.14  | 7.14  | 7.14  | 7.02  | 7.13  | 7.37  | 8.38  | 8.29  | 7.71  |
| Black Market premium (period end %)               |       |       |       |       | 110.0 | 115.6 | 94.9  | 96.0  | 202.5 | 145.1 | 89.1  | 58.5  |
| Fiscal deficit after grants (% of GDP)            | -4.0  | -3.7  | -3.9  | -3.6  | -5.0  | -4.5  | -4.1  | -4.1  | -6.2  | -3.6  | -6.8  | -6.4  |
| Broad Money growth -M2 (%)                        | 21.3  | (2.6) | 25.4  | 18.1  | 18.2  | 17.7  | 18.2  | 22.1  | 24.4  | 25.1  | 20.2  | 12.6  |
| Inflation (%)                                     | 1.7   | 4.6   | 2.0   | 2.4   | 4.8   | 9.1   | 10.4  | 18.9  | 27.0  | 6.3   | 17.6  | 7.0   |
| Exports (% of GDP)                                | 26.5  | 24.2  | 24.7  | 24.0  | 24.1  | 24.6  | 22.4  | 21.3  | 18.2  | 21.7  | 19.5  | 14.6  |
| Imports (% of GDP)                                | 26.2  | 26.7  | 24.4  | 28.4  | 33.0  | 29.8  | 29.3  | 34.8  | 31.0  | 23.9  | 22.8  | 29.7  |
| Terms of Trade (1987 =100)                        | 126.0 | 126.0 | 126.0 | 137.0 | 123.0 | 128.0 | 146.0 | 174.0 | 142.0 | 152.0 | 182.0 | 152.0 |

Source: Bank of Tanzania, (2011) and Edwards, (2012)

However, policy inefficiencies were apparent in the export sector, including taxation of exports, overvalued exchange rate, government monopoly on crop marketing, which dragged producer pricing, as well as relocation of the rural producers through the villagelisation drive (Bigsten and Danielsson, 1999). These inefficiencies vividly touched the ground since mid-1970 and thus the economic crisis of the late 1970 and 1980s was inevitable.

During the crisis period of 1979 to 1985, the control regime was intensified to enable the government to finance increased spending and to maintain import-intensive industrialization strategy in the face of declining export proceeds (Bigsten and Danielsson, 1999). The economy recorded not only low rates of economic growth but in a number of years, negative real growth rates were evident. During the period real GDP growth dropped to 2.7% in the 1979 to 1980 period, further to 0.8% between 1981 and 1983, but reversed to 4.0% over the 1984 to 1985 (Table 3.2). The export sector performed poorly as domestic inflation increased, while the government compressed imports through direct foreign exchange rationing.

The sluggish growth of real GDP since late 1970s emanated from structural weaknesses within the economy as well as a series of shocks that the economy went through, such as the severe droughts of 1973 and 1974, the oil price shocks of 1973 and 1979, the collapse of the East African Community (EAC) in 1977, and the war with Uganda in the 1978 to 1979 period. The economic crisis was evident by among others, high inflation, high black market exchange rate premium, deteriorating balance of payments and low and negative economic growth.

**Table 3 2: Selected Macroeconomic and Social Indicators (Crisis period 1979-1985)**

|                                                   | 1979  | 1980  | 1981  | 1982  | 1983  | 1984  | 1985  |
|---------------------------------------------------|-------|-------|-------|-------|-------|-------|-------|
| Real GDP growth (%)                               | 2.4   | 3.0   | (0.5) | 0.6   | (2.4) | 3.4   | 4.6   |
| Population Growth (%)                             | 3.1   | 3.2   | 3.2   | 3.2   | 3.2   | 3.2   | 3.1   |
| Real GDP Per capita growth (%)                    | (0.3) | 2.3   | (3.2) | (2.6) | (5.3) | (0.2) | 1.1   |
| Gross fixed capital formation (% of GDP)          | 33.6  | 33.1  | 28.6  | 26.0  | 19.3  | 20.2  | 11.3  |
| External Debt (% of GDP)                          | 66.9  | 73.8  | 66.2  | 62.5  | 72.9  | 83.1  | 48.4  |
| Official exchange rate (TZS/US\$, period average) | 8.22  | 8.20  | 8.28  | 9.28  | 11.14 | 15.29 | 17.47 |
| Black Market premium (end of period %)            | 64.2  | 223.9 | 192.6 | 204.7 | 301.4 | 286.6 | 259.4 |
| Fiscal deficit after grants (% of GDP)            | -7.5  | -11.4 | -8.4  | -8.1  | -4.4  | -7.2  | -5.8  |
| Broad Money growth -M2 (%)                        | 46.9  | 26.9  | 18.1  | 19.5  | 17.8  | 3.7   | 29.0  |
| Inflation (%)                                     | 12.1  | 30.8  | 25.7  | 28.9  | 27.1  | 36.1  | 33.3  |
| Exports (% of GDP)                                | 14.1  | 13.2  | 12.2  | 8.5   | 8.0   | 9.0   | 6.8   |
| Imports (% of GDP)                                | 26.9  | 26.3  | 20.7  | 17.7  | 14.1  | 16.7  | 16.8  |
| Terms of Trade (1987 =100)                        | 139.0 | 142.0 | 129.0 | 127.0 | 128.0 | 131.0 | 126.0 |

**Source:** Bank of Tanzania, (2011) and Edwards, (2012)

As noted earlier, the ERP I and ERP II of 1980s were intended to reverse the declining economic performance, particularly decline in economic growth. ERP I had a broad range of policies aimed at liberalizing internal and external trade, unifying the exchange rate, reviving exports, stimulating domestic saving and restoring fiscal sustainability. ERP II or Economic and Social Action Programme (ESAP), which was adopted in July 1990 strengthened earlier efforts through trade and exchange rate liberalization and macroeconomic stabilization. In addition, the banking sector, agricultural marketing, the parastatal sector, government administration and civil service were also subjected to reforms. Following these reform measures, the economy responded positively in the second half of 1980s, but slowed down in early 1990s. Real GDP recorded an average growth rate of 4% over the 1986 to 1990 period, dropped to 2% in the period 1991 to 1995, and per capita income stagnated at an average of 0.4% during the period. The unification of black market and official exchange rates was attained (Table 3.3).

**Table 3 3: Selected Macroeconomic and Social Indicators: 1986-1995**

|                                                   | 1986  | 1987  | 1988  | 1989  | 1990  | 1991  | 1992  | 1993  | 1994  | 1995  |
|---------------------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Real GDP growth (%)                               | 1.9   | 4.9   | 4.4   | 2.6   | 6.2   | 2.8   | 1.8   | 0.4   | 1.4   | 3.7   |
| Population Growth (%)                             | 3.1   | 3.1   | 3.1   | 3.2   | 3.3   | 3.4   | 3.5   | 3.4   | 3.3   | 3.1   |
| Real GDP Per capita growth (%)                    | 0.5   | 1.6   | 3.0   | (0.6) | 3.3   | (0.1) | (1.0) | (2.4) | (1.4) | 0.8   |
| Gross fixed capital formation (% of GDP)          | 15.5  | 23.5  | 16.1  | 17.7  | 25.8  | 26.0  | 27.0  | 24.9  | 24.4  | 19.6  |
| External Debt (% of GDP)                          | 63.7  | 103.0 | 103.0 | 119.5 | 135.6 | 117.1 | 127.4 | 136.8 | 136.3 | 119.1 |
| Official exchange rate (TZS/US\$, period average) | 32.7  | 64.3  | 99.3  | 143.4 | 195.1 | 219.2 | 297.7 | 405.3 | 509.6 | 574.8 |
| Black Market premium (end of period %)            | 248.0 | 138.9 | 100.0 | 44.0  | 78.0  | 71.0  | 19.4  | 1.7   |       |       |
| Fiscal deficit after grants (% of GDP)            | -5.2  | -4.7  | -0.4  | 1.1   | 1.0   | -0.4  | 0.7   | -4.2  | -4.5  | -2.1  |
| Broad Money growth -M2 (%)                        | 29.2  | 32.0  | 40.0  | 33.1  | 43.8  | 30.8  | 51.3  | 34.0  | 37.2  | 18.2  |
| Inflation (%)                                     | 32.4  | 29.9  | 31.2  | 30.4  | 35.9  | 28.8  | 21.9  | 24.0  | 35.3  | 27.4  |
| Exports (% of GDP)                                | 9.6   | 9.0   | 9.6   | 11.3  | 12.6  | 10.3  | 12.4  | 18.0  | 20.6  | 24.1  |
| Imports (% of GDP)                                | 25.0  | 26.3  | 27.9  | 32.9  | 37.5  | 33.6  | 39.4  | 47.7  | 43.6  | 41.5  |
| Terms of Trade (merchandise 2000=100)             |       | 160.4 | 127.8 | 120.0 | 107.4 | 111.5 | 98.0  | 100.0 | 107.8 | 98.0  |

**Source:** Bank of Tanzania, (2011) and Edwards, (2012)

The economy picked up steadily since the second half of 1990s through to 2000s.<sup>31</sup> Robinson *et al.*, (2011) cite the year 1996 as a point of break in growth or growth accelerator in Tanzania. Such a growth take-off was spurred by significant structural transformation in basic institutions of the economy. These are private banking system, unification of exchange rate and price liberalization coupled with responsive policy making. Real economic activities improved markedly to 4.3% during 1996 to 2000 (Table 3.4). The real GDP recorded an average growth rate of 7% over the 2001 to 2007 period, and exceeded that rate to 7.4% in 2008, before slowing down to 6% in 2009 due to effects of the global financial crisis, and reversed to 7% and down to 6.4% in 2010 and 2011, respectively. The GDP growth for Tanzania in 2000s surpassed the average growth rate for Sub-Saharan Africa (BoT, 2010). Improved GDP growth during 2000s scaled up per capita income growth to 4.4% and 3.8%, for the 2001 to 2005 and 2006 to 2011 periods, respectively.

<sup>31</sup> This was the Second generation reforms period since 1996.

**Table 3 4: Selected Macroeconomic and Social Indicators (Second Generation Reforms period 1996-2011)**

|                                                   | 1996   | 1997  | 1998  | 1999  | 2000  | 2001  | 2002  | 2003    | 2004    | 2005    | 2006    | 2007    | 2008    | 2009    | 2010    | 2011    |
|---------------------------------------------------|--------|-------|-------|-------|-------|-------|-------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| Real GDP growth (%)                               | 4.3    | 3.3   | 4.0   | 4.8   | 4.9   | 6.0   | 7.2   | 6.9     | 7.8     | 7.4     | 6.7     | 7.1     | 7.4     | 6.0     | 7.0     | 6.4     |
| Population Growth (%)                             | 2.8    | 2.7   | 2.6   | 2.5   | 2.6   | 2.6   | 2.7   | 2.7     | 2.8     | 2.8     | 2.8     | 2.9     | 2.9     | 3.0     | 3.0     | 2.9     |
| Real GDP Per capita growth (%)                    | 1.3    | 0.2   | 0.9   | 1.7   | 1.8   | 2.8   | 4.9   | 4.8     | 4.7     | 4.6     | 3.0     | 5.0     | 4.2     | 2.9     | 3.9     | 3.8     |
| Gross fixed capital formation (% of GDP)          | 16.5   | 14.7  | 19.6  | 17.1  | 16.4  | 17.0  | 18.7  | 20.0    | 21.2    | 22.5    | 23.8    | 25.0    | 26.3    | 29.3    | 32      | 36      |
| External Debt (% of GDP)                          | 94.7   | 78.1  | 67.5  | 65.5  | 58.6  | 53.2  | 55.4  | 51.4    | 54.7    | 49.5    | 21.2    | 23.3    | 22.2    | 24.6    | 26.2    | 24.0    |
| Official exchange rate (TZS/US\$, period average) | 580.0  | 612.1 | 664.7 | 744.8 | 800.4 | 876.4 | 966.6 | 1,038.4 | 1,089.2 | 1,129.2 | 1,253.9 | 1,239.5 | 1,196.8 | 1,306.0 | 1,395.7 | 1,579.5 |
| Fiscal deficit after grants (% of GDP)            | -0.4   | -1.8  | -1.1  | -0.3  | -1.4  | 1.6   | -0.4  | -1.3    | -2.9    | -4.6    | -5.2    | -4.6    | -1.5    | -4.5    | -6.5    | -5.5    |
| Broad Money growth -M2 (%)                        | (10.6) | 11.0  | 11.1  | 15.0  | 12.5  | 11.7  | 24.1  | 15.1    | 21.8    | 39.3    | 16.7    | 27.2    | 24.4    | 20.8    | 21.8    | 15.0    |
| Inflation (%)                                     | 21.0   | 16.1  | 12.9  | 7.9   | 5.9   | 5.1   | 4.6   | 5.3     | 4.7     | 4.4     | 7.3     | 7.0     | 10.3    | 12.1    | 7.6     | 12.6    |
| Exports (% of GDP)                                | 19.9   | 16.2  | 12.4  | 12.5  | 13.4  | 17.0  | 17.6  | 18.6    | 19.7    | 20.8    | 22.6    | 24.3    | 22.6    | 23.2    | 23.8    | 24.3    |
| Imports (% of GDP)                                | 31.9   | 25.7  | 25.0  | 22.9  | 20.1  | 21.3  | 19.8  | 22.8    | 26.1    | 29.7    | 35.7    | 37.1    | 39.1    | 35.2    | 36.7    | 38.1    |
| Terms of Trade (merchandise 2000=100)             | 95.3   | 98.7  | 98.4  | 99.1  | 100.0 | 95.2  | 98.3  | 101.7   | 103.0   | 98.0    | 109.0   | 110.0   | 107.9   | 121.1   | 123.2   | 122.5   |

**Source:** Bank of Tanzania, (2011) and Edwards, (2012)

In Tanzania, the agricultural sector is still dominated by small-scale farming with 70% dependant on the hand hoe and rain-fed agriculture. This exposes farming to the vagaries of weather. This notwithstanding, the sector has been identified as the growth driver, owing to its potential and the livelihood it supports. The contribution of agriculture to GDP was more than 40% between 1976 and 1980, over 50% during 1980s and it averaged 48% in the 1990 to 1995 period.

The structure of the economy in terms of GDP composition has changed in recent years. While the agricultural sector had the lion's share in the 1980s and 1990s, the service sector was leading in 2000s, accounting for over 47% of GDP (Table 3.5). The share of agriculture, hunting and forestry declined to 29.8%, during the 1996 to 2000 period, averaged 27.6% during the 2001 to 2005 period, and declined further to 23.7% over the 2006 to 2011 period. However, the performance of the agricultural sector has been adversely influenced by climatic conditions. The sector grew at an average of 3.4% in the 1986 to 1990 period, averaged 3.1% during 1990s, increased to 4.3% in the 2001 to 2005 period, decreased slightly to 4.1% during the 2006 to 2008 period. However, it dropped to 3.2% in 2009 due to drought of 2008/09 season, increased to 4.2% in 2010 and down to 3.6% in 2011. The rather uncertain and sluggish growth of agriculture impacts negatively on food production and the ensuing shortage exerts an upward pressure on food prices and inflation.

**Table 3 5: Growth Rates and Shares to GDP by Activities (2001 prices)**

|                                          | 1990       | 1991-1995  | 1996- 2000 | 2001-2005  | 2006-2011  |
|------------------------------------------|------------|------------|------------|------------|------------|
| <b>Annual growth Rates in Percentage</b> |            |            |            |            |            |
| 1. <b>Real GDP (at factor cost)</b>      | <b>6.2</b> | <b>2.0</b> | <b>4.3</b> | <b>7.1</b> | <b>6.8</b> |
| 2. Agriculture, Hunting & Forestry       | 5.5        | 3.2        | 3.4        | 4.6        | 3.9        |
| 3. Fishing                               | 2.9        | 3.6        | 3.5        | 6.1        | 3.3        |
| 4. Industry                              | 3.2        | 2.4        | 4.2        | 9.6        | 8.1        |
| Mining and quarrying                     | 16.5       | 10.9       | 15.4       | 16.0       | 5.8        |
| Manufacturing                            | 4.1        | -0.1       | 5.2        | 8.1        | 8.5        |
| Construction                             | 30.5       | -5.8       | 7.0        | 11.3       | 9.4        |
| 5. Services*                             | 3.2        | 2.4        | 4.4        | 7.5        | 8.0        |
| <b>Shares in GDP (Percent)</b>           |            |            |            |            |            |
| 1. Agriculture, Hunting & Forestry       | 28.9       | 29.7       | 29.8       | 27.6       | 23.7       |
| 2. Fishing                               | 1.6        | 1.7        | 1.8        | 1.7        | 1.5        |
| 3. Industry                              | 18.7       | 17.3       | 17.7       | 19.1       | 21.2       |
| 4. Services*                             | 44.4       | 45.5       | 44.9       | 46.0       | 48.1       |

**Source:** Computed from Tanzania Economic Survey various issues

Note: \*includes trade & repairs, hotels & restaurants, transport, communications, financial intermediation, real estate & business services public administration, education, health and other personal services.

The share of manufacturing activities in GDP declined from about 12% in the late 1970s to less than 5% in the mid eighties. The sector improved to 8.3% and 8.9% during 1990s and 2000s, respectively, following measures taken by the government to redress the power crisis, increase in the number of Investment Promotion Center (IPC) approved projects and the restructuring or privatization of parastatal industries. The performance of the industrial sector during 1990s has not been encouraging. On average the sector grew by 2.5% during 1990s and contributed about 18% of GDP. The slow growth in the sector resulted from a number of reasons, including high import content and foreign exchange shortages, low industrial capacity utilization caused by lack of needed raw materials, inadequate power and water supply, as well as shortage of working capital (Noni, 1996). However, the sector, improved to an average growth rate of 9.6% and 8.1% in the 2001 to 2005 and 2006 to 2011 periods, respectively.

In the mining sector, diamonds contributed only 0.5% to GDP during the period 1976 to 1989. As the consequences of liberalization measures which, in particular, allowed both foreign and domestic private participation in the production/recovery and marketing of minerals, major improvements have been recorded since 1990. On average the sector grew by 11.8%, 15.4% and 16% during 1990 to 1995, 1996 to 2000 and 2001 to 2005 periods, respectively, but dropped to annual average of 13.2% in the 2006 to 2007 period, before declining sharply to an average of 2.1% over the 2008 to 2011 period. The low growth was due to low production of gold and the decline in export of diamonds (URT, 2009). Some challenges in mining sector include weak linkages between the sector and local supply chains, resulting in low domestic value addition, limited multiplier effects and employment creation, environmental-related conflicts, and weak technical and institutional capacities for effective management of the sector. Nevertheless, the vast mineral deposits in the country point to a high potential of the sector's contribution to growth and socio-economic transformation, and thus the sector has been identified as a growth driver (URT, 2010).

### *Capital Formation*

Gross Capital Formation (GCF) in 1970s and 1980s demonstrated increase in government bias to development expenditure. The ratio of GCF to real GDP averaged 30.2% and 28.1% during the 1970 to 1974 and 1975 to 1979 periods, respectively, but declined to an average of 21% during the 1980 to 1985 period. It improved to 24.9% during 1990-95, declined again to 17.2% of GDP in the 1996 to 2000 period, and rose to 20.3 and 26.5% during the 2001 to 2005 and 2006 to 2011

periods, respectively. The GCF grew at an average of 11% per annum in the 1970 to 1974 period, and 4.9% in the 1975 to 1979 (Nyagetera, 1997), declined significantly to an average of -3.0% over the 1991 to 1995 period, but improved markedly to 4.7 and 12.2% in the 1996 to 2000 and 2001 to 2011 periods, respectively. In recent years heavy investments in commercial building, water and roads infrastructure by both private sector and government agencies explain increased capital formation in the country (Economic Survey, 2011).

Unlike the period 1970s to 1990s where the public sector had an upper hand in capital formation, the composition in the 2000s indicates that the private sector dominates. Contribution of private sector to capital formation increased significantly to 73.3% in 2007-2011 compared to an annual average of 63.7% recorded during 2000-2006. Capital formation in the public sector (including central government, institutions and parastatals) declined to an average of 16.4% during 2007-2011, from the growth rate of 19.8% recorded in 2003-06 at current prices. The public sector's contribution to capital formation decreased to 26.3% in 2007-2011 compared to 34.8% in 2000-06.

However, comparative statistics indicate that Tanzania is picking up favorably in terms of Gross Fixed Capital Formation as a ratio of GDP in the region (Table 3.6). Gross fixed capital formation includes land improvements, plant, machinery, and equipment purchases, and the construction of roads, railways, and the like, including schools, offices, hospitals, private residential dwellings, and commercial and industrial buildings.

