NELSON MANDELA UNIVERSITY

MONETARY AND FISCAL POLICY EFFECTS ON UNEMPLOYMENT AND INFLATION IN UGANDA

By

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In accordance with Rule G4.6.3, I hereby declare that the above-mentioned thesis is my own work and that it has not previously been submitted for assessment to another University or for another qualification.

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DEDICATION

I dedicate this thesis to my beloved Dad, Mr. Sebuliba Busulwa who encouraged me to further my studies. Without him, I would be nothing in this world.

ABSTRACT

Over the recent past, Uganda has experienced disproportionate volatility in inflation alongside rapid growth of unemployment. Whilst inflation has been curtailed to single digit figures since the economic crisis of the 1970s, nevertheless, in the recent past, inflation volatility and unemployment have constrained Uganda's growth outlook. Like many various developing countries, Uganda has interacted monetary and fiscal policy frameworks as macroeconomic tools to spur productive growth. Most developing countries like Uganda continue to grapple with the challenges of jobless growth which is largely attributed to unstable inflationary pressures as well as low investment which further eggravated rapid expansion in unemployment levels. Government policy efforts have recently been greatly inhibited by rising youth unemployment rates in the country, this has greatly affected Uganda's growth dynamics. Whilst developed countries have successfully used monetary and fiscal policy frameworks in their pursuit to macroeconomic stability, due to their complex structural economic dynamics, low income countries face challenges in implementing both monetary and fiscal policy to stabilize their economies. Central banks across all countries strive for low and predictable inflation as key in fostering economic growth.

The debate over the applicability between monetary and fiscal policy frameworks in the pursuit of enhanced growth continues among policy analysts. The general observation especially in low income countries pertains to the use and effective coordination of monetary and fiscal policy in efforts to stabilize these economies. Despite numerous public expenditure reforms implemented and decline in poverty levels in Uganda, unemployment continued to rise over the past decade consequently inhibiting the country's growth prospects which has ultimately undermined the econoimy's capacity to external shocks. Keynes and the monetarists ignited the contentious debate over the superiority between monetary and fiscal policy frameworks which has transformed macroeconomic policy application. A conducive private sector environment as well as large expansions of infrastructure are key fundamental aspects of the development strategy in developing countries, they enhance growth in per capita income. Whilst the monetary authority emphasizes price stability when formulating policies, the fiscal authority pursues its objectives accommodative of the underlying circumstances in the economy.

This study aimed to establish an econometric model to predict the impact of monetary and fiscal policy on unemployment and inflation in Uganda using annual time series data for the period 1980 to 2013. The study sought to investigate the influence of monetary and fiscal policy variables on the Ugandan economy in relation to unemployment and inflation. The analysis in the study is based on a twofold oriented objective. The first objective was to investigate monetary and fiscal policy dynamics in Uganda in relation to unemployment. The second objective examined the conduct of monetary and fiscal policy framework on inflation in Uganda. The study analysis begins with a review of literature on the various monetarists and Keynesian theories in relation to the underlying monetary and fiscal policy frameworks. Considering the analysis was a twofold objective, two empirical models linked to unemployment and inflation as well as their relative determinants are specified. The Empirical literature review examined in the study is based on various monetary and fiscal policy theories as well as empirical works by Keynesians, classical economists and the Friedman views.

The time series data used were obtained from published sources of the World Bank and IMF, the Uganda Bureau of Statistics (UBOS), Ministry of Finance, Planning and Economic Development (MoFPED) statistical reports and annual statistical drafts from the Uganda Revenue Authority (URA) and Bank of Uganda (BOU). To empirically investigate the influence of monetary and fiscal policy variables on unemployment and inflation in Uganda, considering the use of two dependent variables i. e unemployment and inflation, hence, two estimation techniques were applied in the study namely; the Modified Ordinary Least Squares that comprise of FMOLS and DOLS and the Autoregressive Distributed Lag (ARDL) approach.