**Table 3 6: Gross Fixed Capital Formation (% of GDP): Countries Comparison**

| Period  | Kenya | Uganda | Tanzania | Ghana |
|---------|-------|--------|----------|-------|
| 1990-94 | 19.8  | 14.7   | 25.6     | 17.9  |
| 1995-99 | 16.8  | 17.4   | 17.5     | 22.0  |
| 2000-04 | 17.0  | 20.0   | 18.7     | 24.3  |
| 2005-08 | 18.6  | 22.1   | 24.4     | 23.1  |
| 2009-11 | 20.9  | 24.1   | 28.8     | 19.6  |

**Source:** Authors computation from World Economic Outlook (WEO), various issues

#### *Sources of Post-Reform Growth Acceleration*

Tanzania, recorded an average real GDP growth rate of 7% per annum during the 2001 to 2011 period, from 4.3% registered in the 1996 to 2000 period. The major sources of high GDP growth during 2000s include aid inflows, Foreign Direct Investment (FDI), and improvement in Total Factor Productivity (TFP). This was sustained by structural reforms, including fiscal reforms and macroeconomic stability (Nord *et al.*, 2009; Mbelle, 2005).

TFP played a significant role in real GDP growth in Tanzania since mid 1980s, declined in early 1990s and improved markedly in 2000s (Table 3.7). The early 1990s decline is explained by poor incentive structures including bad macroeconomic policies that led to shortage of foreign exchange to procure imported inputs and poor investment decisions by parastatal (Mbelle, 2005). Increased investment in physical capital including technological change since the late 1990s explained the real growth registered during the period. Thus, continued reform efforts and macroeconomic stability attained are behind TFP acceleration which also pushed up investment and economic growth.

**Table 3 7: Major Sources of GDP growth in Tanzania**

|                                 | 1986-1990 | 1991-1995 | 1996-2000 | 2001-2008 |
|---------------------------------|-----------|-----------|-----------|-----------|
| Real GDP Growth                 | 4.0       | 1.8       | 4.3       | 7.1       |
| Labour force                    | 2.2       | 2.5       | 1.7       | 1.7       |
| Capital                         | 0.9       | 1.3       | 0.3       | 1.9       |
| Total factor productivity (TFP) | 2.2       | -2.0      | 2.3       | 3.5       |

**Source:** Nord *et al.*, 2009

External debt in Tanzania averaged 79% of GDP in the 1970s and the 1980s, and it worsened to 107.8% in the 1990s. It declined substantially to an average of 41.4% of GDP in 2000s and 25.1% of GDP in 2010 and 2011 due to debt cancelation initiatives through Heavily Indebted Poor Countries (HIPC) and Multilateral Debt Relief Initiative (MDRI). As a result, external debt service as a percent of government revenue declined from 2.4% in 2000/01 before HIPC to an average of 1.9% in 2005/06 and further to about 1.3% in 2007/08 after MDRI. Debt cancelation created substantial fiscal space to finance NSGRP priority areas as well as other growth enhancing programs. Increased aid inflow from 1987 after IMF and World Bank support to reforms tally with significant growth acceleration, especially the donor-funded infrastructure component, which stimulated economic growth (Kayandabila, 2008).

Significant structural reforms of 1990s including financial sector reforms, privatization and gradual shift from project and technical assistance to direct budgetary support also seemed to have improved aid effectiveness, and thus the growth trajectory of Tanzania in the 2000s (Nord *et al.*, 2009). On the contrary, significant increase in foreign assistance since the late 1980s to the mid-1990s did not translate much into economic growth due to, among others, dominance of large

and inefficient parastatal sector that absorbed the bulk of both domestic and foreign resources coupled with limited administrative capacity to absorb the large inflows of foreign resources (Moshi, 1998).

FDI inflows to Tanzania reached a peak of 5.3% of GDP in 1999, surpassing SSA and low income countries and stabilized at 4% in 2000s, boosting capital formation and accelerating total factor productivity (Nord *et al.*, 2009). However, non-FDI private flows such as portfolio and private lending are still low in Tanzania due to restrictions such as closed capital account and limited borrowing capacity of the private sector.

### **3.2.2 The Exchange Rate Policy and External Sector Performance**

Since independence, Tanzania has experienced three exchange rate policy regimes. The Fixed Exchange Rate regime existed between 1967-1985, the flexible or crawling peg during 1986-1993, and the freely floating regime from 1994 to date. During the fixed exchange rate regime, the Tanzanian shilling was pegged to the Great Britain Pound (GBP) in 1966 and later to the US dollar (USD). The government preferred to keep the exchange rate “fixed” or just made small adjustments, relying on administrative, central allocation of foreign exchange. In 1971 and 1972, Tanzania’s shilling (TZS) was devalued against the US dollar and the gold standard, respectively, while in 1983, it was devalued against a basket of currencies of the country’s major trading partners. The tight exchange controls instituted led to the parallel market for foreign exchange during the period.

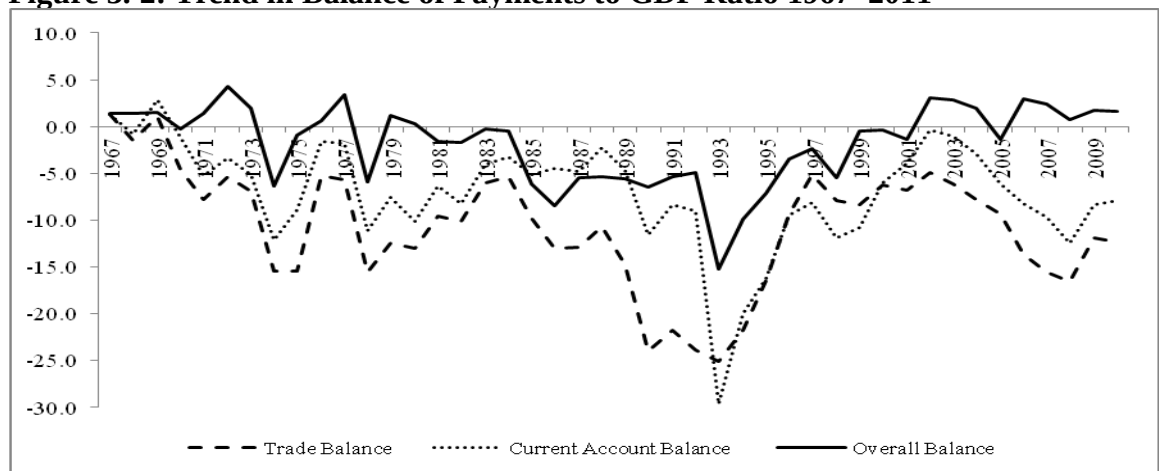
The ERP period witnessed exchange rate adjustment and unification. The shilling was devalued from TZS/USD 16 in March 1986 to TZS/USD 192.3 in December 1989, which was about a 1,100% increase. It then rose to TZS/USD 233.9 in December 1991 and more than doubled to TZS/USD 523.5 in December 1994. The black market premium averaged 108.4% and 244.8 during the 1971 to 1979 and 1980 to 1985 periods, respectively. It was 248% in 1986, and following the devaluation, it dropped significantly by 100% and 71% in 1988 and 1991, respectively, and closed at 1.7% in 1993. The exchange rate (end of period) depreciated further to TZS/USD 803.3 in 2000, and in 2003 it was TZS/USD 1,063.6. It recorded TZS/USD 1,239.5 and TZS/USD 1,557.4 in 2007 and 2011, respectively.

However, the development of persistent trade deficit and balance of payment (BOP) crisis forced the government to abandon the fixed exchange rate regime in favor of a more flexible regime in 1986. The flexible (crawling peg) regime was marked by massive devaluation in 1986, enactment of Foreign Exchange Act of 1992 and introduction of Bureau de Changes in 1992. In addition, the government partially eliminated the quantitative trade restrictions, and by 1993 the exporters were no longer required to register with BoT or use licenses and also imports licensing were abolished. In 1993 the bureau and official foreign exchange rates were unified. The freely floating exchange rate regime started in 1994 when the Interbank Foreign Exchange Market (IFEM) was started.

The exchange rate reforms of 1990s were accompanied by relaxed trade restrictions and therefore they boosted the external sector performance. Increased external

support also improved the foreign exchange reserves and trade balance as well as current account and the overall balance. The trade balance recorded an average deficit of -9.3% of GDP during the 1970-85 period, worsened to -18.4% over the 1986 to 1995 period, but improved to -9.5% in the 1996 to 2011 period (Figure 3.2 and Table 3.8). The BoP followed a similar trend in the 1970s and 1980s, but improved significantly to a surplus of 0.2% of GDP during the 1996 to 2011 period due to better performance in the capital and financial accounts through surges in FDI and donor aid. It is argued that unsustainable balance of payment deficits in Tanzania during the 1970s and 1980s were largely a product of macroeconomic mismanagement, particularly overvalued exchange rates and high rates of inflation caused by expansionary credit policy and the impressive performance recorded in 2000s is explained by macroeconomic stability attained during the period. These include the right exchange rate policy, low and stable inflation, high GDP growth, and fiscal discipline.

**Figure 3. 2: Trend in Balance of Payments to GDP Ratio 1967–2011**



**Source:** Authors' Calculations

**Table 3 8: Trends in Balance of Payments 1970-2011 (annual data)**

|                                | Entire period | Sub-periods |         |           |
|--------------------------------|---------------|-------------|---------|-----------|
|                                | 1970-2011     | 1970-85     | 1986-95 | 1996-2011 |
| Trade Balance/GDP              | -11.6         | -9.3        | -18.4   | -9.5      |
| Exports (fob)/GDP              | 11.4          | 13.3        | 8.5     | 11.4      |
| Imports (cif)/GDP              | 23.0          | 22.5        | 27.0    | 20.9      |
| Current Account Balance/GDP    | -7.6          | -5.9        | -11.1   | -7.1      |
| Overall Balance/GDP            | -2.0          | -0.7        | -7.4    | 0.2       |
| Real GDP Growth (%)            | 4.1           | 2.8         | 3.0     | 6.1       |
| Exchange rate (annual average) | 429.20        | 9.08        | 254.12  | 1,028.2   |
| Reserves (Months of Imports)   | 2.8           | 1.9         | 2.3     | 4.7       |
| Inflation (%)                  | 17.7          | 18.6        | 29.7    | 9         |

**Source:** Author's computation

### 3.2.3 The Monetary Sector

A strong monetary and credit expansion has existed since 1967 (Table 3.9). Money supply, broadly defined to include currency in circulation, demand deposits, savings deposits and time deposits (M2), grew at an average of 14.7% and 18.9% for the period 1967 to 1969 and 1970 to 1974, respectively. Between 1975 and 1979 M2 grew at 25.8% per annum, where the highest rate of 46.9% was recorded in 1979. High growth of money supply during the period is explained by inevitable spending amid economic shocks since the mid-1970s. M2 growth declined to an average of 17.2% over the 1980 to 1984 period, and in 1985 to 1989, it resumed an upward trend when it grew by 32.6% per year.

**Table 3 9: Growth in Monetary Aggregates (period average)**

|                            | 1967-69 | 1970-74 | 1975-79 | 1980-84 | 1985-89 | 1990-94 | 1995-99 | 2000-04 | 2005-11 |
|----------------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| Base Money (Mo)            | 19.9    | 17.7    | 19.3    | 26.3    | 30.3    | 139.5   | 23.2    | 14.8    | 22.5    |
| Broad Money (M2)           | 14.7    | 18.9    | 25.8    | 17.2    | 32.6    | 39.4    | 8.9     | 17.1    | 22.8    |
| Extended broad money (M3)* |         |         |         |         |         |         | 10.0    | 20.4    | 22.6    |

**Source:** Bank of Tanzania (2011),

Note: \*M3 was introduced in 1994

Monetary growth during the 1990s by far exceeded growth of output and services. The actual growth rate of broad money (M2) during the period 1990 to 1994 averaged 39.4%, where growth rates ranged between 18.2% and 51.3% above the targeted growth rate of between 10% and 18% (Noni, 1996). The excess liquidity fuelled domestic inflation during the period. M2 growth declined drastically to a record level of 7.8% per annum during the 1995 to 1999 but increased to an average of 17.1% and 22.8%, during the periods 2000 to 2004 and 2005 to 2011, respectively.

Extended broad money (M3), which includes the M2 and foreign currency deposits, has been one of the fastest growing components of banks' liabilities since it was introduced in 1994 due to, among others, coexistence of deposit dollarization with capital controls (Adam *et al.*, 2011). M3 jumped to 54.9% in 1994, decreased to 18.6% in 1999 and averaged 20.4% and 22.6% over the 2000 to 2004 and 2005 to 2011 periods, respectively.

It is worth noting that, deficiencies in the financial system have contributed to the excessive growth of money and thus inflationary pressure in the economy. Low deposit mobilization efforts by the financial institutions and inadequate scope for channeling resources to productive activities have had a negative impact on the economy. The restructuring process, in particular, also appears to have restricted the access of households to financial services, particularly in rural areas where the National Bank of Commerce (NBC) and other public banks rolled back their branch networks. Adam *et al.*, (2011) notes that the dominance of currency (20% of M3 in

2008) as a means of exchange, as well as small share of public with bank accounts in rural areas where the economy is largely cash-based, complicated the whole process. The study also notes that confidence in the banking system might also have been shaken by the collapse of Meridien-BIAO and Tanzania Housing Bank (THB) in the mid-1990s, though these failures did not appear to have systemically endangered the banking system.

However, the most significant deficiency that promoted excess growth of money in the economy in the 1970s and 1980s was the existence of leakages through, for example, portions of bank loans, especially to parastatal enterprises, Crop Marketing Boards and Co-operative unions that remained uncollected. This was exacerbated by the fact that banks had borrowed the money from the BoT, which compounded the excess liquidity outside the banking system. During restructuring of financial institutions in early 1990s the government assumed their liabilities, which added on to its own budgetary problems. In fact the government issued bonds in 1992 and 1993 amounting to about TZS 136 billion in order cover for the bad debts and recapitalize banks to restore their financial standing (Noni, 1996). Other factors that could have contributed to monetary expansion in Tanzania included capital inflows, mostly counterpart payments to government with respect to aid funds and export proceeds, which were not fully sterilized, as well as the debt conversion scheme and gold purchase scheme operated by the BoT.

### 3.2.4 Fiscal Performance

#### *Fiscal Dominance Regime: 1967-1985*

During the 1960s and 1970s, a wave of fiscal expansion and growth dominated the newly independent African states. Most countries pursued expansionary fiscal policies to correct inherited imbalances at independence. This was in line with Keynesian economic theories that, increasing government expenditure can stimulate economic activity when the output is below its potential level. In Tanzania, for reasons which seemed obvious and persuasive right after independence in 1961, the first president of Tanzania, Mwalimu J.K. Nyerere recognized from the very outset that given the mixed character of the economy, the government would have to play a key role in combating ignorance, poverty and diseases.

Through the Arusha Declaration in 1967 the government became the main economic agent responsible for promoting economic and social developments. The tasks set out for fiscal policy were principally three. First was to finance investment by raising the level of domestic savings. Second was to bring about a reduction in the inequalities of income and wealth. Third was to influence the volume and direction of economic activity. The policy demanded increased government spending to meet different economic and social activities. The annual finance and credit plan (AFCP) of 1971/72 was to ensure that both local and foreign financial resources accrued to the government, banking and financial institutions, and parastatals, and the residual to flow to the private sector. However, the plan had a ceiling on credit expansion, compatible with rapid but fairly stable growth. That is, relatively free from inflationary pressure and balance of payments problems (Balali, 1974). This

momentum was not maintained because government expenditure grew faster than revenues, which resulted in huge budget deficits.

The behavior of the three conversional measure of government size (tax revenue, total tax and non-tax revenue, and total government expenditure to GDP) has not been smooth over time. The sharp increase in expenditure in 1970s coincided with economic and political policies pursued during the period (Osoro, 2002). Instead of making positive contributions to the government coffers, the public enterprises, drained the national budget and competed with the private sector for resources from banks to cover their deficits (Moshi, 1998). Thus, financing of the public sector proved increasingly difficult, leading to larger recourse to central bank financing, that is, monetization of the fiscal deficits (BoT, 1994).

Until 1977, recurrent expenditure was fully financed from tax and non-tax revenue, and the surplus on recurrent account contributed to domestic financing sources of the development expenditure (Nyagetera, 1977). After 1977, deficit on recurrent savings increased the government borrowing requirement. The widening fiscal deficits were caused by external shocks, including the collapse of the EAC in 1977 and the war with Uganda, which entailed huge budgetary expenditures, including foreign borrowing. Yet the financing of the deficit was largely accommodated by monetary expansion through borrowing from the BoT. The proportion of fiscal deficit funded in this manner rose from 9.7% in 1977 to 62.3% in 1979, before tapering off to an average of 41% over the period 1980 to 1982 (BoT, 1994). Quasi- fiscal deficits associated with subsidies granted to loss making public enterprises also increased

pressure on the government budget and caused the government to borrow even more from the BoT. As a result of large budget deficits, increased money supply in the economy could not translate into additional credit to the productive sectors of the economy.

Government revenue as a percent of GDP was 18.9% and 19.9% during the periods 1970 to 1974, and 1975 to 1979, respectively, but declined to 18.3% during 1980 to 1985 period. While the recurrent expenditure increased throughout the 1970 to 1985 period, development expenditure portrayed a mixed trend (Table 3.10). The level of gross fiscal deficit (before grants) as a percentage of GDP worsened to -10.8% during 1980 to 1985, from -9.6% and -6.0% recorded in the periods 1975 to 1979 and 1970 to 1974, respectively.

**Table 3 10: Central Government Fiscal Trends (% of GDP), 1970-2011**

|                                  | Period Average (fiscal year) |             |              |             |             |             |             |             |
|----------------------------------|------------------------------|-------------|--------------|-------------|-------------|-------------|-------------|-------------|
|                                  | 1970-74                      | 1975-79     | 1980-85      | 1986-89     | 1990-94     | 1995-99     | 2000-04     | 2005-11     |
| Revenue                          | 18.9                         | 19.9        | 18.3         | 13.2        | 12.7        | 12.2        | 10.7        | 14.4        |
| Recurrent Expenditures           | 16.4                         | 17.6        | 20.8         | 11.2        | 12.1        | 11.3        | 12.1        | 16.1        |
| <b>Recurrent surplus/deficit</b> | <b>2.5</b>                   | <b>2.3</b>  | <b>-3.1</b>  | <b>2.1</b>  | <b>0.6</b>  | <b>0.9</b>  | <b>-1.4</b> | <b>-1.7</b> |
| Capital Expenditures             | 8.5                          | 11.9        | 8.2          | 3.2         | 3.0         | 1.7         | 4.3         | 7.6         |
| <b>Deficit (before grants)</b>   | <b>-6.0</b>                  | <b>-9.6</b> | <b>-10.8</b> | <b>-1.2</b> | <b>-2.4</b> | <b>-0.8</b> | <b>-5.7</b> | <b>-9.3</b> |
| Financing                        |                              |             |              |             |             |             |             |             |
| External Grants                  | 0.5                          | 2.0         | 1.8          | 1.3         | 2.5         | 2.0         | 3.3         | 4.6         |
| Foreign borrowing                | 1.5                          | 2.1         | 1.5          | 1.2         | 0.6         | 0.4         | 0.9         | 2.7         |
| Domestic borrowing               | 2.7                          | 4.0         | 6.5          | 1.9         | 0.5         | 0.5         | -0.8        | 0.9         |
| Arrears                          | 1.3                          | 1.5         | 1.0          | -3.1        | -1.2        | -2.1        | 2.3         | 1.1         |
| Real GDP Growth (%)              | 4.5                          | 3.4         | 0.8          | 3.5         | 4.2         | 4.3         | 6.3         | 6.8         |
| Inflation (%)                    | 9.1                          | 14.0        | 29.7         | 31.0        | 29.2        | 17.1        | 5.1         | 8.7         |

Source: Authors computations from Bank of Tanzania (2011)

#### *Fiscal Adjustment: from 1986*

The 1980s was characterized by different types of reform efforts in Africa, with one of the aims being reduction of government borrowing requirements. In fiscal

consolidation package, correction of the fiscal imbalances through reduction of fiscal deficit and debt was a prerequisite to envisioned macroeconomic stability, including low and stable inflation and higher real GDP growth eroded in the late 1970s and early 1980s. However, the move towards fiscal adjustment in Tanzania was discernible since the inception of ERPs in 1986, with a comprehensive fiscal reforms program at the central government level initiated at the beginning of the 1990s, where the government adopted a mixed strategy of increasing budget revenues and expenditure switching or pruning. The adjustment process included, among others, civil service reforms, privatization of state enterprises and better coordination between monetary and fiscal policies. The strategy also embraced tax reform policies with appropriate expenditure cuts in some periods and strengthening tax institutions.