The estimation analysis in the study contains two main parts which are spread over two chapters. The first part of the analysis deals with the effects of fiscal and monetary policy on unemployment. The estimation techniques applied in the study included the Fully Modified Ordinary Least Squares (FMOLS) and Dynamic Ordinary Least Squares (DOLS) applied to a Vector Autoregressive (VAR) model. The analysis regressed monetary and fiscal policy aggregates on unemployment in a twofold objective. The first sub section regressed fiscal policy aggregates on unemployment using; total government expenditure, total government revenue, tax revenue and trade

openness on unemployment using both FMOLS and DOLS techniques. The second sub-section regressed monetary policy on unemployment using; interest rates, money supply, real effective exchange rates and inflation being regressed against unemployment. To test for presence of unit root among the variables of the sample period of 1980 to 2013, the study employed three approaches; i.e. the Augmented Dickey Fuller (ADF) test, Phillips-Perron (PP) test and Kwiatkowski–Phillips–Schmidt–Shin (KPSS) test. Included in this analysis is the test for structural breaks to further determine stationarity in the data series. The results revealed the presence of structural breaks. Structural breaks tend to inhibit stationarity among the variables at levels. However, when presence of structural breaks is taken into consideration, it simplifies empirical estimation analysis under review. The Johansen Cointegration approach was further applied to establish existence of a stable long-run relationship between monetary policy and fiscal policy as well as their respective variables included in the model in relation to unemployment, this further entailed estimation of FMOLS and DOLS in the model estimation analysis.

The results from the above analysys show a negative and statistically significant relationship between total government expenditure (LGOVTEXP) and unemployment (LUNEMPLOYMENT). However, tax revenue, trade openness as well structural reforms which denotes the (SB) coefficient all show a positive and significant relationship with unemployment. Additionally, total government revenue (LGOVTREV) shows a negative relationship with unemployment although statistically insignificant. The DOLS results in this analysis all show statistically insignificant results between all the variables and unemployment.

The second subsection using DOLS, analysed the impact of monetary policy on unemployment, revealed a negative and significant relation between interest rates, real exchange rates and structural reforms (SB) with unemployment. Money supply indicates a negative but statistically insignificant relationship with unemployment. However, inflation has a positive and statistically significant relationship with unemployment. The normality tests conducted indicate normal distribution of the residuals. Similiraly, the AR inverse roots show stability of the models estimated whilst the multi-collinearity and Wald tests all showed unbiased estimation results.

Having analysed the effects of fiscal and monetary policy on unemployment the interest was to further test the impact of fiscal and monetary policy on inflation. This part constitutes two sub-sections. The ARDL approach ws used to analyse the influence of fiscal policy on inflation. The results reveal a negative and statistically significant relationship between inflation (DLINF) and total government expenditure (DLGOVTEXP) both lagged twice. Similiraly, total government revenue (DLGOVTREV) and tax revenue (DLTAXREV) both lagged once indicate a negative and statistically significant relationship with inflation. However, unemployment lagged three times indicates a negative and statistically insignificant relationship with inflation whilst trade openness lagged three times has a positive and satatistically significant relationship with inflation. The Granger causality test results revealed among all the fiscal policy aggregates used, only inflation Granger causes total government revenue.

The second part on the effects of fiscal and monetary policy on inflation used monetary variables; interest rates (DLINT), money supply (DLMS) and real exchange rates (DLREER). The ARDL results revealed all coefficients to have positive signs. Inflation and real exchange rates lagged five and four times respectively have a positive and significant relationship with the dependent variable of inflation. However, interest rate and money supply lagged five and three times respectively show a positive and statistically insignificant relationship with inflation. The estimated model showed no evidence of presence of serial correlation through numerous diagnostic tests performed. These include; heteroscedasticity, residual normality and misspecification tests as well as the Cusum stability tests.

Under the analysis of monetary policy dynamics on inflation, the Granger causality test revealed that inflation Granger causes interest rates. Similiraly, real exchange rate Granger causes inflation. The ARDL results in this sub-section suggest that inflation regressed against its own lagged values is statistically significant in explaining variations on inflation. Further, interest rates, money supply and real exchange rates significantly explain variations in inflation during the period under review.

The results from the above analysis suggest that firstly, the fiscal authority in Uganda should formulate dynamic as well as robust fiscal reforms that can effeficiently be coordinated with sound monetary policy reforms. This ought to stimulate meaningful economic growth in the economy which would further enhance employment growth.

Secondly, policy authorities should implement macroeconomic policies which harmonise public spending whilst at the same keep inflation subdued. In this regard, inflation targeting policies should be strengthened.

Thirdly, the macroeconomic policy framework in Uganda should be coordinated with strong employment targeting policies in an effort to broaden labour market dynamics.

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LIST OF ACRONYMS

AAIU	Action Aid International Uganda
AfDB	African Development Bank
AD	Aggregate Demand
AS	Aggregate Supply
AIDS	Acquired Immune Defficiency Syndrome
AIC	Akaike information criterion
AREAER	Annual Report on Exchange Arrangements and Exchange Restrictions
ADF	Augmented Dickey Fuller test
AR	Autoregressive
ARDL	Autoregressive Distributed Lag
ARMA	Autoregressive Moving Average
BOU	Bank of Uganda
BOP	Balance of Payment
BTVET	Business, Technical, Vocational Education and Training
CRT	Chain Reaction Theory
CLRM	Classical Linear Regression Model
CMB	Coffee Marketing Board
COMESA	Common Market for Eastern and Southern Africa
CET	Common External Tariff
CGE	Computable General Equilibrium
CPI	Consumer Price Index
CTL	Commercial Transaction Levy
OECD-DAC	Development Assistance Committee of the Organization for Economic Co-operation and Development

DF	Dickey Fuller
DUNCAR	Districts, Urban and Community Access Roads
DSGE	Dynamic Stochastic General Equilibrium
DOLS	Dynamic Least Squares
EAC	East African Community
EACB	East African Currency Board
EAMU	East African Monetary Union
ECM	Error Correction Model
ESAPs	Economic Structural Adjustment Programmes
NAADS	National Agricultural Advisory Services
EME	Emerging Market Economies
EU	European Union
FPE	Final Prediction Error
FIA	Financial Institution Act
FAO	Food and Agriculture Organization
FDI	Foreign Direct Investment
FMOLS	Fully Modified Least Squares
GDP	GrossDomestic Product
GMM	Generalised Method of Moments
GNP	Gross National Product
GOU	Government of Uganda
HQIC	Hannan-Quinn information criterion
HICP	Harmonized Index of Consumer Prices
HIPC	Heavily Indebted Poor Countries Initiative
HIV	Human Immune Virus
IMF	International Monetary Fund

IRFs	Impulse Response Functions
IDA	International Development Association
IFS	International Financial Statistics
JICA	Japan International Cooperation Agency
KPSS	Kwiatkowski, Phillips, Schmidt and Shin
LM	Lagrange multiplier
LDCs	Less Developed Countries
LR	Likelihood ratio
LICS	Low Income Countries
MAM	Macroeconomic Activity Model
MDRI	Multilateral Debt Relief Initiative
MTEF	Medium-Term Expenditure Framework
MDGs	Millennium Development Goals
MAAIF	Ministry of Agriculture Animal Industry and Fisheries
MoFPED	Ministry of Finance, Planning and Economic Development
MGLSD	Ministry Of Gender Labour and Social Development
MTTI	Ministry of Trade Tourism and Industry
MTMs	Monetary Transmission Mechanisms
MNCs	Multi-National Corporations
NDP	National Development Plan
NRM	National Resistance Movement
NTP	National Trade Policy
NTMP	National Transport Master Plan
NEERO	Nominal Effective Exchange Rate Variability
NDA	Net Domestic Assets
NFA	Net Foreign Assets

NKPC	New Keynesian Phillips Curve
NAIRU	Non-Accelerating Inflation Rate of Unemployment
NGOs	Non-Government Organizations
ODA	Official Development Assistance
OLS	Ordinary Least Squares
OMO	Open Market Operations
OECD	Orgainsation for Economic Co-operation and Development
OPEC	Organization of Petroleum Exporting Countries
PAYE	Pay As You Earn
PP	Phillips Perron
PAF	Poverty Action Fund
PEAP	Poverty Eradication Action Plan
PDMS	Public Debt Management Strategy
PERD	Public Enterprise Restructuring and Development
PSRs	Public Sector Reforms
PSRRC	Public Service Review and Reorganization Commission
R&D	Research and Development
RIR	Real Interest Rates
REPO	Repurchase Agreements
RBA	Reserve Bank of Australia
RBI	Reserve Bank of India
RMP	Reserve Money Program
ROM	Results Oriented Management
RSDP	Road Sector Development Program
SADC	Southern African Development Community
SAP	Structural Adjustment Programme