Having seen the tax base being eroded owing to a shift in the composition of output toward harder to tax sectors, such as agriculture and expanding informal sector, melting contribution of parastatals which had been an easy source of revenues as well as proliferation of tax exemptions and increasing tax aversion in the first phase of recovery, the government of Tanzania embarked on developing and reforming the public finance sector (Nord *et al.*, 2009). With donor support, the Civil Service Reform Program (CSRP) was launched in 1991, but it only became operational in 1993. CSRP aimed at having a small, affordable, well-compensated efficient and effectively performing civil service. The program started with restructuring of the overall machinery of the government and retrenching surplus staff in order to regain control over the payroll. While improvements were made in some areas, progress was still low with poor service delivery in many areas, weak accountability and

limited value-for-money assessment (Teskey and Hooper, 1999; Nord *et al.*, 2009). The program was re-launched in 1998 as the Public Service Reform Program (PSRP) with a broader scope. In order to comprehensively shelve the government financial burden, the process of commercialization and privatization of parastatals also started.

The Treasury bills (T-bills) market-based auctions, introduced in 1993 to provide an instrument of liquidity management, a reference interest rate, and a limited short-term non-inflationary finance to the government, became a major instrument for financing the budget deficit.

Attempts to finance the deficit and also restrain monetary expansion by auctioning T-bills led to high interest rates to the extent that the bulk of financial assets of the commercial banks were invested in T-bills, which crowded-out the financial needs of the productive sectors of the economy. For example 91-day T-bill yield ranged between 32.1% to 58.8% in August to December 1993.

In order to improve revenue generation the Tanzania Revenue Authority (TRA) Act was passed in 1995 and the TRA became operational in 1996, and introduced Value Added Tax (VAT) in 1998. On the expenditure side, the government adopted a cash budget system in 1996 to enhance spending discipline and limit cash releases to the Ministries, Departments and Agencies (MDAs) to cash availability. All payments were centralized at the Ministry of Finance. The development of annual public expenditure reviews (PERs) and the Medium Term Expenditure Framework (MTEF) targeted redirection of spending to priority areas, notably education, health and

infrastructure.<sup>32</sup> It is worth noting that, reforms of revenue administration and tax policy started earlier, but consolidating the necessary structures took time. The country's commitment to fiscal reforms, including spending consideration to priority sectors coupled with impressive performance in domestic revenue increased confidence of development partners.

The revenue sources, most of which is tax, was not sufficient to meet the growing demands from the expenditure side since the mid 1980s following the inception of ERPs. Attempts to broaden the tax base through establishment of TRA and introduction of VAT had limited success. Recurrent expenditures portrayed a sluggish declining trend, mainly in the 1990s and it was difficult to cut back on social and economic services when the system was already under great strain (Bigsten and Danielsson, 1999). Adoption of the cash budget system by the newly elected government, in 1995, improved fiscal consolidation for the period 1995 to 1997. However, accountability and compliance to prudential budget management procedures and regulations by the government was still a problem that needed an attention (Ndulu and Mutalemwa, 2002).

Nonetheless, the increased domestic revenue and aid flow in the country from the mid 1980s created the fiscal space and allowed substantial increase in spending with

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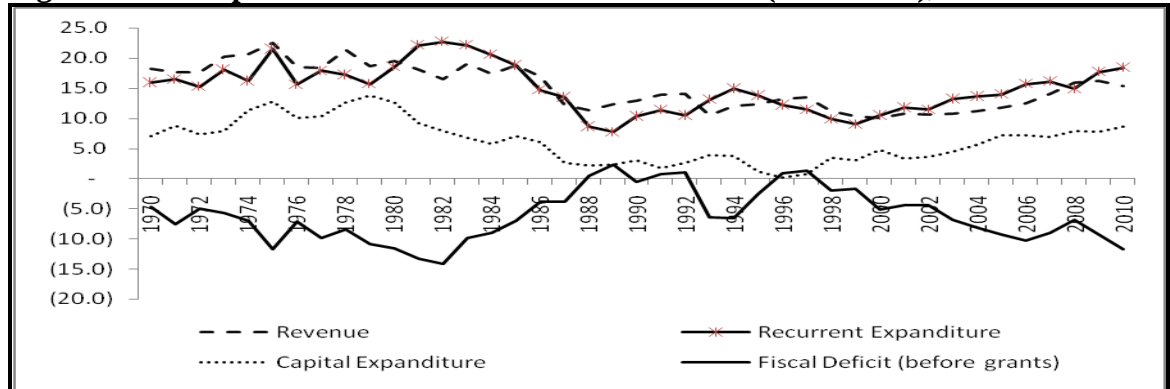
<sup>32</sup> In Tanzania, the World Bank has been conducting periodic PERs since 1987/88, and it was only from 1997/98 that an annual PER was introduced aimed more directly at strengthening the budget process. The MTEF was initiated in 1998 under the PERs and preparation started in 2000/01.

less pressure on debt sustainability.<sup>33</sup> As pointed by Nord *et al.*, (2009), the structural reforms in Tanzania also shifted composition and effectiveness of spending. Nord *et al.*, (2009) further note that the impressive growth of the economy in 2000s is largely explained by fiscal strategies adopted and implemented during the reform period. These include, formalization of the government economic strategy in the first Poverty Reduction Strategy Paper in 2000, followed by NSGRP I (2005-2010) as well as the development of medium term expenditure framework (MTEF), and conduct of annual public expenditure reviews.

However, the sustainable fiscal deficit was not realized immediately as envisioned in the ERP. The deficit continued to grow, up to the fiscal year 1988, but it declined rapidly thereafter (Table 3.10). However, in the fiscal year 1993, the fiscal gap started to grow again and a more sustained improvement was achieved only after introduction of the cash budget system in 1996. The fiscal gap eased in the second half of 1990s and picked up again in 2000s where it averaged -7.8% between 2000 and 2011, where, the widened fiscal deficit trend is explained by inability of revenue to keep pace with the growth in expenditure (Figure 3.3).

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<sup>33</sup> Heller (2005) defines fiscal space as budgetary room that allows a government to provide resources for a desired purpose without any prejudice to the sustainability of a government's financial position.

**Figure 3.3: Composition of Public Finance in Tanzania (% of GDP), 1970-2011**

Source: Authors' Calculations

Figure 3.3 further shows that capital or development expenditure corresponds almost one-to-one with fiscal deficit (before grants). This is a reflection of the fact that government borrowing requirement had largely been used to finance capital expenditure.

#### *Fiscal Consolidation*

Theoretical and empirical studies, for example Alesina and Peroti (1995) and Gupta *et al.*, (2004), indicate that a sound fiscal position is key to achieving macroeconomic stability, which is increasingly recognized as a critical ingredient for sustained growth and poverty reduction. Good quality fiscal adjustment can also serve to mobilize domestic savings, increase the efficiency of resource allocation, and help meet development goals (Clement *et al.*, 2004). Loose fiscal policy can lead to inflation, crowding out, uncertainty and volatility, all which hamper growth (Gupta *et al.*, 2004). Composition of expenditure adjustment matters for sustained fiscal adjustment. Cutting recurrent expenditures such as the wage bill, subsidies and transfers rather than investment outlays give high chance of lasting fiscal adjustment at least in developed countries (Alesina and Peroti, 1995). The exact amount of fiscal adjustment needed depends on individual country circumstances, objectives, and

constraints, and should be assessed compared to a baseline, or unchanged policies scenario.

Table 3.11 (a, b) show consolidation (deterioration) episodes, that is, periods of at least 2% decrease (increase) in fiscal deficit after grants as a percentage of GDP.<sup>34</sup> Fiscal consolidation can be achieved through reduction in expenditure or increase in revenue. Thus, the successive fiscal consolidation periods include 1983 (4.3%), 1986 (3.2%), 1988 (4.3%), 1995 (4.1%) and 1996 (3.3%) while marked fiscal deterioration episodes are 1990 (-2.8%) and 1993 (-7.4%). It is worth noting that out of the five successful fiscal adjustment periods, three successes in 1986, 1988 and 1996 resulted from cuts in recurrent expenditure, and the other two in 1983 and 1995, were attained at the expense of capital/development expenditure. During the 1980 to 1995 period, the deficit improved by an average of 0.5%. Such improvement resulted from cuts in capital expenditure (-0.8%) with relative small reduction (-0.1%) in recurrent expenditure. That trend clearly revealed that the significant fiscal consolidation in the period was essentially brought about by cuts in investment expenditure, following inability to curtail committed recurrent expenditure. However the opposite is the case in the 1996 to 2010 period.

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<sup>34</sup> At least a 2% increase or decrease in fiscal deficit level highlights a period of visible fiscal corrections (improvements or deteriorations) in developed countries (Gupta *et al.*, 2004).

**Table 3.11(a): Fiscal Variables in % of GDP: Annual Change 1980-1995**

|                       | 1980-1995 | 1980 | 1981 | 1982 | 1983 | 1984 | 1985 | 1986 | 1987 | 1988 | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 |
|-----------------------|-----------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| Deficit               | 0.5       | -0.7 | -1.7 | -0.8 | 4.3  | 0.9  | 1.9  | 3.2  | 0.0  | 4.3  | 1.8  | -2.8 | 1.3  | 0.2  | -7.4 | -0.2 | 4.1  |
| Revenue               | -0.4      | 0.9  | -1.5 | -1.6 | 2.7  | -1.7 | 1.4  | -2.0 | -4.6 | -0.9 | 1.0  | 0.6  | 1.0  | 0.2  | -3.5 | 1.4  | 0.4  |
| Recurrent Expenditure | -0.1      | 2.8  | 3.6  | 0.5  | -0.5 | -1.6 | -1.8 | -4.1 | -1.2 | -4.9 | -0.9 | 2.6  | 1.0  | -0.9 | 2.6  | 1.8  | -1.1 |
| Capital Expenditure   | -0.8      | -1.1 | -3.4 | -1.3 | -1.2 | -0.9 | 1.3  | -1.0 | -3.4 | -0.4 | 0.1  | 0.8  | -1.3 | 0.9  | 1.2  | -0.2 | -2.5 |

**Source:** Authors computations form the Bank of Tanzania (2011)

**Table 3.11(b): Fiscal Variables in % of GDP: Annual Growth 1996-2010**

|                       | 1996-2010 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 |
|-----------------------|-----------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| Deficit               | -0.6      | 3.3  | 0.5  | -3.4 | 0.3  | -3.4 | 0.7  | 0.0  | -2.5 | -1.3 | -1.2 | -1.0 | 1.4  | 2.1  | -2.4 | -2.4 |
| Revenue               | 0.2       | 0.8  | 0.3  | -2.2 | -0.9 | -0.3 | 0.7  | -0.1 | 0.1  | 0.4  | 0.7  | 0.7  | 1.6  | 1.9  | 0.3  | -0.8 |
| Recurrent Expenditure | 0.3       | -1.5 | -0.8 | -1.6 | -0.9 | 1.5  | 1.3  | -0.3 | 1.7  | 0.4  | 0.3  | 1.7  | 0.4  | -1.3 | 2.9  | 0.7  |
| Capital Expenditure   | 0.5       | -1.0 | 0.5  | 2.7  | -0.3 | 1.6  | -1.4 | 0.2  | 0.9  | 1.2  | 1.5  | 0.0  | -0.3 | 1.1  | -0.2 | 0.9  |

**Source:** Computed form Bank of Tanzania (2011)

### *Public Finance Trend*

The composition of public finance changed drastically through consolidation of the fiscal accounts in the second half of the 1980s, pushing down domestic financing, while external flows in the form of loans and grants on concessional terms surged (Table 3.12). During the 1970 to 1985 period, fiscal deficit (before grants) as a percentage of GDP averaged 8.8%, of which foreign finance amounted to 35% of the total financing. The trend reversed from the mid 1980s and in the 2000s, foreign financing had reached 78.5%. Trust in government and better coordination with donors increased budget support and basket funding rather than project financing during the period.

**Table 3.12: Central Government Financing Trends (% of GDP) 1970-2011**

|                                | Period Average (fiscal year) |           |             |              |             |             |             |             |             |             |
|--------------------------------|------------------------------|-----------|-------------|--------------|-------------|-------------|-------------|-------------|-------------|-------------|
|                                | 1970-85                      | 1970-74   | 1975-79     | 1980-85      | 1986-99     | 1986-89     | 1990-94     | 1995-99     | 2000-04     | 2005-11     |
| <b>Deficit (before grants)</b> | <b>-8.8</b>                  | <b>-6</b> | <b>-9.6</b> | <b>-10.8</b> | <b>-1.5</b> | <b>-1.2</b> | <b>-2.4</b> | <b>-0.8</b> | <b>-5.7</b> | <b>-9.3</b> |
| Financing:                     |                              |           |             |              |             |             |             |             |             |             |
| Foreign*                       | 3.1                          | 2         | 4.1         | 3.3          | 2.7         | 2.5         | 3.1         | 2.4         | 4.2         | 7.3         |
| Domestic                       | 4.4                          | 2.7       | 4           | 6.5          | 1           | 1.9         | 0.5         | 0.5         | -0.8        | 0.9         |
| Arrears                        | 1.3                          | 1.3       | 1.5         | 1            | -2.2        | -3.2        | -1.2        | -2.1        | 2.3         | 1.1         |
| Real GDP Growth (%)            | 2.9                          | 4.5       | 3.4         | 0.8          | 4.1         | 3.9         | 4.2         | 4.3         | 6.3         | 6.8         |
| Inflation (%)                  | 17.6                         | 9.1       | 14          | 29.7         | 25.9        | 31.4        | 29.2        | 17.1        | 5.1         | 8.7         |

**Source:** Computed from Bank of Tanzania (2011)

Note: \*Foreign financing includes grants and foreign borrowing

### *NSGRP Spending in Priority sectors*

The increased domestic revenue and aid flow in the country increased the fiscal space and allowed substantial increase in spending with less pressure on debt sustainability. Through NSGRP I (2005-2010), the government redirected spending towards priority areas, most notably education and health, and also addressed the key elements of

economic infrastructure such as roads and water facilities. Resource allocation was cluster-based programming. Until 2004/05, budget allocation was based on priority sectors, including basic education, primary health, water, roads, agriculture, lands, the judiciary, and HIV/AIDS. Thereafter, the budget has been structured along NSGRP which has three clusters.<sup>35</sup>

However, year after year, NSGRP allocations were dictated by a number of on-going projects, and emerging issues within the clusters (Mbelle, 2010). Improvement in spending effectiveness has been through reforms in public service and by strengthening public financial management with more realistic budget assumptions, including expenditure allocations based on needs and cash management and control system as well as internal and external audits. Table 3.13 indicates NSGRP priority expenditure clusters with increasing trend in cluster I from its inception in 2005/06 through to 2009/10.

**Table 3.13: Mainland Tanzania: Cluster Shares NSGRP I 2005/06-2009/10**

| Cluster/Year                                    | 2005/2006           | 2006/2007   | 2007/2008   | 2008/2009   | 2009/2010   |
|-------------------------------------------------|---------------------|-------------|-------------|-------------|-------------|
|                                                 | % of NSGRP Spending |             |             |             |             |
| Cluster I                                       | 39.0                | 45.8        | 49.4        | 48.3        | 51.2        |
| Cluster II                                      | 43.0                | 35.8        | 29.5        | 34.1        | 29.3        |
| Cluster II                                      | 18.0                | 18.4        | 21.1        | 17.6        | 19.5        |
| <b>NSGRP allocation to the total budget (%)</b> | <b>65.0</b>         | <b>63.7</b> | <b>62.7</b> | <b>66.9</b> | <b>73.5</b> |

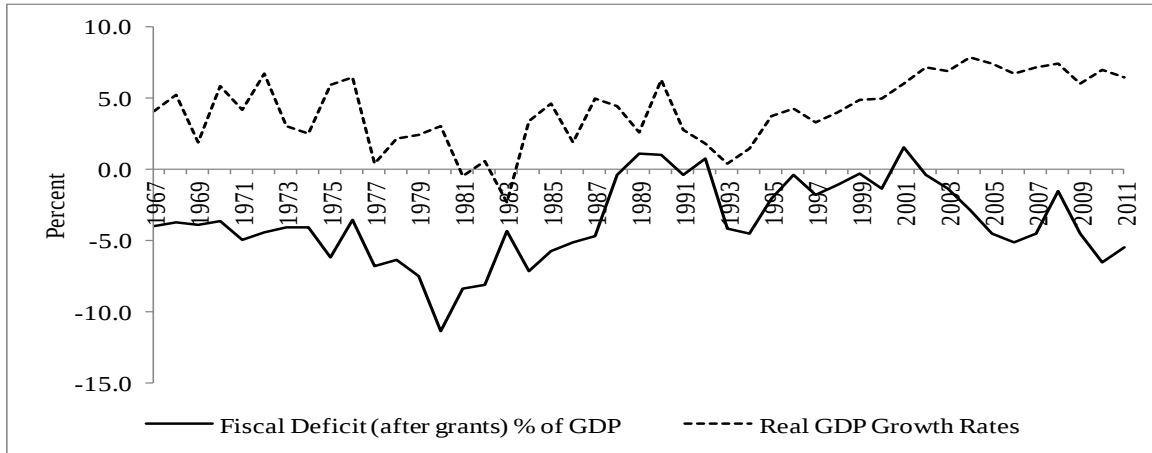
Source: Mbelle (2010)

<sup>35</sup> Cluster I (growth and reduction of income poverty) is intended to maintain macroeconomic stability and economic growth by focusing on agriculture, mining, manufacturing and energy sectors. Cluster II (improvement of quality of life and social well-being) targets development in human capital and focuses on education, health and water. While Cluster III, on good governance and accountability, is intended to enhance the role of law and improve security and safety in the country.

Since 2005, Tanzania's GDP annual growth rate averaged 7%, which was in line with NSGRP target of 6–8% per annum. NSGRP I was also marked by significant improvements in the provision of public services, including education, health, water, energy, telecommunications and infrastructure, particularly roads. Provision of these services was made possible by increased domestic revenue collection as well as support from development partners. Debt relief through HIPC and MDRI initiatives as well as reduced domestic financing of fiscal deficit freed up additional resources for productive spending. However, the achievements could have been much higher had the Tanzanian economy not been affected by daunting local and global challenges, such as high oil and food prices and the global financial and economic crises during the implementation period.

#### *Fiscal Deficit and Real GDP Growth*

Tanzania's economic growth and fiscal deficits (after grants) portrayed a similar trend until 2000, where the two moved apart. Figure 3.4 shows that the rate of growth is lower when deficit to GDP ratio is high until 2001, which implies that higher fiscal deficit (after grants) may be detrimental to the economy. However, high deficits from 2001-2011 coincided with growth acceleration, that could be due to expenditure efficiency and prioritization instituted through NSGRP.

**Figure 3. 4: Real GDP Growth and Fiscal Deficit, 1967–2011**

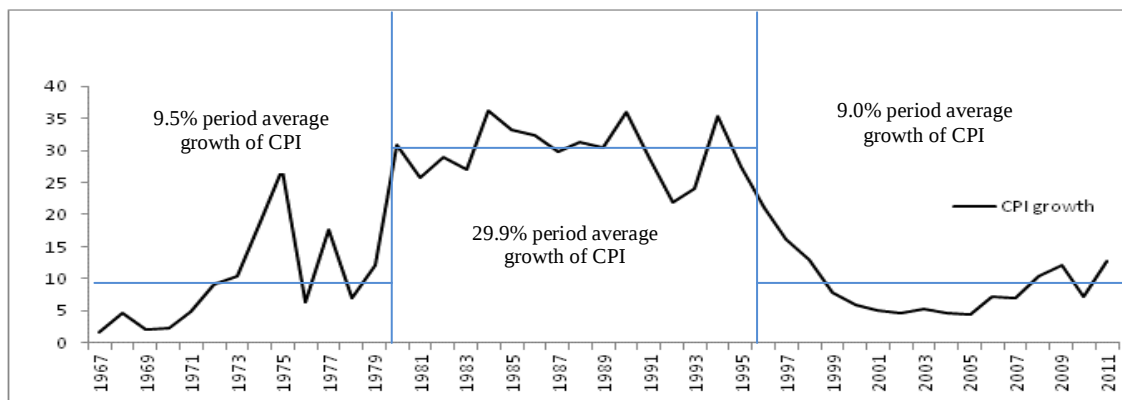
Source: Authors' Calculations

### 3.3 Price Developments

The growth of headline inflation in Tanzania since 1967 portrays an episodic trend. Three broad periods can be deduced from the trend. First, the immediate post-independence period, with particular focus on 1967 to 1979, which recorded an average inflation rate of 9.5%, followed by deterioration and economic reform period of 1980 to 1995, which registered over 30% inflation rate, and the third and most recent period (1996 to 2011) characterized by drastic deceleration and stabilization of inflation, with annual average inflation rate of 9% (Figure 3.5). During phase one, inflation as measured by changes in National Consumer Price Index (NCPI), rose from 3.1% in 1970 to 10.5% in 1973, with peaks of 18.9% and 27% in 1974 and 1975, respectively, due to the oil price shock wave of 1973/74 and 1974/75 drought, but stabilized at an average growth rate of 9.5%

between 1976-1979. This is considered a period of moderate inflation despite internal and external shocks of 1970s.<sup>36</sup>

**Figure 3. 5: Annual Change of NCPI, 1967-2011**



Source: Authors' Calculations.