SIC	Schwartz Information Criteria
SE	Simultaneous Equations
SEATINI	Southern and Eastern Africa Trade Information and Negotitations Institute
STVAR	Smooth Transition Vector Autoregression
SSA	Sub-Saharan Africa
SOEs	State Owned Enterprises
SVAR	Structural Vector Auto Regression
SIDA	Swedish International Development Agency
ITL	Inflation Targeting Lite
TAT	Tax Appeals Tribunal
TBs	Treasury Bills
TOT	Terms of Trade
TO	Trade openness
UBOS	Uganda Bureau of Statistics estimates
UCDA	Uganda Coffee Development Agency
UCB	Uganda Commercial Bank
UCDO	Uganda Cotton Development Organization
UNCTAD	United Nations Coference on Trade and Development
UNRA	Uganda National Roads Authority
URA	Uganda Revenue Authority
USE	Uganda Securities Exchange
UIP	Uncovered Interest rate Parity
UK	United Kingdom
UNDP	United Nations Development Program
USAID	United States Agency for International Development

USA	United States of America
UPE	Universal Primary Education
USE	Universal Secondary Education
VIF	Variance Inflation Factor
VAT	Value Added Tax
VECM	Vector Error Correction Model
VAR	Vector-auto regression
WHO	World Health Organization

CHAPTER ONE

INTRODUCTION AND BACKGROUND TO THE STUDY

1.1   INTRODUCTION AND BACKGROUND

An important economic issue facing policymakers over the past decades has been the interaction between monetary and fiscal policy (Assadi, 2015). Macroeconomic analysis is established on theories that combine economic choices of various rational economic agents coordinating in a comprehensive specific framework. The role of the central bank in the post 2015 era entails promoting local ownership of monetary and fiscal policies and processes (Tumusiime-Mutebile, 2014). Since the 1980s the Ugandan government has used both monetary and fiscal policies as macroeconomic policy tools to influence the economy in an effort to stimulate economic progress. Tumusiime-Mutebile (2014) further outlines numerous essential elements fundamental to the institutional framework of central banking in the post 2015 era which include: clear policy mandates for the central bank focused on monetary policy and bank regulation; a primary monetary policy objective of controlling inflation over the medium term; the operational independence of the central bank; and a clear separation of monetary and fiscal policy.

In low income countries with fragile fiscal positions that prompt the government to finance the budget with injecting money into the economy are known as key determinants of hyperinflation. The great depression in 1930s highlighted to policy makers the fundamental role of monetary and fiscal policies in macroeconomic management. The debate among policy analysts mainly focused on the appropriate choice between monetary and fiscal policy in attaining low inflation, near full-employment level of output. It was the pioneering views of Friedman (1948) who argued for self-correcting macroeconomic mechanisms in pursuit of long-term economic stability that sparked the wide debate.

The changing economic dynamics and volatility in   global financial markets have prompted recent inclination towards understanding the broader relevance to the scope of applied macroeconomics. The monetary vs fiscal policy debate is demonstrated further by the Ricardian and non- Ricardian schools of thought. According to Assadi (2015), the Ricardian view argues that fiscal policy does not matter for monetary policy

whilst the non- Ricardian views argue fiscal policy does matter for monetary policy. The critical relevance of cordinating monetary policy and fiscal policy for sound policy implementation is highlighted by Mishkin (1995). Mishkin (1995) notes, the key outcome of monetary policy such as inflation and output may be affected by the debt accumulated mainly through the interest rate. In general, stabilization policies can be implemented with the aid of either monetary or fiscal policy (Issing, 2005). The widely contentious views between monetarists and Keynesians increasingly gained extensive limelight in the late 1960s.

This intense debate between Keynesians and monetarists generally emphasised the virtual functionality of application of policy instruments, monetarists refute the adequate effectiveness of fiscal tools whilst Keynesians argue in favour of the essential capability of fiscal policy as a stabilization mechanism. The 1930's Great depression intensified the debate about the role of the government in the economy. The argument among both economic and political analysts focuses on the effective role of the government in the economy, with extensive views on the ineffectiveness of large governments whilst other views argue for the fundamental stance of the government role and participatory merit in the economy in order to minimize economic uncertainty, perpetuated recessions as well as escalated unemployment rates. Nyorekwa and Odhiambo (2014) establish, the past 6-8 years in Uganda have exhibited external shocks especially the Terms of Trade (TOT) shocks attributed largely to food and fuel which have compromised the effectiveness of monetary policy.

1.2   A BRIEF LITERATURE REVIEW ON THE MONETARY AND FISCAL POLICY INTERACTIONS

The debate on the superiority between monetary and fiscal policy was largely ignited by Keynesians who argued for the stimulation of aggregate demand (AD) during recessions and restraint inflationary periods through fiscal policy as a stabilization tool. Hence, Keynessians views prompted the extensive coordination between monetary and fiscal policy frameworks in pursuit of economic stability. The notable issue is the uncertainty in achievement of equilibrium between strengthening growth and price stability since stimulation and restraint are not plausible. Mundell (1962) rather ideally urged use of monetary policy to contain prices and use fiscal policy to augment Aggregate Supply (AS). The Policy mix argument is founded on the basis that no single

policy can adequately support both growth prospects as well as stable prices. Dharmadasa (2015) identifies four categories of policy cordinations: loose fiscal policy in combination with expansionary monetary policy; loose fiscal policy jointly with tight monetary policy; tight fiscal policy coordinated with tight monetary policy; and tight fiscal policy blended with expansionary monetary policy.

Brunner and Meltzer (1997) indicate the relevance of the policy mix through improvements of savings, private investment and foreign direct investment (FDI) hence further stimulating economic growth and development. Buiter and Sibert (2001); Dixit and Lambertini (2001) presented in their studies the effectiveness of the policy mix in the United Kingdom and the EU area respectively. However, (Cooper, 1985) notes that experts perceive the autonomy of the country as fundamental in obtaining effective objectives from the macroeconomic policy mix. This argument is notably applicable for developing countries like Uganda. In the short-run Rising real interest rates trigger contraction in demand, inflationary tendencies and production, conversely expansion of the budget deficit is also likely to cause variations in the level of interest rates. In some countries, the consequences of monetary policy tend to vary depending on the fiscal policy stance whether it is passive or active. Cheung and Cheung (1993) revealed the superiority of fiscal policy on both unemployment and inflation over monetary policy.

The evolution of business cycles, Keynesian and Monetarist schools of thought as well as Neo-classical economics, promoted wide evolution in macroeconomic dynamics that there has been lack of general consensus and plausibility on monetary and fiscal policy dynamics in macroeconomic management. Policy observers argue that the Keynesian Revolution lacks adequate illustration of the financial gap between financial saving and credit-financed GDP expenditures. Moreover, in recent times economic fluctuations have necessitated prudent macroeconomic analysis to mitigate the changing global economic systems. The appropriate application between fiscal and monetary policy in the economy is largely manifested through the observable policy trade-offs in policy analysis. Moreover, the trade-offs in monetary policy and fiscal policy render policy making complex especially considering that objectives may conflict with one another. The monetary authority largely focuses on inflation control whilst the fiscal authority emphasizes to boost output production than its monetary

authority counterpart. Monetary policy primarily focuses on stabilisation function however, fiscal policy may be conducted for a wide variety of objectives like; income redistribution policy, effecient resource utelisation, market efficiency as well as prudent management of the fiscal deficiet in the economy. According to Dihn (1999), when the inter-temporal budget constraint is satisfied without the change in either policy or the price level then that current fiscal policy is said to be sustainable. If the government adjusts primary deficit to limit debt accumulation and the central bank does not monetize debt, such a regime is called monetary dominant or Ricardian regime (Sargent and Wallace 1981). Moreover, Kuncoro and Sebayang (2013) note that fiscal deficits generate inflationary pressures because governments find money creation to finance the deficits hence leading to inflation as a monetary phenomenon.

In the recent past, developing countries like the developed countries have moved to flexible monetary policy frameworks, with greater role to: Policy interest rates, Inflation objectives and Forward-looking assessments based on high frequency indicators (Laurens, 2014). In developing countries with shallow financial markets, the success of monetary policy ought to be facilitated by greater degree of financial stability and modest inflationary levels. For such countries reliance on conventional monetary targeting may be challenged by evolving economic structures (Laurens, 2014). Additionally, it becomes paramount for the central bank to conform to the appropriate policy implementation to achieve effective monetary policy in the economy. According to Laurens (2014), there three pillars of modern central bank governance which include; institutional framework, macro-financial framework which entails coordination of monetary, fiscal and foreign exchange policy, promote financial stability which is pivotal for effective interest rate channel transmission; technical and organizational framework.