Severe economic decline started in early 1980s, when the economic crisis was looming due to economic shocks of 1970s. Inflation rose considerably, almost threefold for a period of one year, from 12.1% registered in 1979 to 30.3% in 1980. In the period 1981 to 1983, inflation eased slightly to an annual average of 27.2% due to credit squeeze implemented by NESP and SAP programs during the period. The inflation trend reversed to a peak of 35.4% in 1984. From 1986 until 1990 the inflation rate remained above 30%, despite anti-inflationary policies adopted by the government under ERPs. One of the

<sup>36</sup> Inflation rates in Tanzania could have been higher than the reported figures due to price controls instituted by the National Price Commission (NPC) established in 1973. Since July 1984 the number of commodities under price control was gradually reduced; by mid-1991 controls had been lifted for all commodities except petroleum products and public utilities. The government monopoly on importation of refined petroleum products was abolished in 1997, and by the end of 1999 the state-owned refinery was closed and retail prices fully liberalized.

objectives of ERPs was to bring inflation to low and sustainable level of 15% by 1989 from 32.6% in 1986. However, inflation decelerated to 21.9% in 1992, but reversed to 33.3% in 1994, and eased to 28.4% in 1995. The acceleration in inflation was attributable to heavy devaluation of the Tanzanian shilling, a large increase in oil prices and large monetary expansion, while the economy was experiencing low and negative real GDP growth rates.

The early 1990s witnessed a gradual shift from direct to indirect instruments of monetary control following the BoT Act of 1995 that placed price stability first among the objectives of monetary policy and granted the BoT the independence required to carry out its role and functions. The ERPs also emphasized macroeconomic stabilization and introduced annual money-growth targets as a means of inflation control. Nonetheless, inflation remained over 30% as fiscal pressures drove money growth rates well above program targets. M2 growth averaged 36% during the 1985 to 1994 period, against the target range of 10 to 17%, the difference largely reflecting government borrowing to finance crop authorities and cooperative unions (Ndanshau, 1996). Monetary accommodation continued over the five-year period following the 1990 general elections. By 1994/95, sharply rising interest costs had convinced the policy makers that fiscal adjustment was essential for macroeconomic stabilization (Rashidi, 1997).

Adopting a cash budget system, and accepting a virtually complete denial of monetary accommodation of fiscal deficit in the mid 1990s slowed down growth of credit in the

economy. As the cash budget and reserve money programs gained momentum, the growth rate of extended broad money (M3) fell sharply, averaging 10% for the 1995 to 1999 period and disinflation was rapid. The annual headline inflation rate dropped from 27.4% in 1995 to 7.9% in 1999, decreasing further to 4.6% in 2002. The success story is largely explained by improvements on monetary and fiscal policies. However, the trend reverted to an average rate of over 7.1% in 2006 to 2007, and increased further to about an annual average of 10.6% in 2008 to 2011.

### **3.4 Proximate Causes of Inflation in Tanzania with Evidence from Trends and Relationships**

The efforts to restore internal balance through pursuit of prudent fiscal and monetary policies proved to be unrealistic throughout the 1980s and 1990s (Noni, 1996). Inflation persistently remained high since the mid 1970s, 1980s and the first half of 1990s, given the fact that up to 5% is the level of inflation considered consistent with the country's major trading partners. The African Development Bank (AfDB) (2012) attributes the rise in inflation in Tanzania, especially in the second half of the 2000s, to exogenous factors, namely, world food and fuel prices, structural characteristics, mainly shortage in domestic production, and policy variables, namely monetary, fiscal and exchange rate policies. In the short-run exogenous factors and structural characteristics are outside the influence of the authorities due to production capacity constraints. Moreover, unfavorable weather conditions worsened food supply and thus put an upward pressure on food prices. Global oil prices have fueled domestic inflation through higher cost of production

(energy and transport costs) as well as rapid nominal depreciation of the shilling, which allows the pass-through of external developments into the domestic economy.

The recent inflation is also explained by a rapid increase in velocity of money. Velocity of money, which is an important indicator of the pace of monetary transactions and inflationary development, has portrayed an upward trend with a sharp jump since 2009 in Tanzania Kenya and Uganda (AfDB, 2012). The increase is due to financial innovations, including the advent of new products such as mobile banking. Table 3.14 summarizes the growth of different factors that have been influencing inflation in Tanzania.

**Table 3.14: Growth in Factors Influencing Inflation in Tanzania (period average)**

| <i>Period</i> | Budget deficit<br>(% of GDP) | Exchange rate<br>depreciation (%) | Real GDP<br>Growth (%) | Broad Money<br>Growth (%) | Global<br>inflation | Inflation<br>Tanzania |
|---------------|------------------------------|-----------------------------------|------------------------|---------------------------|---------------------|-----------------------|
| 1967-69       | -3.2                         | 0.0                               | 3.7                    | 19.0                      | 1.8                 | 2.8                   |
| 1970-74       | -4.8                         | 0.0                               | 4.5                    | 18.0                      | 11.7                | 9.1                   |
| 1975-79       | -7.5                         | 3.1                               | 3.5                    | 24.0                      | 9.6                 | 14.0                  |
| 1980-84       | -9.1                         | 14.0                              | 0.8                    | 15.9                      | 0.5                 | 29.7                  |
| 1985-89       | -4.5                         | 59.4                              | 3.7                    | 31.0                      | 5.9                 | 31.4                  |
| 1990-94       | -2.8                         | 29.2                              | 2.5                    | 33.3                      | 2.8                 | 29.2                  |
| 1995-99       | -0.4                         | 8.0                               | 4.0                    | 15.0                      | -2.0                | 17.1                  |
| 2000-04       | -1.6                         | 7.9                               | 6.6                    | 14.7                      | 1.6                 | 5.1                   |
| 2005-11       | -4.8                         | 4.6                               | 7.0                    | 23.3                      | 2.2                 | 8.7                   |

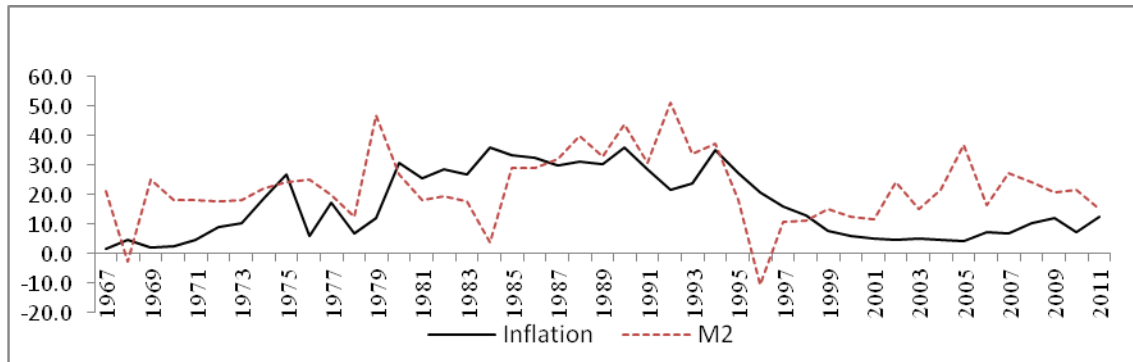
**Source:** Computed from various reports.

The following section discusses the determinants of inflation in Tanzania and movements of the relevant variables over time, with the main focus on growth in money supply, balance of payments, global inflation and exchange rate movements, real GDP growth, and borrowing from the banking sector in the period between 1970 and 2011.

### **3.4.1 Inflation and Growth in Money Supply**

Price stability in Tanzania continued to be elusive and the main challenge throughout 1980s and 1990s. It is urged that monetary accommodation of different shocks, which the country went through since 1970s and 1980, fueled domestic inflation in Tanzania. For example the period 1974 to 1975 when oil and grain prices rose in the world market, the government responded by increasing credit to oil and grain importers to provide for the additional working capital (Doriye, 1990). In response to credit expansion, inflation “reciprocated” by increasing in the subsequent years. The collapse of East African Community (EAC) in 1977, and the Ugandan war in 1979 also forced the government to provide means for their finance. The cost of the Ugandan war increased government expenditure and created huge budget deficits in year 1978/79 and 1979/80, where the large part of the deficit was financed by loans from the Bank of Tanzania, bringing the monetary growth to a level of above 40% in 1979, where M2 jumped from 13% in 1978 to 46% in 1979. The rate of inflation followed the same trend, increasing from 7.0% in 1978 to 12.15% and 30.8% in 1979 and 1975, respectively. During the 1980s, money supply growth was over 25% and inflation was above 30%. Figure 3.6 reveals the close relationship between money supply growth and inflation, where in some cases there is one to one correspondence, while in others there is a one year lag.

**Figure 3.6: Trends in Broad Money (M2) growth and Inflation, 1967–2011**



Source: Authors' Calculations

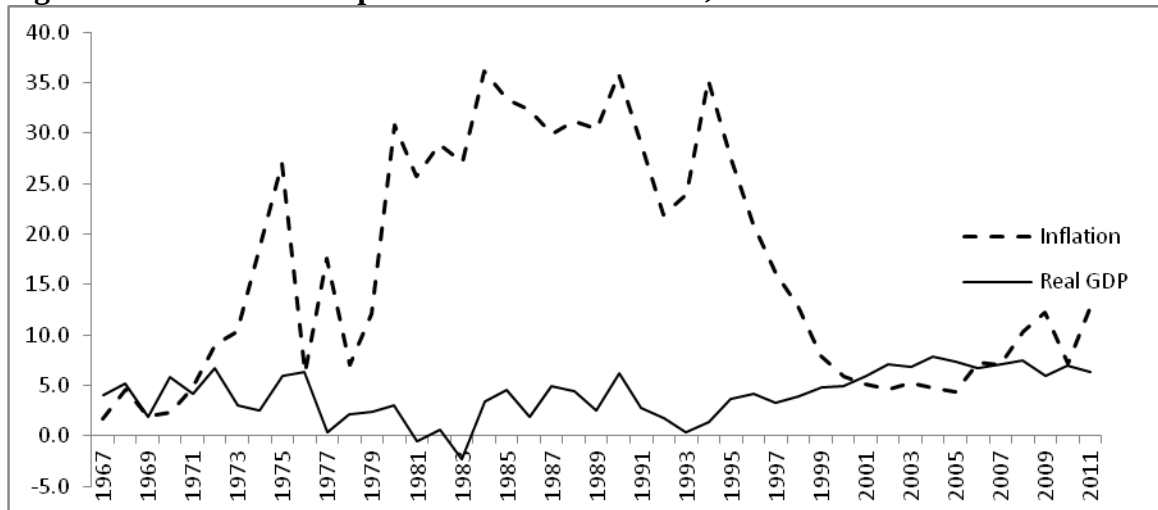
The growth in broad money (M2), ranged between 26.1% and 51.3% during the 1990 to 1995 period in contrast to the targeted growth rate of between 10% and 18% (Noni, 1996). It is not surprising that the excess liquidity fuelled domestic inflation. Persistent increase in domestic credit to accommodate government budgetary deficits by the BoT had been the major factor for monetary expansion in the economy. On average, the period of high monetary growth coincides with a high inflationary trend as demonstrated by the growth of the consumer price index in Figure 3.6. Inflation decelerated to a single digit in 1999 when M2 decreased since mid 1990s.

### 3.4.2 Trends in Output Growth and Inflation

The GDP growth between 1967 and 2011 exhibits periods of both volatility and stability. GDP performance in the 1960s and 1970s displayed moderate growth rates. Since 1980, significant ups and downs were registered, with negative growth rates in 1981 and 1983. Between the late 1980s and 1990s, real GDP improved, but remarkable rates were registered in the 2000s. The growth of inflation almost followed a similar trend. Moderate inflation persisted until 1979, sky rocketed to over 30% per annum during the

1980 to 1995 period and dropped drastically in the second half of 1990s and the whole of the 2000s (Figure 3.7). The periods of strong growth of real GDP had a dampening effect on inflation.

**Figure 3.7: Trends in Output Growth and Inflation, 1967–2011**



Source: Authors' Calculations.

Also, the rather uncertain and sluggish growth of agriculture impacted negatively on food production and thus exerted an upward pressure on food prices and inflation in general, given the significant weight of food in the consumer price index.

### 3.4.3 Balance of Payments and Global Inflation

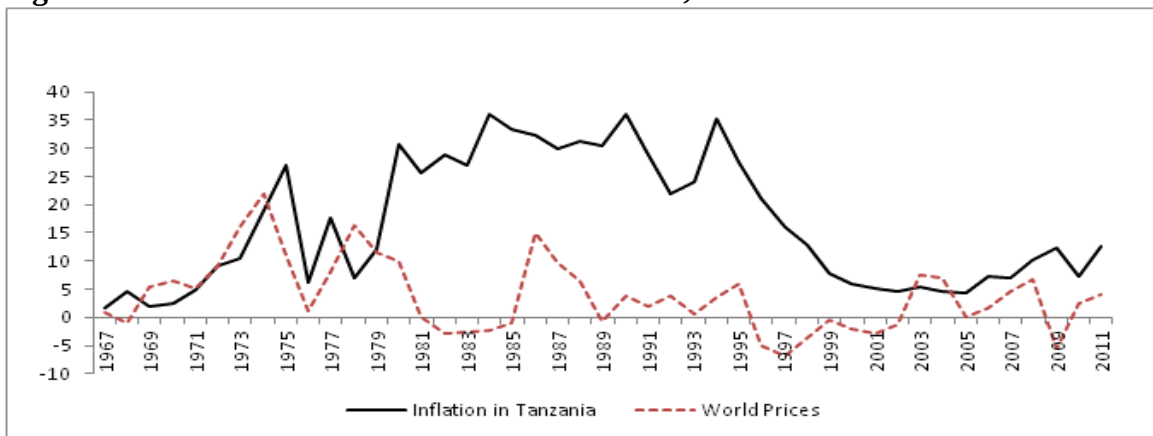
Tanzania experienced severe external resources gaps triggered by exogenous factors, which widened the balance of payments deficit during the second half of 1970s, 1980 and 1990s. Import compression, effected through quantitative restrictions (licensing) rather than exchange rate depreciation, was the key policy response adopted to close the

external gap. Real imports, particularly consumer and intermediate goods fell at a rate of 13.5% annually during 1987 to 1992. Capital goods imports, however, were sustained by continued external resources inflows for project finance (BoT, 1994). The impact of the BoP deficits on inflation was transmitted through import compression and the resultant pressures on domestic prices arising from shortages in supply as well as parallel exchange rates, which were well above the official rate.

The management of the external sector deficit through import licensing and other trade measures affected economic growth and a rapid acceleration of inflation, particularly during 1978 to 1984. The policy that led to import compression through quantitative restrictions according to BoT (1994) had the following implications on inflation: first, the restriction on consumer and intermediate inputs curtailed domestic supply and generated pressure on domestic prices. Yet the import prices were high because the imports were priced at the parallel exchange rate. Low supply and expensive imported inputs constrained capacity utilization of domestic production and also translated into high costs of production and therefore higher prices for domestically produced commodities. Second, import compression of intermediate products and consumption goods whose availability is treated as incentives for production, reduced growth of GDP between 1978 and 1986. It is important to note that exports are also import-dependent for inputs such as fertilizers, packing materials, spare parts, oil and fuels for processing machinery. The decline in export production exacerbated supply pressures and fuelled more domestic inflation. Thirdly, the steep rise in domestic inflation relative to that of trading partners

led to an overvalued real exchange rate that heavily penalized agriculture, since exporter incentives were eroded. This brought about a decline in exports and further worsened the foreign exchange crisis. Global inflation thus has a bearing on domestic inflation owing to the import dependent nature of the economy in terms of capital, intermediate and consumer goods (Figure 3.8).

**Figure 3. 8: Trends in Domestic and World Prices, 1967–2011**



Source: Authors' Calculations

#### 3.4.4 Exchange Rate and Inflation

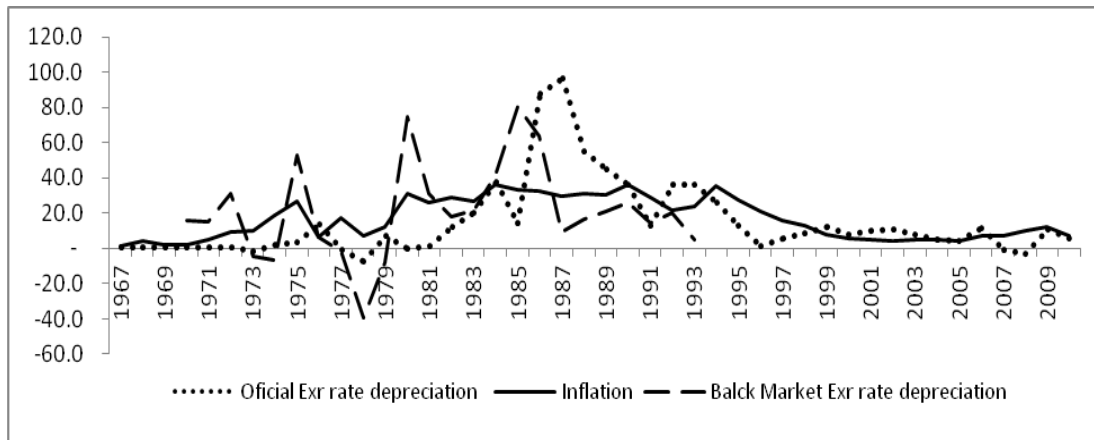
The steep rise in domestic inflation relative to that of the trading partners led to overvaluation of the real exchange rate that heavily penalized agriculture by eroding the exporters' incentives.<sup>37</sup> This brought about a decline in exports and exacerbated the foreign exchange crisis. Due to the fixed exchange rate regime until the mid-1980s, inflation in Tanzania could not be explained by the impact of large real exchange rate devaluation of the official rate. Rather, it was explained by large real exchange rate depreciation of the parallel market rate through which imports were priced. The exchange

<sup>37</sup> Exchange rate was not a policy variable for BOP management by then.

rate controls resulted in growth of the premium between the market (parallel) and official exchange rates. The premium increased from end of period average of about 100% in 1970s to about 232% over the 1980 to 1987 period, and it was 100% and 71% in December 1988 and 1991, respectively.

With the introduction of Own Funded Import Scheme in Tanzania in 1984, the importance of the parallel rate in the inflationary process is likely to have increased because goods that were imported under this scheme were priced at the parallel market exchange rate. A study by O’Connel (1992) reveals that over 30% of Tanzania’s imports in the period between 1985 and 1988 were financed through the own funds scheme and were valued at the parallel market exchange rate. It is estimated that the share of own-funded imports in total imports was over 50%, which explains why substantial devaluations of official exchange rates were effected in 1984 and 1986, and that led to a sharp increase in domestic import prices but did not result in a significant increase in consumer prices (Figure 3.9). The parallel market rate premium was fully eliminated in August 1993 when Tanzania unified the exchange rate and liberalized the foreign exchange system for current account transactions (Nord *et al.*, 2009; Edwards, 2012). Nevertheless, official depreciation of the currency had a budgetary impact in the sense that revaluations increased foreign debt service in local currency, which added to the fiscal deficit.

**Figure 3.9: NCPI, Official and Black Market Exchange Rate Depreciation (%), 1967-2011**



**Source:** Authors' Calculations.

One issue that is probably obvious from the presentation of Tanzania's exchange rate regime is that exchange rate policy was not employed as a principal instrument of economic management until the mid-1980s. Thus, official exchange rate movements during that period bear little relationship to inflation, as shown in Figure 3.9. However, after partial liberalization since the mid-1980s and recourse to a more or less complete market determined exchange rates a decade later, exchange rates move closely to inflation. With respect to the parallel market exchange rate, the story seems to be quite different as periods of high exchange rate depreciation coincided with high inflationary trend.

#### **3.4.6 Trend in Domestic Borrowing for Budgetary Support and Inflation**

The Government Borrowing Requirement (GBR) as a percent of GDP in Tanzania was very high in the 1970s through the mid-1980s due to government commitment in all sectors of the economy including villagilization and parastatal expansion (Nyagetera, 1997). In bridging the resource gaps, the government resorted to both domestic and

foreign sources of revenue. The domestic sources of revenue constituted bank (central bank and commercial banks) and non-bank borrowing, while the foreign window encompassed loans and grants. Domestic borrowing from the central bank creates new money in the system, while borrowing from commercial banks and non-bank public builds interest bearing-debt.