According to Bernheim (1989), there are three views regarding the role of government in the economy; the Neoclassical, Keynesian and Ricardian. Buiter (1977) notes, the neoclassical paradigm postulates that government economic activity may crowd out private sector enterprise thus, less government interference in the economy. Keynesian view advocates the active role of government because of its multiplier effects (Fazzari, 1994) whilst according to (Barro, 1989), the Ricardian equivalence theory postulates the neutrality of government deficits in the economy. Considering

the differing economic dynamics in different countries, thus Bose, Haque & Osborn (2007) observe that the role of government may differ between developed and developing countries.

1.3   STATEMENT OF THE PROBLEM

This section presents Uganda's macroeconomic issues. Monetary policy in Uganda is set within the context of the macroeconomic objectives of achieving real economic growth and the maintenance of price stability as defined by Government from time to time. Consistent with this, monetary policy is designed with a view to achieving the target on inflation while providing adequate credit to the private sector to sustain the desired economic growth and improve the balance of payments (Katarikawe & Musinguzi, 2001). The fundamental objective of macroeconomic policy ought to seek sustainable price stability, output and employment which can be facilitated by coordination between monetary and fiscal policy.

In his assessment of the conduct of monetary policy in Uganda a small land locked country, Adam (2009) notes the perception held by some that while Uganda has been amongst the most consistently successful countries in Africa in controlling inflation since the early 1990s, this has come at a high fiscal cost and that the conduct of monetary policy has stifled rather than encouraged the development of the financial sector. Nyorekwa and Odhiambo (2014) insists monetary policy reforms are necessary but not sufficient especially when the monetary transmission mechanisms (MTMs) are weak. Furthermore, (Mishra *et al*, 2010) notes monetary transmission mechanisms have been found to be relatively weak in low income countries (LICs) compared to the most developed countries. Several countries including Uganda that implemented the Structural Adjustment Programmes (SAPs) in sub Saharan Africa (SSA) considerably prioritised reinforcement of macroeconomic strength. The stabilisation programmes were adopted in 1987 supported by the IMF, the World Bank and donors, with the initial emphasis on devaluation, increased producer prices for farmers, and fiscal and monetary restraint (Brownbridge, 1996). The government implemented several liberalisation reforms like; foreign exchange and financial and trade liberalisation. The decade of the 1980s in Uganda saw a rapid increase in the rate of inflation, with annual averages of more than 100% the period 1981 to 1989 and peak rates of more than 200% in 1986/87(Barungi, 1997).

Following the lengthy civil war and economic mismanagement which triggered significant economic contraction, the National Resistance Movement (NRM) which gained power in 1986 embarked on restoring political security and rebuilding the fragmented economy. Real GDP per capita fell by 38 percent during the period 1970 until 1986. The economy was subject to extensive administrative controls over foreign exchange, imports, financial markets and agricultural prices, etc., which led to acute distortions and the shrinkage of the formal and monetised economy. Inefficiency of public revenue management precipitated extensive public deficits which were subsequently financed by the central bank, this in turn escalated inflationary pressures.

As a landlocked country with a predominantly agrarian economy, Uganda remains vulnerable to exogenous factors such as volatility in the prices of imports and exports, regional instability, and weather shocks (World Bank, 2013). Brownbridge (1996) observes that the country was also diluted of skilled personnel as a result of war, the expulsion in the early 1970s of Ugandan Asians, and more recently HIV AIDs. Brownbridge (1998) further notes the period 1970 to 1986 witnessed real GDP per capita decline by 38% whilst M2 as a share of GDP fell by 50% and inflation rose to 200% in 1986. This subsequently precipitated extensive fiscal dominance thus undermining the capacity of monetary policy. Although the IMF and World Bank endorsed SAPs and a combination of Economic Structural Adjustment Programmes (ESAPs) were initiated in 1987, however, Kasekende and Atingi-Ego (1996) indicate that most of the structural adjustment financial liberalisation aimed at macroeconomic stability did not fully happen until the 1990s. Consequently, (Nyorekwa & Odhiambo, 2014) explain that inflation and growth in annual money supply remained above 100% five years after the adjustment process was agreed upon by the IMF and the World Bank moreover, the average domestic financing over this period was only 1.2%.

A report by the Ministry of Labour, Gender and Social Development(MLGSD) noted in 2010 that, Uganda faces a particular challenge of needing to absorb 392,000 new entrants into the labour market each year. Although the unemployment estimates in Uganda remained relatively low over the recent past, the estimates of underemployment continue to grow considerably attributed to the fact that a large proportion of labour continues to be employed in informal low-productive employment.

According to the Uganda Bureau of Statistics estimates (UBOS, 2006), the labour force continues to rise rapidly beyond and over the general national population rate with overall self-employment accounting for nearly 85% of the employed cohort in the country, 15% of the working population in wage employment particularly 4.6 % in permanent employment and 11.6% temporarily employed. The accelerating self-employment implies sluggish enhancement of the formal sector in Uganda in combination with ascending employment generation in the informal sector. The UBOS (2011) statistical data estimated total labour force of 13.4 million in 2009/10. Consequently, the extent to which a country's economic growth profile is poverty reducing is contingent upon the degree to which growth is creating decent employment opportunities (Bbaale, 2013).

In an empirical analysis on the impact of labour movements across various sectors of the economy in Uganda, Bbale (2013) establishes that in spite of the negative employment shift of agriculture, nevertheless movements of agricultural labour positively impacted inter-sectoral movements attributed to low productivity which in turn facilitates the growth of per capita income through shifts from agriculture to other sectors. On the other hand, services and industry with a positive contribution of 30% and 51% to inter-sectoral shifts, these sectors significantly impact per capita growth considering they exhibit high productivity hence, boast a positive employment share. Bbale (2013) additionally indicated a negative employment share and negative contribution of manufacturing to inter-sectoral shifts, considering manufacturing is a high productive sector. Basically, the analysis implies any shifts of labour from manufacturing significantly impacts per capita growth in Uganda. Ahaibwe and Mbowa (2014) further argue agriculture as the largest sector employer at about 66% whilst services and manufacturing employ 28% and 7% respectively. According to UBOS (2012) statistical report, the share of youth unemployment in 2012 in relation to total unemployment in Uganda rose to 64%. Ahaibwe and Mbowa (2014) argue that shallow unemployment statistics over the past seem implausible particularly in relation to youth unemployment and scope of labour in Uganda, considering a large proportion of youth have abandoned the job search process notwithstanding, three quarters of the population fall under the 30-year age bracket. The jobless growth issue in Uganda is further exacerbated by the recently rapid expansion of population growth rate. The

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World Bank (2008) established Uganda among countries with the youngest population and highest youth unemployment rate of 83%.

1.4   OBJECTIVES OF THE STUDY

The primary objective of this study is to examine the monetary policy and fiscal policy effects on unemployment and inflation in Uganda. The specific secondary objectives are as follows;

- Provide a theoretical and empirical literature review on unemployment and inflation

- To trace the trends of unemployment and inflation in Uganda during the period 1980 to 2013.

- To econometrically analyse the impact of monetary policy and fiscal policy on unemployment and inflation in Uganda

- To establish conclusions and provide policy recommendations based on relevant findings.

1.5   HYPOTHESES

The hypotheses to be tested is that monetary and fiscal policy frameworks have positively influenced unemployment and inflation in Uganda. Hence, this section presents hypotheses on monetary policy on unemployment and inflation as well as a hypothesis of fiscal policy on unemployment and inflation as follows;

Hypothesis of Fiscal Policy on Unemployment and Inflation:

1. H_0: There is a negative relationship between total government expenditure and Unemployment in Uganda

       Ha: There is a positive relationship between total government expenditure and Unemployment in Uganda

2. H_0: There is a negative relationship between total government revenue and Unemployment in Uganda

Ha: There is a positive relationship between total government revenue and Unemployment in Uganda

3. H_0: There is a negative relationship between tota tax revenue and Unemployment in Uganda.

    Ha: There is a positive relationship between total tax revenue and Unemployment in Uganda.

4. H_0: There is a negative relationship between trade openness and Unemployment in Uganda.

    Ha: There is a positive relationship between trade openness and unemployment In Uganda.