Domestic financing of GBR dominated until mid-1980s following the inception of ERPs where the trend reversed in favour of foreign financing. Of the domestic sources, bank borrowing was the major source of finance between the late 1970s and 1990s, except the period 1986 to 1990 (Table 3.15). Since credit to the government constitutes budgetary financing, increased domestic borrowing from the banking system in the 1970s to 1990s increased money supply, which translated into high inflation. However, during the 2000s domestic financing decreased significantly in favour of foreign financing, which decreased money supply and eased inflationary pressures from domestic sources of financing. During the same period, non-bank borrowing financed only 2.3% of the GBR, and the government repaid back its loan to the banking sector, which explains disinflation attained during the period.

**Table 3.15: The magnitude and Financing of Government Borrowing Requirement**

| Period  | GBR as a % of                 |                              |      | Financing of the GBR (in %) |                |                          |                          | Inflation |
|---------|-------------------------------|------------------------------|------|-----------------------------|----------------|--------------------------|--------------------------|-----------|
|         | Total development expenditure | Total government expenditure | GDP  | Non-Bank borrowing          | Bank Borrowing | Total Domestic Borrowing | Foreign loans and Grants |           |
| 1967-69 | 63.0                          | 16.2                         | 3.5  | 27.2                        | 17.7           | 44.9                     | 55.1                     | 2.7       |
| 1970-74 | 85.1                          | 28.5                         | 9.1  | 18.4                        | 33.2           | 51.6                     | 48.4                     | 9.1       |
| 1975-79 | 87.4                          | 32.6                         | 12.1 | 15.8                        | 29.2           | 45.0                     | 55.0                     | 14.0      |
| 1980-85 | 115.3                         | 30.0                         | 10.5 | 14.1                        | 57.2           | 72.0                     | 28.0                     | 30.3      |
| 1986-90 | 72.7                          | 13.9                         | 4.8  | 25.4                        | 2.2            | 27.7                     | 72.3                     | 32.0      |
| 1991-95 | 284.1                         | 40.0                         | 6.1  | 8.5                         | 12.6           | 21.1                     | 78.9                     | 27.5      |
| 1996-00 | 44.0                          | 17.4                         | 2.5  | 8.4                         | 36.4           | 44.8                     | 55.2                     | 12.8      |
| 2001-05 | 141.9                         | 41.0                         | 7.9  | 2.4                         | -10.4          | -8.0                     | 108.0                    | 4.2       |
| 2006-09 | 122.3                         | 39.8                         | 9.3  | 2.3                         | -0.5           | 1.8                      | 98.2                     | 9.2       |

Source: Nyagetera, (1997), Computed from BoT, (2011).

### 3.5 Summary

The Tanzanian economy performed fairly well in pre and post-Arusha declaration until the mid-1970s. From late 1970s, the economy deteriorated with macroeconomic imbalances and the country was in crisis in early 1980s. During the crisis, real GDP growth was very low and in some years negative growth rates were registered, inflation was over 30%, budget deficit-GDP ratio was very high and the balance of payments were not satisfactory. In response to the crisis Tanzania started implementing own funded recovery programs, namely NESP of 1981 and SAPs of 1982-84. However, the programs failed due to lack of funding. Nonetheless, the programs had some impacts in checking down the growth of credit in the economy.

As a remedy to the crisis, ERP I and II were respectively implemented since 1986/87 and 1991/92. The ERP I package addressed issues relating to the size of the state sector, and

areas of activity whose short-run objective was macroeconomic stability, especially price stability, through fiscal discipline. The ERP II (1989/90–1991/92) had three additional specific objectives, namely, improvement of the quality and quantity of social services, liberalization of financial sector, and privatization of public institutions. NSGRP, which was adopted in order to address the income poverty and MDGs, played a significant role in guiding the budget to specific clusters.

However, since inception of ERPs it took about a decade to realize some impressive performance in terms of major macroeconomic variables. Inflation decelerated from over 30% in 1994 to a single digit in 1999, real GDP growth improved from 3.3% in 1997 to over 6% during the 2000s, and the adoption of T-bills market relived the deficit monetization window. These achievements centered on, among others, fiscal adjustment measures undertaken during the period, which created not only fiscal space to finance social and economic sectors but also was very crucial in terming inflationary pressure. Chapter four provides a detailed description of the methodology.

## **CHAPTER FOUR**

### **METHODOLOGY**

#### **4.0 Introduction**

The chapter presents a conceptual framework that forms the basis for an empirical analysis of fiscal policy, economic growth and inflation as well as data set used in the study. The estimation models are informed by both empirical and theoretical literature on endogenous growth models, fiscal policy and growth as well as fiscal deficit, money supply and inflation covered in Chapter 2. They are also enriched by background information on developments and trends in major macroeconomic variables presented in Chapter 3. This chapter is divided into three sections. The first section models the fiscal policy-growth nexus, while the second section deals with fiscal deficit and inflation. The final section explains the estimation procedures.

#### **4.1 Fiscal Policy and Economic Growth**

##### **4.1.1 Conceptual Framework and the Model**

In examining the impact of fiscal policy on growth a model developed by Feder (1983) and used by Ram (1986) is adopted. Ram (1986) models the externality effect of government size, relative factor productivity in government and nongovernment sectors, and the overall impact of government size. Several features characterize the model. The specifications used are based on a production function of government and nongovernment sectors. The model not only provides an assessment of the overall effect of government size on economic growth, but it also enables one to judge whether firstly, the (marginal)

"externality" effect of government size on the rest of the economy is positive or negative, and, secondly, whether input productivity in the government sector is higher or lower than in the nongovernment (private) sector.

Accordingly, the government has critical roles in the process of economic development. An efficient large government size is likely to be a powerful engine of economic growth through its guarantee of security, participation in productive investment and provision of socially optimal direction for growth (Barro and Sala-i-Martin, 1995).

Consider the traditional aggregate production function presented as

$$y_t = f(K_t, L_t), \quad (4.1)$$

where  $y$  is real GDP,  $K$  is capital stock,  $L$  is labor, and  $t$  is time.

In line with the endogenous growth theory or new growth theory, an introduction in (4.1) of aggregate public spending ( $G$ ) as an explanatory variable yields,

$$y_t = f(K_t, L_t, G), \quad (4.2)$$

Note that, aggregate public spending ( $G$ ) can be split into public investment ( $I_g$ ) and current public consumption ( $C_g$ ). Both enter the production function. However, theory asserts that public consumption expenditure retards growth.

Ram (1986) uses a two-sector production function framework, namely the public sector (G), and private/non-government sector (P) as

$$P = P(K_p, L_p, G), \quad (4.3)$$

$$G = G(K_g, L_g), \quad (4.4)$$

where  $L_p$  and  $K_p$  are labor and capital inputs, respectively, in the private sector, while  $K_g$  and  $L_g$  are capital and labor in the public sector. In equation (4.3), the government sector has a positive externality on output in the private sector (P).

Following Ram (1986), total national output is the sum of the two sectors

$$Y = P + G = P(K_p, L_p, G) + G(L_g, K_g) \quad (4.5)$$

The marginal productivities of labour and capital in the two sectors are captured by the sign of  $\delta$  such that

$$G_L / P_L = G_K / P_K = (1 + \delta), \quad (4.6)$$

where  $G_i, P_i$  ( $i = L$  or  $K$ ) denotes respective partial derivatives (for example  $G_L$  denotes  $\partial G / \partial L$  or its discrete analog  $\Delta G / \Delta L$ ).  $\delta > 0$  implies higher marginal productivity in the public sector, the reverse would be the case if  $\delta < 0$  and  $\delta \neq 0$ .

By taking total differentials of equation (4.5), it can be shown that

$$dY = P_K dK_P + P_L dL_P + G_K dK_G + G_L dL_G + P_G dG \quad (4.7)$$

From equation (4.6)  $G_L = (1 + \delta)P_L$

$$dY = P_K dK_P + G_K dK_G + P_L (dL_P + dL_G) + \delta P_L dL_G + P_G dG \quad (4.8)$$

From equation (4.4)  $dG = G_K dK_G + G_L dL_G$  and thus,  $P_L dL_G = dG/(1+\delta) - G_K dK_G/(1+\delta)$ .

Since  $L = L_P + L_G$  equation (4.8) can be written as

$$dY = P_K dK_P + G_K dK_G + P_L dL + \delta \left[ \frac{dG}{1+\delta} - \frac{G_K}{1+\delta} dK_G \right] + P_G dG \quad (4.9a)$$

Or

$$dY = P_K dK_P + G_K dK_G \left[ 1 - \frac{\delta}{1+\delta} \right] + P_L dL + dG \left[ \frac{\delta}{1+\delta} + P_G \right], \quad (4.9b)$$

where  $P_K$ ,  $P_L$  and  $P_G$  refer to the marginal productivities of capital, labour and public services in the private sector.

The endogenous growth models of Barro (1990) and Romer (1990), among others, suggest different impacts of private and government investment on economic growth. They also single out the role of human capital accumulation in productivity enhancement. Thus,  $dK_P = I_P$  and  $dK_G = I_G$  which are private sector investment and public sector physical investment, respectively. Rao (1989) assumes a linear relationship between marginal product of labour in each sector and the average output per unit of labour in the economy, that is  $P_L = \beta(Y/L)$  and  $P_K = \alpha$ . Dividing through by national output  $Y$ , 4.9b can then be written as

$$\frac{dY}{Y} = \alpha \frac{I_P}{Y} + \sigma \frac{I_G}{Y} + \beta \frac{dL}{L} + (dG/G)(G/Y) \left[ \frac{\delta}{1+\delta} - P_G \right], \quad (4.10)$$

where  $\sigma = \left( 1 - \frac{\delta}{1+\delta} \right) G_K$

As in other studies, it is more plausible to use a variable  $G/Y$  instead of  $(dG/Y)$ , and public investment in human capital ( $H_g$ ) is used as a proxy for labour force growth  $(dL/L)$  due to lack of time series data on labour force growth in Tanzania, and  $C_g/Y$  instead of  $(dG/G)(G/Y)$  (Kweka and Morrissey, 2000).

Since  $y$  is the growth rate of total output we have

$$y = \alpha_0 + \alpha_1 \frac{I_p}{Y} + \alpha_2 \frac{I_g}{Y} + \alpha_3 \frac{H_g}{Y} + \alpha_4 \frac{C_g}{Y} + \mu, \quad (4.11)$$

In order to capture the impact on growth of macroeconomic policies instituted through other reforms, other variables are included in 4.11, among others, measures of financial sector reforms, and real exchange rate depreciation (Calamtisis *et al.*, 1999). Also, the effect on growth of export trade policies is captured through export performance or trade volume (Romer, 1986). Dummy variables to capture economic recovery programs and policy changes of 1986 (D1) and fiscal reforms of 1996 (D2) are included.

In view of the above, equation (4.11) is re-stated as

$$y = \alpha_0 + \alpha_1 \frac{I_p}{Y} + \alpha_2 \frac{I_g}{Y} + \alpha_3 \frac{H_g}{Y} + \alpha_4 \frac{C_g}{Y} + \alpha_5 \text{Rexr} + \alpha_6 \text{Trade} + \alpha_7 D1 + \alpha_8 D2 + \mu_t, \quad (4.12)$$

where  $I_p$  is private investment,  $I_g$  represent public investment spending,  $H_g$  is a measure of public human capital investment spending,  $C_g$  captures public consumption spending,  $\text{Rexr}$  measures real exchange rate,  $\text{Trade}$  captures trade value which is the sum of exports

and imports as a percentage of GDP.  $D1$  and  $D2$  are reform dummies and  $\mu_t$  indicates stochastic error term. Equation 4.12 is therefore the basic empirical specification model estimated in this study.

The error correction model (ECM) facilitates the analysis of the short-run effects on the dependent variable and suggests the speed of adjustment to the long-run equilibrium.

Based on the model, ECM is defined as

$$\Delta y_t = \alpha_0 + \sum_{i=1}^p \alpha_1 \Delta y_{t-i} + \sum_{i=0}^p \alpha_2 ip_{t-i} + \sum_{i=0}^p \alpha_3 ig_{t-i} + \sum_{i=0}^p \alpha_4 hg_{t-i} + \sum_{i=0}^p \alpha_5 cg_{t-i} + \sum_{i=0}^p \alpha_6 trade + \sum_{i=0}^p \alpha_7 rexr_{t-i} + \alpha_8 D1 + \alpha_9 D2 + \lambda_{10} ECT_{t-1} + \mu_t, \quad (4.13)$$

where, the  $ECT_{t-1}$  is the error correction term.

The ECM indicates how much of the disequilibrium is being corrected over one period.

The coefficients  $\alpha_1, \dots, \alpha_7$  are immediate impact multipliers,  $\lambda_{10}$  represents the speed of adjustment parameter, which for plausible results must be negative and statistically significant.

#### 4.1.2 Data and Sources

The study uses annual time series data for the period 1967 to 2011. The annual data for Gross Domestic Product (GDP), public investment spending or total government development expenditure, human capital investment spending (measured by total of health and education spending), public consumption spending (measured by government recurrent expenditure less expenditure on health and education), real exchange rate, and

trade volume (trade openness), are obtained from the Bank of Tanzania<sup>38</sup> and from Economic Surveys. Moreover, data for private investment, proxied by private capital formation, are from the International Financial Statistics (IFS) of the International Monetary Fund.

#### 4.1.3 Definition and Measurement of the Variables

Table 4.1 presents the definitions and expected signs of the variables in the model to be estimated. Fiscal and non-fiscal variables constitute the main estimation equation.

**Table 4. 1: Description of the Growth Model Variables**

|     | Variable                                         | Abbreviation | Definition                                                             | Expected sign/<br>Remarks          |
|-----|--------------------------------------------------|--------------|------------------------------------------------------------------------|------------------------------------|
| 1.  | Private investment                               | <i>ip</i>    | Proxied by private capital formation                                   | $\alpha_1 > 0$                     |
| 2.  | Public investment spending                       | <i>ig</i>    | Government development expenditure                                     | $\alpha_2 > 0$                     |
| 3.  | Human capital investment spending                | <i>hg</i>    | Total of health and education spending                                 | $\alpha_3 > 0$                     |
| 4.  | Public consumption spending                      | <i>cg</i>    | Government recurrent expenditure less health and education expenditure | $\alpha_4 > 0 / \alpha_4 < 0$      |
| 5.  | Nominal GDP                                      |              | Nominal GDP at factor cost used to deflect some variables              |                                    |
| 6.  | Real GDP growth                                  | <i>rgdp</i>  | Real GDP in constant 2001 prices                                       |                                    |
| 7.  | Real exchange rate                               | <i>rexr</i>  | Calculated from nominal exchange rate and CPI                          | $\alpha_5 > 0$<br>(undervaluation) |
| 8.  | Trade openness – sum of exports & imports values | <i>trade</i> | The ratio of the sum of exports and imports to nominal GDP             | $\alpha_6 > 0$                     |
| 9.  | Economic reforms dummy (1986)                    | <i>D1</i>    | A dummy variable to capture reform effects since 1986                  | $\alpha_7 > 0$                     |
| 10. | Fiscal reforms dummy (1996)                      | <i>D2</i>    | A dummy variable to capture fiscal reform effects since 1996           | $\alpha_8 > 0$                     |

Source: Constructed from literature review

<sup>38</sup> Economic and Operation Report (various) and Quarterly Economic Bulletins of the Bank of Tanzania.

## **4.2 Fiscal Adjustment and Inflation**

### **4.2.1 Conceptual Framework**

Sargent and Wallace (1981) allude that sooner or later, the fiscal deficit will be monetized and is thus inflationary. The main focus in the literature has been on the way in which the process takes place. This depends on the chosen model, either monetary theory or fiscal theory of price level. A single-equation model is commonly used to investigate the deficit-inflation nexus. Thus, the price determination equation can be the money demand or government budget constraints (Serban, 2002).

As opposed to fiscal dominance, in monetary dominance, the central bank starts the move by setting the inflation target and thus caps the seigniorage. Since the price level, seigniorage and public debt are predetermined, then the fiscal deficit is a residual. In fiscal dominance regime, the fiscal authority chooses the deficit according to fiscal policy and the central bank aligns the monetary (base) targets accordingly and inflation will be a residual (Cochrane, 1999). Overall, the monetarist dictum applies, that is, the price level is always a monetary phenomenon, in spite of the eventual fiscal roots of the observed monetary stance.

### **4.2.2 The Model**

In order to capture the inflation deficit-relationship, the starting point has been the public sector budget identity. The public finance approach to inflation is often used to model the public sector of the economy. It is also assumed that all debt takes the form of non-

interest bearing money. That is, printing money finances any primary public sector debt (Metin, 1995; Solomon and De Wet, 2004), as in equation (4.13)

$$\frac{G_t - T_t}{Y_t} = \frac{\Delta M_t}{Y_t} \quad (4.13)$$

where  $G$ ,  $T$  and  $Y$ , stands for public expenditures, public sector revenues (tax), nominal income and  $M$  denotes the base money.

In a growing economy this can be specified as

$$\Delta\left(\frac{M_t}{Y_t}\right) = \left(\frac{M_t}{Y_t}\right)\left[\left(\frac{\Delta M_t}{M_t} - \frac{\Delta Y_t}{Y_t}\right)\right] = \left(\frac{\Delta M_t}{Y_t}\right) - \left(\frac{M_t}{Y_t}\right)(\Delta p + y) \quad (4.14)$$

where  $\Delta p$  and  $y$  are inflation and growth rate of real income, respectively. It is assumed that the long-run income elasticity of demand for money is unit. The simplified budget constraint can be defined as

$$\Delta\left(\frac{M_t}{Y_t}\right) = \frac{(G_t - T_t)}{Y_t} - \left(\frac{M_t}{Y_t}\right)(\Delta p + y) \quad , \quad (4.15)$$

As a fraction of nominal income,  $G-T$  must be financed either by inflation tax  $M(\Delta p)$  or real seigniorage  $(My)$ , which accumulates to the government when income and money demand increases and the corresponding supply of money is provided. If not, it must be financed by increasing the real money stock at a rate which exceeds that justified by money demand given inflation and real income growth (Catao and Terrones, 2005). Seignorage revenue, the right hand side of equation (4.15), can be written as a function of the inflation rate and real money supply as follows:

$$S = \frac{f(\Pi)M_t}{P_t} \quad (4.16)$$

where  $f(\Pi_t)$  is a reduced form money demand equation.

Assuming that seignorage is increasing with inflation, one obtains an equation that explains inflation rate by budget deficit and money supply.

$$\Pi_t = \frac{\beta(G_t - T_t)P_t}{M_t} \quad , \quad (4.17)$$

where  $\beta$  and  $M/P$  are the inverse linear multiplier and money supply, respectively.

Dividing by nominal GDP gives the size of budget deficit (BD) in terms of GDP and level of inflation (Catao and Terrones, 2005):

$$\Pi_t = \frac{BD_t / Y_t}{M_t / Y_t} \quad (4.18)$$

The impact of the budget deficit on inflation is positive. The higher the budget deficit, the greater will be the rate of inflation. The budget deficit affects inflation only if it is monetized because it increases the monetary base of the economy, thus increasing the money supply and thereby causing an increase in the price level. When the budget deficit is monetized, an extremely high correlation exists between the budget deficit and money supply.

In order to estimate the effect of the budget deficit on inflation, the budget deficit is used as explanatory variabl. The second explanatory variable is the level of GDP, which is negatively related with the level of inflation. The third variable is exchange rate. It is included as a control variable in this study to explain inflation. Exchange rate

depreciation puts up pressure on domestic prices, especially for an import-dependent economy like Tanzania. The functional form of the model is

$$\Delta CPI = f(bd, exr, y, m2), \quad (4.19)$$

where: *cpi*, *bd*, *exr*, *rgdp* & *m2* are the consumer price index, consolidated nominal budget deficit, official nominal exchange rate, real GDP growth and broad money supply, respectively.

Tanzania experienced a series of internal and external shocks since 1967. These included policy regime changes since mid 1986, particularly a shift to indirect monetary policy instrument in 1995, external shocks from the oil crises in the 1970s and cash budget system introduced in 1995. To capture these regime changes the study used dummy variables. Dummy (D1) takes care of monetary policy changes, while a shift to cash budget system in 1996 is assigned a dummy (D2) (Ndanshau, 2009; Adam *et al.*, 2010).

By invoking natural log transformation gives the long run price equation

$$\Pi_t = \alpha_0 + \alpha_1 bd_t + \alpha_2 rgdp_t + \alpha_3 exr_t + \alpha_4 m2 + \alpha_5 D1 + \alpha_6 D2 + \varepsilon_t, \quad (4.20)$$

where  $\Pi_t$  is consumer price index,  $\alpha_i$  ( $i=0, 1, \dots, 6$ ) are parameters and  $\varepsilon_t$  is a stochastic error term.

Differencing equation (4.20) gives the long-run inflation relation in terms of budget deficit, output and nominal exchange rate growth

$$\Delta\Pi_t = \alpha_0 + \alpha_1\Delta bd_t + \alpha_2\Delta rgdp_t + \alpha_3\Delta exr_t + \alpha_4\Delta m2 + \alpha_5D1 + \alpha_6D2 + \varepsilon_t \quad (4.21)$$

In order to capture dynamics in the way inflation adjusts to changes in the fiscal deficit or to any other variable, an Auto-regressive distributed lag (ARDL) structure is evoked, where dependent and independent variables enter the right-hand side with lags of order  $p$  and  $q$ , respectively. ARDL helps to mitigate any contemporaneous causation from the dependent to the independent variables which might bias the estimates:

$$\Pi_t = \alpha_t + \sum_{i=1}^p \lambda_i \Pi_{t-i} + \sum_{i=0}^q \chi_i X_{t-i} + \varepsilon_t, \quad (4.22)$$

where  $X$  is a vector of explanatory variables.

The short-run dynamics of the system can be recovered by estimating an error-correction specification in which price changes respond to current and lagged changes in other variables as well as to the previous period's estimated equilibrium error,  $\Pi_{t-1} - X_{t-1}$ :

$$\Delta\Pi_t = \alpha_0 + \sum_{i=1}^p \lambda_i \Delta\Pi_{t-i} + \sum_{i=0}^p \chi_i \Delta bd_{t-i} + \sum_{i=0}^p \phi_i y_t + \sum_{i=0}^p \psi_t er_t + \beta_1 D1 + \beta_1 D2 + \zeta ect_{t-1} + u_t \quad (4.23)$$

where  $u_t$  is an iid stochastic error term,  $p$  is the lag length and  $\zeta_{ect_{t-1}}$  is the error correction term.

### 4.2.3 Data Type and Sources

The analysis in this study is based on annual time series data for the period 1967 to 2011. The annual data for price level (measured by the consumer price index (CPI)), broad money stock, Gross Domestic product (GDP) and exchange rate are obtained from the Bank of Tanzania and various National Economic Surveys.<sup>39</sup> The annual data for the fiscal balances is obtained from International Financial Statistics (IFS) of the IMF.

### 4.2.4 Definition and Measurement of the Variables

Table 4.2 presents the definitions and expected signs of the variables to be estimated in using equations 4.20 and 4.23. The main variables are consumer price index, Real GDP growth, budget deficit, official exchange rate, and two dummy variables.

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<sup>39</sup> Economic and Operations Reports and Quarterly Economic Bulletins of the Bank of Tanzania.

**Table 4. 2: Description of the Inflation Model Variables**

| Variable                                 | Abbreviation | Definition                                                                     | Expected sign/<br>Remarks                       |
|------------------------------------------|--------------|--------------------------------------------------------------------------------|-------------------------------------------------|
| 1. Nominal GDP                           |              | Nominal GDP at factor cost used to deflect some variables                      |                                                 |
| 2. Consumer Price Index                  | <i>cpi</i>   | Log of headline Consumer Price Index                                           |                                                 |
| 3. Budget deficit,                       | <i>bd</i>    | Consolidated budget deficit (percent of nominal GDP)                           | $\alpha_1 > 0$<br>(assume deficit is monetized) |
| 4. Real GDP growth                       | <i>rgdp</i>  | Real GDP in constant 2001 prices                                               | $\alpha_2 < 0$                                  |
| 5. Nominal exchange rate                 | <i>nexr</i>  | Official nominal exchange rate (period average)                                | $\alpha_3 > 0$                                  |
| 6. Broad money supply                    | <i>m2</i>    | Broad money supply growth                                                      | $\alpha_4 > 0$                                  |
| 7. Monetary policy changes               | <i>D1</i>    | A dummy to represent the quality of monetary policy since 1995                 |                                                 |
| 8. A shift to cash budget system in 1996 | <i>D2</i>    | A dummy variable to represent the discipline in government spending since 1996 |                                                 |

**Source:** Constructed from literature review

### 4.3. Estimation Procedures

#### 4.3.1 Unit Root Test

The important assumption of time series regression is that the future is like the past, and thus the historical relationship is a reliable guide to the future, which is formalized by the concept of stationarity (Stock and Watson, 2007). Most of the macroeconomic time series variables are trended and thus in most cases are non-stationary (they have unit root). Consider the first order autoregressive model [AR(1)] which may contain a unit root.

$$Y_t = \rho Y_{t-1} + u_t \quad (-1 \leq \rho \leq 1) \quad (4.24)$$

when  $\rho = 1$  the regression equation 4.24 becomes a non-stationary process, that is, the unit root problem. When  $\rho < 1$ , the series in the model is stationary.

As noted by Granger and Newbold (1974) and Phillips (1986), estimation of non-stationary or trended data by using OLS procedures may lead to a spurious or nonsense regression. First, the least squares estimators of the intercept and slope coefficients are not consistent, that is, they do not approach the true population parameter value as the sample size gets larger. Second, the conventional test statistics, such as the t-ratio and F-statistic do not have distributions like t- and F-distributions that we expect to hold when the null hypothesis is true. Consequently, the critical values used are inappropriate. Third, there will be a high degree of goodness of fit measured by  $R^2$  or the adjusted  $\bar{R}^2$ , but the Durbin-Watson statistic will converge to zero as the sample size grows (Granger and Newbold, 1974).

Therefore, before estimating a meaningful regression, time series data are subjected to unit root test in order to ascertain the stationarity and order of integration of the series. The Augmented Dickey-Fuller (ADF) statistic is a commonly used unit root test. However, conventional unit root tests such as ADF do not allow for the possibility of a structural break and are biased towards non-rejection of the null hypothesis (Zivot and Andrews, 1992 and Perron, 1997). Zivot and Andrews (1992) proposed a testing approach whereby the time of the break is estimated rather than assumed as an exogenous phenomenon. Since the study covers the period from 1967 to 2011, in which there have been policy changes, the ADF test is complemented by Zivot and Andrews unit root test, which takes into account structural breaks.

### 4.3.2 Cointegration

As literature admits, trended time series can potentially create major problems in empirical econometrics due to the spurious regression problem. One way of resolving this is to difference the series successively until stationarity is achieved and then use the stationary series for regression analysis. However, this solution is not ideal because it not only differences the error process in the regression, but also it no longer gives a unique long-run solution (Asteriou and Hall, 2007). If two series are really related, they are expected to move together and so the two stochastic trends would be very similar to each other, and when are combined together it may be possible to find a combination of them that eliminates the nonstationarity. In this special case, we say that the variables are cointegrated (Engle and Granger, 1987). Cointegration becomes one of the main tools for modelling non-stationary time series data to avoid spurious regression results.

Different test statistics for estimating long-run equilibrium relationship (cointegration) are suggested in the literature. The Engel-Granger two-step method, introduced by Engel and Granger (1987), and the Johansen Approach (Johansen, 1988, 1991) are among the widely used tests. This study uses the Johansen approach to cointegration. The Johansen approach is preferred owing to its superiority over the Engel and Granger single-equation approach. These include its ability to determine the actual number of existing cointegrating vectors in case of a model with more than two variables (for  $k$  number of variables, you can have up to  $k-1$  cointegrating vectors. Also, the Johansen methodology is a system-based, and thus is a dynamic approach (Asteriou and Hall, 2007). In the

Johansen approach, inference is made by comparing the critical values and test statistics.

If the test statistic is greater than critical value, then the null hypothesis is rejected.

Cointegration regression considers only the long-run property of the series in levels. It does not deal with the short-run dynamics explicitly. That is, it does not measure any dynamic adjustments between the first differences of the variables. Therefore, if two or more variables are cointegrated, the relationship between independent and dependent variables is most efficiently represented by an error correction model (Engel and Granger, 1987).

#### 4.3.3 Error Correction Model

The error correction model (ECM) is used to investigate the speed of adjustment towards equilibrium when a set of series is subjected to external shocks. Since non-stationary series have permanent effects (explosive) convergence is guaranteed so long as the series are cointegrated. The ECM facilitates analysis of the short-run effects on the dependent variable and suggests the speed of adjustment to the long-run equilibrium.

Assume two variables  $Y$  and  $X$ , the ECM representation of the model is shown as:

$$\Delta Y_t = \beta_0 + \beta_1 \Delta X_t - \beta_2 ECT_{t-1} + u_t \quad (4.25)$$

where variables,  $\beta_0$  is the intercept,  $\beta_1$  is the short-run error correction coefficient,  $\beta_2$  is the long-run error correction coefficient estimated in the model which provides

information about the speed of adjustment in cases of disequilibrium,  $u_t$  is the white noise, and  $ECT_t$  is the one period lag residual of the model (equilibrium error term).

If the two variables are cointegrated ECM incorporates not only short-run but also long-run effects. The long-run equilibrium or ECT  $[Y_{t-1} - \beta_0 - \beta_1 X_{t-1}]$  is included in the model together with the short-run dynamics captured by the differenced term. In ECM all the terms are stationary and the standard OLS estimation is therefore valid because  $Y_t$  and  $X_t$  are  $I(1)$ , then  $\Delta Y_t$  and  $\Delta X_t$  are  $I(0)$ , and by definition if  $Y_t$  and  $X_t$  are cointegrated, then their linear combination  $[Y_{t-1} - \beta_0 - \beta_1 X_{t-1}] \sim I(0)$ .

## CHAPTER FIVE

### EMPIRICAL ANALYSIS

#### 5.0 Introduction

This chapter presents and discusses the empirical estimation results and analysis of fiscal adjustment, economic growth, and inflation in Tanzania. The presentation is organized three sections. Section 5.1 discusses the results from estimation of fiscal adjustment economic growth nexus. The estimation results of the fiscal adjustment and inflation is the focus of section 5.2. Each section contains sub-sections on descriptive statistics, unit root test and cointegration analysis as well as error correction model. In order to check for robustness of the model results, diagnostic tests are conducted. A summary of the chapter is in section 5.3.

#### 5.1 Fiscal Adjustment-Economic Growth Nexus

##### 5.1.1 Time Series Properties of the Data

##### **Descriptive Statistics of the variables**

The first step in estimating fiscal consolidation and economic growth is to examine the basic properties of the data to be used for estimation. The variables as reported in Tables 5.1 to 5.5: *lnrgdp* is a log of real GDP, *ip* is private investment, *hg* is human capital spending, *ig* is government development expenditure, *cg* is government recurrent expenditure less health and education expenditures, *lntrade* is a log of trade, and *lnrexr* is a log of real exchange rate. The results in Table 5.1 show that all variables have a

skewness of about zero and kurtosis of about two, suggesting that they are normally distributed.

**Table 5. 1: Descriptive Statistics of the Variables**

|              | <i>lnrgdp</i> | <i>ip</i> | <i>ig</i> | <i>hg</i> | <i>cg</i> | <i>lntrade</i> | <i>lnrexr</i> |
|--------------|---------------|-----------|-----------|-----------|-----------|----------------|---------------|
| Mean         | 15.662        | 5.376     | 4.213     | 3.927     | 5.018     | 3.522          | 6.538         |
| Median       | 15.584        | 5.211     | 3.142     | 2.968     | 4.185     | 3.622          | 6.693         |
| Maximum      | 16.701        | 9.037     | 8.049     | 7.659     | 8.817     | 3.970          | 7.095         |
| Minimum      | 14.883        | 2.472     | -1.293    | 0.426     | 2.063     | 2.846          | 5.669         |
| Std. Dev     | 0.488         | 2.393     | 2.851     | 2.692     | 2.531     | 0.332          | 0.442         |
| Skewness     | 0.478         | 0.269     | 0.097     | 0.212     | 0.175     | -0.593         | -0.439        |
| Kurtosis     | 2.361         | 1.521     | 1.476     | 1.336     | 1.362     | 2.052          | 1.801         |
| Observations | 45            | 45        | 45        | 45        | 45        | 45             | 45            |

**Source:** Author's estimates.

**Note:** ln means in natural logarithm.

### Behavior of the Key Variables

Usually, graphical analysis is considered as a natural first step to econometric analysis. Such a plot at levels gives an initial insight about the likely nature of the time series. Therefore, the visual inspection of the variables suggested that only real output (*rgdp*) trended upward. *ip*, *ig*, *hg*, *ig*, *cg*, *trad* and *rexr* lacked a clear trend. Trade, which is the sum of exports and imports as the ratio of GDP, is more volatile during the study period. The graphs are presented in Appendix I.

### Correlation Matrix

Correlation analysis was undertaken prior to estimating the models. In this regard, Table 5.2 shows correlation matrix between real GDP growth (*rgdp*) against its hypothesized determinants. It indicates that there is a strong correlation between real GDP growth (*lnrgdp*) and private investment (*ip*), human capital spending (*hg*) and real exchange rate (*lnrexr*), which are statistically significant at 5% level.

**Table 5. 2: Correlation Matrix**

|                | <i>lnrgdp</i>        | <i>ip</i>           | <i>ig</i>            | <i>hgig</i>          | <i>hg</i>            | <i>cg</i>            | <i>lntrade</i>     | <i>lnrexr</i> |
|----------------|----------------------|---------------------|----------------------|----------------------|----------------------|----------------------|--------------------|---------------|
| <i>lnrgdp</i>  | 1.0000               |                     |                      |                      |                      |                      |                    |               |
| <i>ip</i>      | 0.3681*<br>(0.0129)  | 1.0000              |                      |                      |                      |                      |                    |               |
| <i>ig</i>      | -0.0308<br>(0.8406)  | 0.0928<br>(0.5442)* | 1.0000               |                      |                      |                      |                    |               |
| <i>hgig</i>    | -0.1267<br>(0.4069)  | 0.0405<br>(0.7918)  | 0.9833*<br>(0.0000)  | 1.0000               |                      |                      |                    |               |
| <i>hg</i>      | -0.3249*<br>(0.0294) | -0.0813<br>(0.5955) | 0.8245*<br>(0.0000)  | 0.9138*<br>(0.0000)  | 1.0000               |                      |                    |               |
| <i>cg</i>      | 0.0470<br>(0.7589)   | -0.0933<br>(0.5419) | 0.5057*<br>(0.0004)  | 0.5113*<br>(0.0003)  | 0.4605*<br>(0.0015)  | 1.0000               |                    |               |
| <i>lntrade</i> | 0.1390<br>(0.3627)   | 0.6496*<br>(0.0000) | 0.3574*<br>(0.0159)  | 0.3329*<br>(0.0254)  | 0.2373<br>(0.1166)   | 0.2002<br>(0.1872)   | 1.0000             |               |
| <i>lnrexr</i>  | 0.7159*<br>(0.0000)  | 0.4089*<br>(0.0053) | -0.4916*<br>(0.0006) | -0.5576*<br>(0.0001) | -0.6361*<br>(0.0000) | -0.4169*<br>(0.0044) | 0.1978<br>(0.1928) | 1.0000        |

**Source:** Author's estimates.

Note: \*statistically significant (at least at 5%).

Likewise, real GDP portrays strong correlation with real exchange rate, which may suggest an indication of multicollinearity. In addition, there is an inverse correlation between public consumption and real GDP. Surprisingly, development expenditure (*ig*) and human capital spending (*hg*) are also inversely correlated to real GDP.

## Stationarity Tests

### Unit Root Test

The stationarity condition for all variables was tested. The unit root test was performed by using Dickey-Fuller (ADF) test. The testing was done at levels and first difference included both intercept and liner trend. The test results are reported in Table 5.3 and indicate that variables are not stationary at levels (since the P-values are greater than 0.05). The next tests were undertaken to validate the null hypotheses that the first differences of the variables are stationary. Overall, these tests suggest that all variables are I(1).

**Table 5.3: ADF Unit Root Test Results for the Variables of the Model**  
[constant term and trend included]

| Variable       | Test Statistics | In Levels  |                      | At First Deference (zero lag length) |                      |
|----------------|-----------------|------------|----------------------|--------------------------------------|----------------------|
|                |                 | Lag length | Order of Integration | Test Statistics                      | Order of integration |
| <i>lnrgdp</i>  | -0.252          | 2          | I(1)                 | -4.099                               | I(0)                 |
| <i>ip</i>      | -2.450          | 0          | I(1)                 | -7.029                               | I(0)                 |
| <i>ig</i>      | -1.351          | 0          | I(1)                 | -5.322                               | I(0)                 |
| <i>hg</i>      | -2.787          | 0          | I(1)                 | -9.641                               | I(0)                 |
| <i>cg</i>      | -2.131          | 0          | I(1)                 | -7.521                               | I(0)                 |
| <i>hgig</i>    | -1.424          | 0          | I(1)                 | -5.738                               | I(0)                 |
| <i>lntrade</i> | -1.499          | 0          | I(1)                 | -5.264                               | I(0)                 |
| <i>lnrexr</i>  | -0.635          | 0          | I(1)                 | -3.970                               | I(0)                 |

**Source:** Author's estimates.

**Notes:** Critical values of ADF statistic are: 1% = -3.621, 5% = -2.947, 10% = -2.607.

#### *Unit Root Test with Structural Break*

The ADF test statistics become biased towards non-rejection of a unit root whenever there are structural breaks (Enders, 1995). Peron (1989) developed a unit root test that takes into account the process of structural break, which was further developed by Zivot and Andrews (1992). Since it is unlikely to have all series without structural break, the data have been tested for unit root using Zivot and Andrews test (Zandrews test). The results are summarized in Table 5.4.

**Table 5.4: Results of Zivot and Andrews, one Break Test**

| In Levels [constant term and trend included] |            |                 |            |
|----------------------------------------------|------------|-----------------|------------|
| Variable                                     | Lag length | Test Statistics | Break Date |
| <i>lnrgdp</i>                                | 0          | -4.115          | 1977       |
| <i>ip</i>                                    | 0          | -3.201          | 1977       |
| <i>ig</i>                                    | 0          | -3.019          | 1981       |
| <i>hg</i>                                    | 0          | -4.705          | 1985       |
| <i>cg</i>                                    | 0          | -4.004          | 1986       |
| <i>hgig</i>                                  | 0          | -3.619          | 1986       |
| <i>lntrade</i>                               | 0          | -2.541          | 1989       |
| <i>lnrexr</i>                                | 0          | -4.458          | 1987       |

**Source:** Author's estimates.

**Notes:** Critical values for Zivot and Andrews test are: 1% = -5.570, 5% = -5.080.

The Zivot Andrews test reported in Table 5.4 includes a trend since most of the series in the study depict an upward or downward trend. The null hypothesis is that the series are non-stationary against an alternative hypothesis of trend stationary process that allows for one-time break in the level and trend. The test results fail to reject the null hypothesis for all variables in level and trend. From the results, a single structural break and date for each series was identified. The Zivot and Andrews test, thus confirms the ADF unit root test for non-stationary series in levels.

### Testing for cointegration

After conducting the unit root test, the study applied the Johansen and Juselius (1990) maximum likelihood method to investigate whether or not there is more than a single cointegration relationship among the variables of interest. At 5% significance level, the trace test and maximum eigenvalue test indicates three cointegrating equations among the variables. Hence, the Johansen methodology depicts that there exist three long-run (cointegrating) relationships among *lnrgdp*, *ip*, *hgig*, *cg*, *lntrade* and *lnrexr* (Table 5.5).

Thus, estimation of VECM is plausible in this context. The likelihood-ratio tests based on LR, AIC and FPE selected a model with three lags.

**Table 5.5: Cointegration Tests based on Johansen's Maximum Likelihood Method**

|                          |          |          |          |          |         |         |
|--------------------------|----------|----------|----------|----------|---------|---------|
| Eigenvalues              | 0.87666  | 0.71665  | 0.64423  | 0.44322  | 0.38383 | 0.35625 |
| Null hypothesis, Rank =r | r=0      | r≤1      | r≤2      | r≤3      | r≤4     | r≤5     |
| Trace statistic          | 269.6791 | 179.6893 | 125.4638 | 81.0242* | 55.8443 | 35.0224 |
| 5% critical value        | 192.89   | 156.00   | 124.24   | 94.15    | 68.52   | 47.21   |
| Maximum Statistic        | 89.9898  | 54.2256  | 45.4395  | 25.1799* | 20.8219 | 18.9389 |
| 5% critical value        | 57.12    | 51.42    | 45.28    | 39.37    | 33.46   | 27.97   |

**Source:** Author's estimates.

### 5.1.2 Empirical Results for the Long-run Model for Fiscal Consolidation and Economic Growth Nexus

#### Specification of the Fiscal Adjustment-Growth Nexus Model

The examination of the time series properties of the basic data was followed by econometric analysis. The Least Squares Method was applied in the static long-run growth equation 5.1, including two dummy variables for policy shifts. The basic model of income growth was estimated, after the deletion of one insignificant variable in the spirit of general to specific modelling (Hendry, 1995). Table 5.6 summarizes the results for the basic model that seeks to establish, among others, the fiscal determinants of real income growth in Tanzania.

#### Diagnostic Tests

The study uses both Breusch-Pagan, and White tests for heteroskedasticity. The most commonly test used for autocorrelation is the Durbin –Watson test. However, the

Durbin–Watson test does not assume higher order autocorrelation. Therefore, in order to capture higher order autocorrelation the study conducts Breusch-Godfrey test.

Since the p-value (0.1516) in White's test is higher than the usual threshold of 0.05 (95% significance), we fail to reject the null hypothesis (Table 5.6). Thus both Breusch-Pagan and White test indicate that the residuals are homoskedastic. This in turn, accept the null hypothesis of no serial correlation according to Breusch-Godfrey test.

**Table 5.6: Results for Estimated long-run Coefficients**  
[Dependent variable: Ln(rgdp)]

| <i>Variable</i>                                                                 | <i>Coefficient</i> | <i>Std. Error</i> | <i>Prob.</i> | <i>Beta</i> |
|---------------------------------------------------------------------------------|--------------------|-------------------|--------------|-------------|
| <i>Private Investment (ip)</i>                                                  | 0.15105*           | 0.0906            | 0.095        | 0.07702     |
| <i>Public investment spending (hgig)</i>                                        | 0.43573***         | 0.06506           | 0.000        | 0.42311     |
| <i>Public consumption spending (cg)</i>                                         | 0.54269***         | 0.08555           | 0.000        | 0.31979     |
| <i>Real exchange rate (lnrexx)</i>                                              | 0.35999**          | 0.13342           | 0.007        | 0.32024     |
| <i>Openness (lntrade)</i>                                                       | -0.32023**         | 0.11622           | 0.006        | -0.22707    |
| <i>Economic reforms dummy (D1)</i>                                              | 0.42755***         | 0.05897           | 0.000        | 0.73641     |
| <i>Fiscal reforms dummy (D2)</i>                                                | 0.09425***         | 0.02228           | 0.000        | 0.24987     |
| <i>Constant (C)</i>                                                             | 12.98462           | 0.85053           | 0.000        |             |
| F(6, 37) = 95.02      R-squared = 0.9473                                        |                    |                   |              |             |
| Prob > F = 0.0000      Adj R-squared = 0.9373                                   |                    |                   |              |             |
| Breusch-Godfrey LM test: Prob > chi2 = 0.2397; H0: no serial correlation        |                    |                   |              |             |
| White's test: Prob > chi2 = 0.1516; H0: homoskedasticity                        |                    |                   |              |             |
| Breusch-Pagan / Cook-Weisberg test: Prob > chi2 = 0.5818; H0: Constant variance |                    |                   |              |             |

**Source:** Author's estimates.

**Notes:** \*, \*\*, and \*\*\* denotes significance level at 10%, 5% and 1%, respectively.

The fiscal adjustment growth-nexus model consists of five explanatory variables including two dummy variables, to capture the regime change. The two dummy variables are macroeconomic reforms (1986) and fiscal reforms of 1996. The regression results in Table 5.5 provide the coefficient for the long-run determinants of GDP growth in Tanzania for the period 1967 to 2011. The results suggest that fiscal factors, as well as

openness of the economy due to the adopted reforms, contributed to real GDP growth during the study period. According to the estimates, none of the coefficients of explanatory variables is found to be greater than unity, indicating low responsiveness of economic growth to changes in these variables.

Surprisingly, human capital investment spending, that is, recurrent and development expenditures in education and health sectors (not reported) is negative and statistically insignificant. One line of argument in favour of the finding is that human capital investment spending has been inefficient and unproductive. However, the sign reversed when human capital investment spending was combined with development expenditures in other sectors of the economy. Interestingly, while expected positive correlation between private investments, proxied by private capital formation, is observable, the relationship is weakly significant (10% level). Nonetheless, except openness (trade), public investment spending, public consumption, and real exchange rate variables have the expected positive relationships and are statistically significant at least at 5% level.

#### **Public investment spending (*hgig*)**

The regression results are in line with theoretical prediction. The correlation between public investment spending (government development expenditure) as a percentage of GDP, and real income growth is positive, as postulated by theory. The coefficient is statistically significant at 1% level, implying that in the long run public investment spending does influence the real GDP growth. The coefficient of 0.436 on public

investment spending implies that, a 1% increase in *hgig* increases the real GDP growth by approximately 0.44%, all other things being equal. A plausible explanation for the positive correlation between public investment spending and real GDP is that, increases in public investment augments or complements private sector growth. Studies by Kayandabila (2008) and Moshi and Kilindo (1999) on Tanzania have similar results. Also, the findings are similar to studies by Amin (1998) in Cameroon, M'Amanja and Morissey, (2005) in Kenya, Aregbeyen (2007) in Nigeria and Antwi *et al.*, (2011) in Ghana.

#### **Private investment spending (*pi*)**

The coefficient on private investment spending, proxied by private capital formation, is positive as expected. It is statistically significant at 10% level. Specifically, a one percent increase in private investment spending will cause real GDP to increase by approximately 0.151%, *ceteris paribus*. Therefore, it can be inferred that private capital has a positive impact on real GDP in Tanzania. This implies that in the long run, increases in private capital is critical to economic growth in Tanzania. This result supports the theory and concurs with the findings from Bose *et al.*, (2003) for 30 developing countries, and Mansouri (2008) in Egypt, Morocco and Tunisia.

#### **Public consumption spending (*cg*)**

The coefficient on public consumption spending as a percent of GDP, is statistically significant at 1% level with a positive sign. This denotes that an increase in public

consumption spending by 1% leads to an increase of approximately 0.54% of the real GDP, other things being equal. This could be due to the impact of large government consumption spending especially wages on private consumption, which in turn affects growth or the substantial productive expenditures included in aggregation of consumption expenditures (Kweka and Morrissay, 2000). This is in line with most of empirical studies in developing countries, which find a positive correlation between government consumption and real GDP growth. Such studies include Kweka and Morrissay (2000), and Kayandabila (2008) in Tanzania, as well as Babalola and Aminu (2011) in Nigeria.

#### **Real exchange rate (*rexr*)**

The coefficient of real exchange rate is positive and significant at 5% level, indicating that there is a positive relationship between the level of economic growth and real exchange rate growth. In this regard, a one percent real exchange rate depreciation results in an increase of approximately 0.359% in real GDP growth, *ceteris paribus*. This suggests that undervalued real exchange rate tends to boost economic growth. The observed result is consistent with the fact that prudent macroeconomic policies, like trade liberalization are growth-enhancing. On the contrary, an overvalued real exchange rate is harmful to growth.

#### **Openness –sum of exports and imports value (*trade*)**

The coefficient that captures openness of the economy (*trade*) is found to be negative, contrary to the theory, but statistically significant at 5% level. Unexpected negative effect

of openness could be due to huge import component in it which may be detriment to growth through the trade balance deficit. However, the studies by Khungwa (2007) on Malawi and Anaman (2006) on Ghana find a strong positive relationship between trade openness and economic growth.

### **Dummy Variables ( $D1$ and $D2$ )**

Two dummy variables ( $D1$  and  $D2$ ) are included in the first model to capture the impact of macroeconomic policy shifts in the mid 1980s and fiscal reforms (1996), respectively. The positive signs and statistical significance (at 1% level) of macroeconomic policy shifts (1986) and fiscal reforms especially after the setting up TRA in 1996, suggest that both macroeconomic and fiscal reforms contributed significantly to income growth in Tanzania.

## **5.1.3 The Short-Run Model for Fiscal Consolidation and Economic Growth**

### **Error Correction Modeling**

An analysis of the short-run dynamic equation has two important objectives: first, to investigate whether or not the impact of any of the explanatory variables is permanent or temporary. If responses are significant only in the short run, the effect of changes in any of the explanatory variables is temporary. If the response is significant in both the short run and the long-run, then it can be said that changes in any of the explanatory variables are permanent. Second, to find out the speed of adjustment in response to a deviation from the long run equilibrium, with a view to inform policy (Cholifihani, 2008). The

presence of cointegration implies that the variables have a long-run equilibrium relationship. The error correction model is used to capture the short-run dynamics.

### Diagnostic Tests

Diagnostic tests are performed to ascertain the validity of the model. It appears that the ECMs are well specified. The equations pass the Eigenvalue stability condition (correctly specified number of cointegrating equations), Lagrange-multiplier test (LM) test for serial correlation, and the normality test (normally distributed error term). The next step is the interpretation of the results in Table 5.7.

**Table 5.7: Estimated Error Correction Model: Fiscal Adjustment Growth-Nexus**  
[The dependent variable:  $\Delta \text{Ln}(\text{rgdp})$ ]

| Variable                                                                                   | Coefficient | Std. Error | P>Z   |
|--------------------------------------------------------------------------------------------|-------------|------------|-------|
| Constant                                                                                   | 0.0223**    | 0.0098     | 0.022 |
| $\Delta(\text{lnrgdp})(-1)$                                                                | 0.1992      | 0.1815     | 0.273 |
| $\Delta(\text{lnrgdp})(-2)$                                                                | 0.5312**    | 0.2115     | 0.012 |
| $\Delta(\text{ip})(-1)$                                                                    | -0.0037***  | 0.0013     | 0.003 |
| $\Delta(\text{ip})(-2)$                                                                    | -0.0019*    | 0.0011     | 0.074 |
| $\Delta(\text{hgig})(-2)$                                                                  | 0.0021      | 0.0023     | 0.360 |
| $\Delta(\text{cg})(-1)$                                                                    | -0.0112**   | 0.0035     | 0.002 |
| $\Delta(\text{cg})(-2)$                                                                    | -0.0048*    | 0.0024     | 0.047 |
| $\Delta(\text{lntrad})(-1)$                                                                | 0.1281**    | 0.0387     | 0.001 |
| $\Delta(\text{lntrad})(-2)$                                                                | 0.0375      | 0.0286     | 0.190 |
| $\Delta(\text{lnrexr})(-1)$                                                                | -0.0589     | 0.0463     | 0.203 |
| $\Delta(\text{lnrexr})(-2)$                                                                | -0.0456     | 0.0557     | 0.413 |
| ECM1(-1)                                                                                   | -0.1999***  | 0.0564     | 0.000 |
| Lagrange-multiplier test (mlag4) Prob > chi2= 0.30786; H0: no autocorrelation at lag order |             |            |       |

**Source:** Author's estimates.

**Notes:** \*, \*\*, and \*\*\* denotes significance level at 10%, 5% and 1%, respectively and 'Δ' denotes the first difference of the variable.

The results reported in Table 5.7 show that the coefficient on real GDP growth lagged one period two periods (lag-2), and trade openness lagged one period (lag-1) are statistically significant at 5% level and have a positive relationship with the dependent

variable, GDP, in the short-run. Surprisingly, the effects of private investment (lag-1 and lag-2), is negative, but statistically significant. Productive public investment (*hgig*) has the correct sign but is statistically insignificant. The results also suggest that government consumption spending (lag-1 and lag-2) is statistically significant and has a negative short-run effect on economic growth. Real exchange rate has a negative sign and statistically insignificant in exerting short-run impact on economic growth in Tanzania. The first lag of the error term has the correct sign and is statistically significant.

The estimated coefficient of the error term (-0.1999) is statistically significant at 1% level with the appropriate sign (negative). This suggests that the system corrects its previous period's disequilibrium by about 20% a year.

## 5.2 Fiscal Consolidation and Inflation

### 5.2.1 Time Series Properties of the Data

#### Descriptive Statistics of the variables

The basic properties of the variables are given in Table 5.8, and they indicate that all the variables are fairly distributed. The variables given in Table 5.8 to 5.12: CPI is consumer price index, RGDP is real GDP growth, M2 is log of broad money growth, BD is budget deficit (% of GDP) and REXR is log real exchange rate.

**Table 5.8: Descriptive Statistics for determinants of Inflation model (1967-2011)**

|      | <i>lnpci</i> | <i>lnrgdp</i> | <i>lnm2</i> | <i>bd</i> | <i>lnrexr</i> |
|------|--------------|---------------|-------------|-----------|---------------|
| Mean | 1.97137      | 15.67906      | 11.67073    | -3.828    | 4.51247       |

|              |          |          |          |          |          |
|--------------|----------|----------|----------|----------|----------|
| Median       | 2.24495  | 15.59751 | 11.72642 | -4.10593 | 4.96547  |
| Maximum      | 5.135151 | 16.70108 | 16.03996 | 1.55841  | 7.36486  |
| Minimum      | -1.71479 | 14.92312 | 7.183871 | -11.357  | 1.94876  |
| Std. Dev     | 2.39411  | 0.47921  | 2.741464 | 2.989    | 2.20475  |
| Skewness     | -0.16606 | 0.50602  | -0.06382 | -0.283   | -0.04391 |
| Kurtosis     | 1.44038  | 2.35770  | 1.67022  | 2.866    | 1.21916  |
| Observations | 45       | 45       | 45       | 45       | 45       |

**Source:** Author's estimates.

**Notes:** ln means in natural logarithm

### Behavior of the Key Variables

A graphical inspection of the variables indicate that all variables trend upward except fiscal deficit (*bd*) and inflation (*cpi* growth). This is an indication that they are non-stationary at levels, Appendix II.

### Correlation Matrix

Table 5.9 shows the correlation matrix between inflation (*cpi*) and against its hypothesized determinants. It indicates that there is a strong correlation between inflation (*ln**cpi*), broad money supply (*ln**m2*), nominal exchange rate (*ln**nexr*), and real income growth (*ln**rgdp*), which is statistically significant at 5% level. However, inflation is positively correlated to nominal exchange rate, money supply and budget deficit but inversely related with real GDP growth.

**Table 5.9: Correlation Matrix**

|                       | <i>ln</i> <i>cpi</i> | <i>ln</i> <i>rgdp</i> | <i>ln</i> <i>m2</i> | <i>ln</i> <i>nexr</i> | <i>bp</i> |
|-----------------------|----------------------|-----------------------|---------------------|-----------------------|-----------|
| <i>ln</i> <i>cpi</i>  | 1.0000               |                       |                     |                       |           |
| <i>ln</i> <i>rgdp</i> | -0.9311*<br>(0.0000) | 1.0000                |                     |                       |           |
| <i>ln</i> <i>m2</i>   | 0.9912*<br>(0.0000)  | 0.9659*<br>(0.0000)   | 1.0000              |                       |           |
| <i>ln</i> <i>nexr</i> | 0.9840*<br>(0.0000)  | 0.9094*<br>(0.0000)   | 0.9699*<br>(0.0000) | 1.0000                |           |

|           |                     |                    |                    |                     |        |
|-----------|---------------------|--------------------|--------------------|---------------------|--------|
| <i>bd</i> | 0.3740*<br>(0.0114) | 0.1447<br>(0.3431) | 0.2834<br>(0.0592) | 0.4461*<br>(0.0021) | 1.0000 |
|-----------|---------------------|--------------------|--------------------|---------------------|--------|

**Source:** Author's estimates.

**Note:** \*statistically significant (at least at 5%).

## Stationarity Tests

### Unit Root Test

The Augmented Dickey Fuller unit root test was used to test the order of integration and to solve the problem of non-stationary of variables. The ADF is conducted at level and at first difference with constant and trend. Table 5.10 presents ADF unit root test statistics. The inflation level (*cpi* change), real income (*lnrgdp*), *lnm2*, and nominal exchange rate (*nexr*) in log as well as fiscal deficit (*bd*), appear to be difference stationary, that is, they are integrated of order one, I(1).

**Table 5.10: ADF Unit Root Test Results for the Variables of the Model**  
[Constant term and trend included]

| Variable      | In Levels       |            |                      | At First Deference (zero lag length) |                      |
|---------------|-----------------|------------|----------------------|--------------------------------------|----------------------|
|               | Test Statistics | Lag length | Order of Integration | Test Statistics                      | Order of integration |
| <i>lnmpi</i>  | -1.429          | 0          | I(2)                 | -8.265                               | I(1)                 |
| <i>lnrgdp</i> | -0.252          | 2          | I(1)                 | -4.099                               | I(0)                 |
| <i>lnm2</i>   | -0.442          | 0          | I(1)                 | -3.986                               | I(0)                 |
| <i>bd</i>     | -1.676          | 0          | I(1)                 | -7.207                               | I(0)                 |
| <i>lnnexr</i> | -0.382          | 0          | I(1)                 | -4.541                               | I(0)                 |

**Source:** Author's estimates.

**Notes:** Critical values of ADF statistic are: 1% = -3.634, 5% = -2.952, 10% = -2.610.

### Unit Root Test with Structural Break

The ADF test assumes no structural breaks in the series and if such breaks exist, the ADF loses most of its powers. In this study, an alternative test, namely Zivot and Andrews, which accommodates structural breaks in the series was used. The results are presented in Table 5.11.

**Table 5.11: Results of Zivot and Andrews One Break Test**

| In Levels [Intercept and trend included] |            |                 |            |
|------------------------------------------|------------|-----------------|------------|
| Variable                                 | Lag length | Test Statistics | Break Date |
| <i>lnmpi</i>                             | 0          | 0.652           | 1987       |
| <i>lnrgdp</i>                            | 0          | -0.098          | 1980       |
| <i>infl</i>                              | 0          | -3.286          | 1989       |
| <i>lnm2</i>                              | 0          | -1.595          | 1979       |
| <i>lnnextr</i>                           | 0          | -3.666          | 1989       |
| <i>bd</i>                                | 0          | -1.594          | 2006       |

**Source:** Author's estimates

**Notes:** Critical values for Zivot and Andrews test are: 1% = -5.3400, 5% = -4.8000

The null hypothesis for the test is that the series are non-stationary against an alternative hypothesis of trend stationary process that allows for a one-time break in the level and trend. The test results fail to reject the null hypothesis for all variables in level and trend. The Zivot Andrews test thus confirms that all variables are integrated of the same order including CPI.

### Testing for cointegration

The Johansen cointegration test was used to determine the long-run equilibrium between variables. The optimal lag length of two in this multivariate model was determined by the Vector Auto Regressive (VAR) method, Final prediction error (FPE), the Hannan–Quinn information criterion (HQIC) method, and Schwarz Bayesian information criterion (SBIC) method. Table 5.12 shows the result of Johansen co-integration test. Both the trace test and maximum Eigenvalues given in panel indicate one cointegrating equation at 5% level of significance. This indicates that there is long run equilibrium in the model.

**Table 5.12: Cointegration Tests based on Johansen's Maximum Likelihood Method**

|                          |          |          |         |         |         |
|--------------------------|----------|----------|---------|---------|---------|
| Eigenvalues              | 0.79091  | 0.49856  | 0.41729 | 0.26315 | 0.23789 |
| Null hypothesis, Rank =r | r=0      | r≤1      | r≤2     | r≤3     | r≤4     |
| Trace statistic          | 152.6658 | 85.3708* | 55.6890 | 32.4659 | 19.3348 |
| 5% critical value        | 124.24   | 94.15    | 68.52   | 47.21   | 29.68   |

|                   |         |          |         |         |         |
|-------------------|---------|----------|---------|---------|---------|
| Maximum Statistic | 67.2951 | 29.6817* | 23.2232 | 13.1310 | 11.6815 |
| 5% critical value | 45.28   | 39.37    | 33.46   | 27.07   | 20.97   |

Source: Authors estimates

## 5.2.2 Empirical Results, Long-Run Model: Fiscal Consolidation and Inflation

### Estimated Long-run relationship

The presence of cointegration between variables suggests a long-run relationship among the variables under consideration. The results for long-run relationship between *cpi*, *rgdp*, *m2*, *bd* and *nexr* for Tanzania during the 1967 to 2011 period are presented in Table 5.13.

**Table 5.13: Results for Estimated long-run Coefficients**

| [The dependent variable: ( $\Delta$ CPI)]                                                        |             |            |             |       |         |
|--------------------------------------------------------------------------------------------------|-------------|------------|-------------|-------|---------|
| Variable                                                                                         | Coefficient | Std. Error | t-Statistic | Prob. | Beta    |
| Real GDP growth                                                                                  | -1.0112*    | 0.5924     | -1.71       | 0.096 | -0.2195 |
| M2 growth                                                                                        | -0.1062     | 0.1199     | -0.89       | 0.381 | 0.1126  |
| Nominal Exchange rate growth                                                                     | 0.2986**    | 0.1391     | 2.15        | 0.038 | 0.3397  |
| Budget deficit                                                                                   | -0.8751**   | 0.4696     | -1.86       | 0.070 | -0.2343 |
| Economic reforms dummy (D1)                                                                      | 10.6516     | 5.4372     | 2.58        | 0.058 | 0.4690  |
| Fiscal reforms dummy (D2)                                                                        | 13.6064     | 5.4040     | 2.52        | 0.016 | 0.5862  |
| Constant                                                                                         | 15.7052     | 4.1346     | 3.80        | 0.001 |         |
| F( 6, 37) = 10.41      R-squared = 0.6281                                                        |             |            |             |       |         |
| Prob > F = 0.0000;      Adj R-squared = 0.5677                                                   |             |            |             |       |         |
| Breusch-Godfrey LM test: Prob > chi2 = 0.0054; H0: no serial correlation                         |             |            |             |       |         |
| Breusch-Pagan / Cook-Weisberg test: Prob > chi2 = 0.4308; Ho: Constant variance                  |             |            |             |       |         |
| Link test (linktest): ( $\hat{u}_{\text{hat}}^2$ ), Prob > t = 0.285; Ho: no specification error |             |            |             |       |         |

Source: Author's estimates.

Notes: \*, \*\*, and \*\*\* denotes significance level at 10%, 5% and 1%, respectively.

As noted above, diagnostic test indicates that the error terms have a constant variance, or homoskedastic. The link test reveals that the model is correctly specified. However, the model suffers from autocorrelation (Breusch-Godfrey LM test).<sup>40</sup> The problem of multicollinearity is very severe as the Variance Inflation Factor (VIF) is very high for the

<sup>40</sup> The problem of autocorrelation tends to underestimate the true variances and standard errors, and thus it inflates the t-values. High t-values may potentially lead to the erroneous conclusion that coefficients and other estimators are statistically different from zero.

two independent variables, namely the money supply ( $lnm2$ ) and nominal exchange rate ( $lnnextr$ ).<sup>41</sup>

The long-run regression results presented in Table 5.13, show that only real GDP growth and nominal exchange rate, have the correct sign and are statistically significant. However, budget deficit is statistically significant with negative sign contrary to theoretical prediction. The results also suggest that in the long run, real income has a bigger impact in bringing down inflation in Tanzania, while monetary factors have negative effect. Two dummy variables (D1 and D2) were included in the model to capture the impact of macroeconomic policy shifts in mid 1980s and fiscal reforms of 1996, respectively.

### **Real income ( $lnrgdp$ )**

The correlation between real income and inflation is negative in line with theoretical predictions. The coefficient of real GDP is statistically significant at 10% level, and it is equal to unit. The coefficient of -1.0112 on real output growth implies that 1% real GDP growth will reduce inflation by approximately 1%, other factors held constant. The plausible explanation is that easing supply side pressure such as a boom in agriculture depresses prices significantly. The significant long-run negative effect of economic growth on inflation is consistent with the studies by Engwaikhide, *et al.*, (1994) on Nigeria, Nachega (2005) on DRC, and Suliman (2012) on Sudan.

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<sup>41</sup> With multicollinearity, there is a risk of accepting the null hypothesis when it should have been rejected.

### **Broad money supply (*lnm2*)**

The long-run effect of broad money supply (M2), on inflation is unexpectedly negative and statistically insignificant at a conventional test level. The results show lack of a strong and positive long-run influence of money growth on inflation in Tanzania as maintained by the monetarist school. The findings are consistent with, among others, the studies by Ndanshau (2009), and Ndanshau and Nyasebwa (2012). To the contrary, Kilindo (1997) and Laryea and Sumaila (2001) reported positive and significant coefficients of money supply on inflation in Tanzania. One of the explanations could be that strong relationship between changes in money supply and changes in prices exists in chronic and acute inflation regimes (Harberger, 1978) of which Tanzania has never experienced (Ndanshau, 2009).

### **Nominal Exchange rate (*lnnextr*)**

The exchange rate coefficient has the correct sign and statistically significant. The nominal exchange rate coefficient at 0.2985 indicates that for every one percent exchange rate depreciation, inflation rate increases by about 0.3%, other factors held constant. The findings are consistent with Rutasitara (2004) in Tanzania. However, Mwase (2006) finds that the exchange rate pass-through to inflation in Tanzania has been weak since the late 1990s.

### **Budget deficit (*bd*)**

The regression results show that the fiscal deficit is statistically significant (at 10%) with a negative sign. The lack of significant positive effect of budget deficit on inflation in Tanzania is consistent with the studies by Nyasebwa and Ndanshau (2011) in Tanzania, Sowa (1994) on Ghana and Metin (1995) on Turkey. However, the studies by Solomon and Wet (2004) on Tanzania and Oladipo and Akinbobola (2011) on Nigeria establish the causal link that runs from the budget deficit to inflation rate and cites monetization of budget deficit to be the main source of inflationary pressure.

### 5.2.3 Short-Run Model for Fiscal Consolidation and Inflation

#### Error Correction Modelling

When there is an existence of co-integration, then the construction of an error correction model becomes imperative in order to model dynamic relationships. The error correction model indicates the speed of adjustment from the short run equilibrium to the long run equilibrium state.<sup>42</sup>

The error correction model in Table 5.14 was subjected to diagnostic tests. The stability check does not indicate that our model is misspecified. The eigenvalues shows that none of the remaining eigenvalues appears close to unit circle. Thus, no serial correlation was detected in the residuals.

**Table 5.14: Estimated Error Correction Model for Fiscal Adjustment and Inflation:**  
[The dependent variable:  $\Delta(\text{CPI})$ ]

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<sup>42</sup> The lag depth of 2 means that t-2 is the furthest back the data goes which allows us to indicate  $\Delta y_{t-1}$  in the short-run adjustment factors.

| <i>Variable</i>                                                                                      | <i>Coefficient</i> | <i>Std. Error</i> | <i>P&gt;Z</i> |
|------------------------------------------------------------------------------------------------------|--------------------|-------------------|---------------|
| <i>Constant</i>                                                                                      | -0.6115            | 2.3843            | 0.830         |
| $\Delta(cpi)(-1)$                                                                                    | -0.1825            | 0.1657            | 0.271         |
| $\Delta(\lnrgdp)(-1)$                                                                                | -93.3245**         | 42.3336           | 0.037         |
| $\Delta(\lnm2)(-1)$                                                                                  | 25.2086**          | 10.7661           | 0.019         |
| $\Delta(\lnnextr)(-1)$                                                                               | 12.0839            | 8.3531            | 0.148         |
| $\Delta(bd)(-1)$                                                                                     | 0.3275             | 0.3604            | 0.363         |
| <i>D1</i>                                                                                            | -0.6602            | 4.9213            | 0.899         |
| <i>D2</i>                                                                                            | 1.3283             | 5.2999            | 0.802         |
| <i>ECM1(-1)</i>                                                                                      | -0.0425**          | 0.02833           | 0.013         |
| <i>Lagrange-multiplier test (mlag4) Prob &gt; chi2= 0.19570; H0: no autocorrelation at lag order</i> |                    |                   |               |

**Source:** Author's estimates.

**Note:** \*, \*\*, and \*\*\* denotes significance level at 10%, 5% and 1%, respectively and 'Δ' denotes the first difference of the variable.

The error correction model presents the variables that explain the short-run dynamics of the determinants of inflation model. The statistically significant variables are real GDP growth and broad money supply only. To the contrary, nominal exchange rate and budget deficit are statistically insignificant, but with the correct signs. The first lag of error term has the correct sign and is statistically significant.

The empirical results, based on error correction models (Table 5.14) indicates that real GDP growth (lag-1) and broad money supply lagged one period (lag-1) have positive impacts on price developments in Tanzania in the short-run. Real GDP lagged one period (lag-1) is found to have an inverse relationship to inflation in the short-run. Specifically, the coefficient of real GDP and broad money are statistically significant at 5% level, with signs of the coefficients consistent with theoretical prediction. Therefore, it seems that real GDP, nominal money supply and nominal exchange rate affect inflation both in the short and long run periods.

The error correction term is statistically significant with the appropriate negative sign. However, the size of the estimated error correction coefficient suggests a slow adjustment process. The speed of adjustment of the ECM from the short-run equilibrium to the long-run is -0.0425. This suggests that the system corrects its previous period's disequilibrium by about 4% a year.

### **5.3 Summary**

The growth equation results indicate that growth-enhancing variables, which include public investment spending, public consumption spending, real exchange rate, private investment, as well as the adopted macroeconomic reforms and fiscal reforms had long-run effects on growth in Tanzania. However, trade openness depicted a negative sign. GDP, public consumption spending, and trade openness, had significant effects on economic growth in the short-run.

The long-run estimates of the inflation model indicated that real GDP growth and nominal exchange rate have impact on price developments in Tanzania. Budget deficit is statistically significant with incorrect negative sign. Moreover, the ECM revealed that real GDP growth affect prices in both short and long-run periods, nominal money supply has impact on inflation in the short-run only.

## **CHAPTER SIX**

### **CONCLUSIONS AND POLICY IMPLICATIONS**

#### **6.1 Fiscal Adjustment Growth-Nexus**

##### **6.1.1 Summary**

The main objective of this study was to examine, among others, the effects of fiscal adjustments on growth in Tanzania. The Autoregressive Distributed Lag Model (ARDL) and error correction modeling techniques were used. Indeed, economic growth is the result of a variety of influencing factors, which can only be informed by growth theory. Historically, the simple neo-classical growth models were extended over time by relaxing the model restrictions and supplementing new variables to give a better explanation on economic growth through new growth theories.

According to the study findings, public investment, public consumption spending, real exchange rate, and private investment have the expected positive signs and significant effect on economic growth in the long-run. Only lagged GDP, public consumption spending and trade openness, has significant effects on economic growth in the short-run. The results from cointegration estimation suggest existence of a stable long-run relationship between real economic growth and private investment, public investment, public consumption, and real exchange rate. The existence of a stable long-run relationship was further confirmed in the error correction model (ECM) estimated.

### **6.1.2 Policy Implications**

To the extent that macroeconomic stability matters for growth, Tanzania should therefore continue with its reform efforts that started in the 1980s and 1990s in the areas of fiscal and monetary policies. Such measures will enhance a business-friendly environment which in turn will lead to increased investment and higher rates of economic growth.

The study findings suggest that decision makers in Tanzania should not rely heavily on cutting public spending on investment as a way of reducing the public sector budget because such a policy stance would be harmful to economic growth. On the contrary, decision makers should aim at curtailing non-productive expenditures. Expenditure-based adjustments that succeed in cutting least productive spending tend to last longer and is expansionary, unlike those that focus entirely on tax increases and cuts in public investment, which tend to be short-lived and counterproductive. Fiscal space is needed for infrastructure development.

In its attempt to address fiscal challenges, policy makers have undertaken a number of measures to reduce non-productive expenditures. Such measures include: the adoption of the Medium Term Expenditure Framework (MTEF) as part of broad package of budget reforms aimed at encouraging coordination across various government arms in planning and strategy for reducing wasteful expenditure. The expenditure reprioritization and efficiency instituted through NSGRP is yet another such measure. Executing investment budget efficiently and realizing value for money is yet another avenue through which

fiscal space can be created. There is also a need to sustain public investment and strengthen the regulatory environment.

Policy makers need to note the importance of human capital and infrastructure in anchoring the private sector and promoting growth. Thus, government spending should be scaled-up in the health and education sectors. Likewise, public investments on physical and social infrastructure need to be enhanced as a means of attracting both domestic and foreign investment.

Trade openness, especially export growth remains an important driver of the growth process. Therefore, the government needs to scale-up efforts for promoting exports while addressing those challenges that hampers the growth of this sector. To that effect, efforts to ease restrictions on international trade, designing strategic trade policies, and active participation in trade negotiations for better market for exports are key ingredients for boosting the economy. There is a need for deliberate effort by the government to promote exports by capitalizing on the existing regional initiatives such as SADC and AGOA, which remain untapped.

## **6.2 Fiscal Adjustment and Inflation**

### **6.2.1 Summary**

The study used descriptive and econometric analyses based on a dynamic autoregressive distributed lag error correction model to analyze the fiscal determinants of headline

inflation in Tanzania. Cointegration test results show that there is one cointegrating relationship in the model during the study period. The long-run estimates of the model indicate that only nominal exchange rate has positive impact on price development in Tanzania, while real GDP has an inverse relationship. Moreover, the ECM reveals that real GDP has impact on inflation in both the short and long-run periods, while broad money supply affect prices in the short-run only.

The principal component of overall inflation is food price inflation, which is predominantly driven by supply-side factors, mainly the domestic agricultural output shocks, and indirectly by the pass-through via high world prices for food and fuel.

Structural factors, particularly output and exchange rate were found to exert relatively strong influence on inflationary process in Tanzania. The deceleration in inflation since the second half of the 1990s was achieved through commitment to macroeconomic stability since the inception of ERP I in 1986. This was further cemented by the financial sector reforms in 1990s, especially after the BoT Act of 1995.

### **6.2.2 Policy Implications**

It needs to be underscored that reducing the levels of inflation will not only improve government credibility and commitment towards sound economic management, but it will also boost investors' confidence in the economy. The findings of the price equation underscore importance of policy measures directed to the attainment of exchange rate

stability and stable rate of economic if price stability is to be attained. Importance of fiscal discipline is indirectly emphasized owing to its reverse sign in the model. Nonetheless, Tanzania needs credible and sustained fiscal adjustment, supported by an appropriate monetary policy. With respect to public finance it is critical to rationalize public spending and emphasize expenditure efficiency. Thus, sound fiscal management is crucial to sustaining the success of ongoing reforms.

Since there is a strong inverse relationship between inflation and real GDP growth (a 1% increase in GDP reduces inflation by 1%), additional measures to increase output and productivity are crucial for growth and price stability. Also the government should ensure less non-productive government consumption, value for money and efficient public investment with a high return in order to increase GDP growth.

### **6.3 Areas for Further Research**

One component of the study aimed at establishing the effects of fiscal adjustment on growth. That is, to what extent fiscal discipline instituted especially after fiscal reforms impacted on economic growth. Specifically, it considered expenditure components in their broad sense. The study did not cover the effects of expenditure and revenue composition on economic growth. One area for further research is therefore, to disaggregate expenditures as well as government revenues and examine its effects on economic growth. Therefore, government expenditure could be further decomposed into public sector wages and salaries, expenditure on goods and services, transfers and

subsidies, interest payments on debt, and capital expenditure. While government revenues could be dissected into tax and non-tax revenues as well as grants.

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## APPENDICES

### Appendix I: Behavior of the Key Variables-Fiscal Adjustment and Growth

Figure 1: Private Investment (ip), public consumption spending (cg) and public investment spending (hgig)

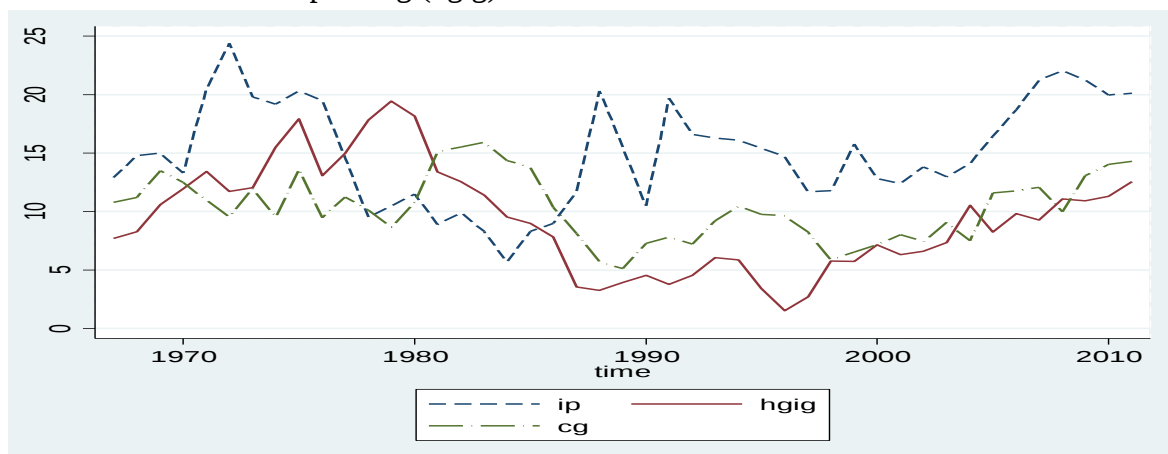


Figure 2: Trade

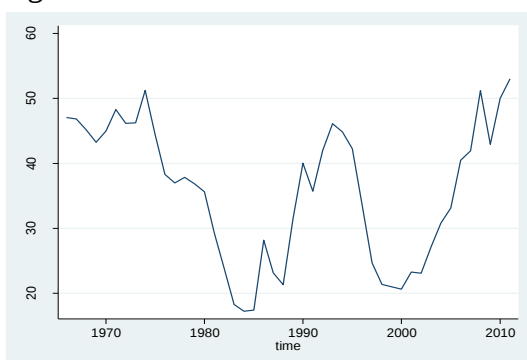


Figure 3: Real Exchange rate in log

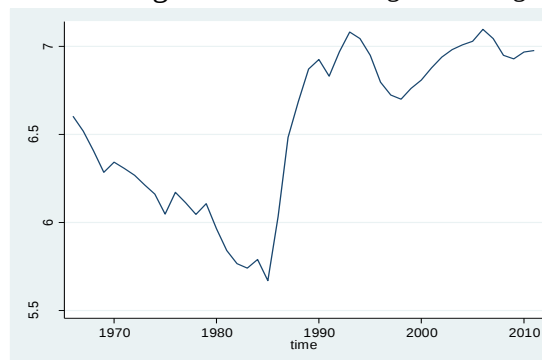
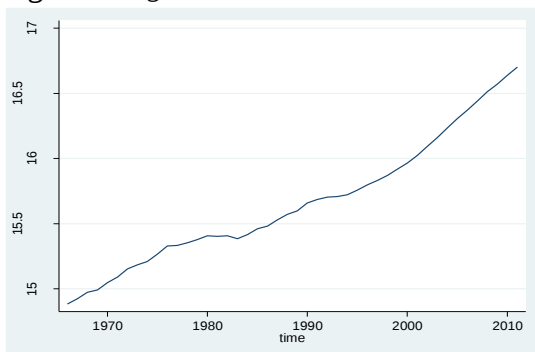


Figure 4: logRGDP



**Appendix II: Behavior of the Key Variables-Fiscal Adjustment and Inflation**

Figure 1: Logcpi

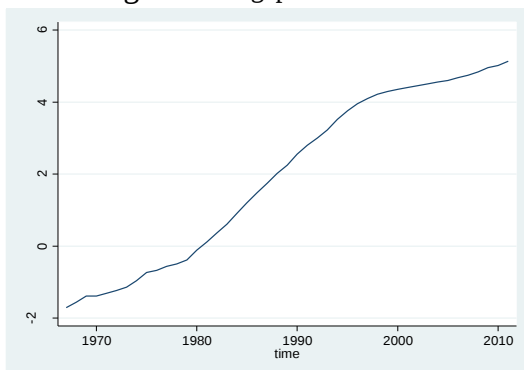


Figure 2: Budget deficit (BD)

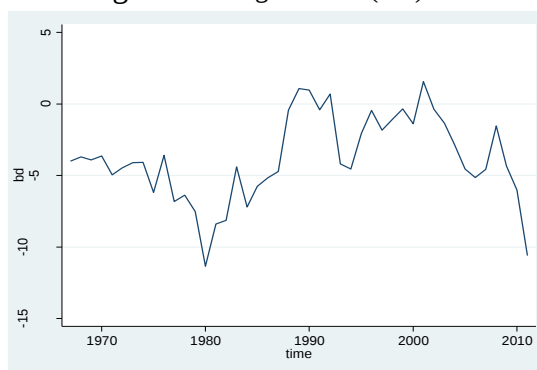


Figure 3: LogM2

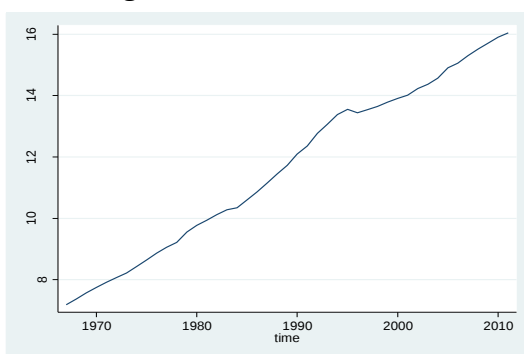


Figure 4: Nominal exchange rate (lognexr)

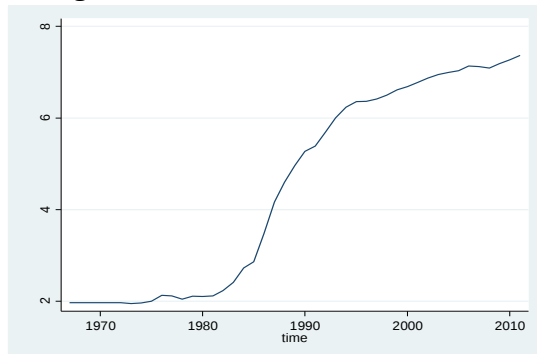


Figure 5: Inflation