5. H_0: There is a negative relationship between total government expenditure on Inflation in Uganda

6. H_0: There is a positive relationship between tota government expenditure and Inflation in Uganda

7. H_0: There is a negative relationship between total government revenue and Inflation in Uganda

    Ha: There is a positive relationship between total government revenue and Inflation in Uganda

8. H_0: There is a negative relationship between total tax revenue and inflation in Uganda.

    Ha: There is a positive relationship between total tax revenue and inflation in Uganda.

9. H_0: There is a negative relationship between trade openness and inflation in Uganda.

    Ha: There is a positive relationship between trade openness and inflation in Uganda

Hypothesis of Monetary Policy on Unemployment and Inflation:

10. H_0: There is a negative relationship between interest rates and unemployment In Uganda

    Ha: There is a positive relationship between interest rates and unemployment In Uganda

11. H_0: There is a negative relationship between total money Supply and unemployment in Uganda

Ha: There is a positive relationship between total money supply and unemployment in Uganda.

12. H_0: There is a negative relationship between real effective exchange rate and Unemployment in Uganda.

Ha: There is a positive relationship between real effective exchange rate and Unemployment

13. H_0: There is a negative relationship between interest rate and inflation

Ha: There is a positive relationship between interest rate and inflation

14. H_0: There is a negative relationship between money supply and inflation

Ha: There is a positive relationship between money supply and inflation

15. H_0: There is a negative relationship between real effective exchange rate and Inflation

Ha: There is a positive relationship between real effective exchange rate and Inflation

1.6   RESEARCH METHODOLOGICAL APPROACH

The motivation behind this section is to explain how the underlying objectives of the study will be achieved. The study employs quantitative methodology approaches in which econometric techniques are applied. The study employs annual Ugandan data for the period 1980-2013 obtained from the International Monetary Fund's (IMF) International Financial Statistics (IFS), the World Bank; Uganda Bureau of Statistics (UBOS) and Ministry of Finance Planning and Economic Development (MoFPED). In analyzing the influence of monetary and fiscal policies on unemployment and inflation, firstly, Long run and short run determinants between the dependent variable (unemployment) and independent variables of monetary and fiscal aggregates are examined using the Fully Modified Least Squares (FMOLS) and Dynamic Least Squares (DOLS) estimation approaches applied to a vector autoregressive (VAR) model to investigate the influence of fiscal and monetary policy on the dependent variable (Unemployment). Furthermore, the Autoregressive Distributed Lag (ARDL) approach was additionally estimated to determine the long run and short run

determinants between the dependent variable (Inflation) and independent monetary and fiscal variables. The bounds testing approach to cointegration were tested to examine monetary and fiscal dynamics on inflation in Uganda.

Several diagnostic tests such as the autocorrelation, the residual normality tests, stability and multi-collinearity tests were tested, the Ramsey misspecification tests were tested. Details on the research methodology are reported in chapter six.

1.7   RATIONALE AND SIGNIFICANCE OF THE STUDY

Following sustained increases of inflation rates for much of the 1970's and 1980's, Uganda embarked on massive implementation of various policies to rebuild the shattered economy which were additionally facilitated by the international finance donor aid from IMF and the World Bank. Uganda adopted direct and indirect monetary policy regimes through its rehabilitation and recovery programme, from the initial Reserve Money Programme (RMP) to the current monetary stance of "**Inflation Targeting Lite**". The rigorous changes in monetary policy sought to deteriorate high inflationary levels which had constrained the economy. Whilst these policies somewhat successfully curtailed rising inflation, yet Uganda inflation is still high compared to other developing countries. The ineffectiveness of both fiscal and monetary policies is a result. Economic mismanagement and the long civil war generated significant economic slump. Having recognised the fundamental capability of fiscal policy, the government incorporated fiscal policy in its policy reform programmes. Accordingly, to achieve the pre-desired objectives, fiscal reforms were a prerequisite.

Several attempts including liberalisation of the economy and public-sector restructuring, were made by the government of Uganda. Yet these policy reforms left much to be desired in the Ugandan economy. The economy of Uganda still remains sluggish with high levels of unemployment, particularly among the youth.

Although several studies have been conducted on the economy of Uganda by various researchers: (Kabundi, 2013), Barungi (1997), Opolot and Kyeyune (2012), Adam (2008), Nyorekwa and Odhiambo (2014), yet these studies fall short of testing the effectiveness of both monetary and fiscal policies on unemployment and inflation in Uganda.

This study brings in anew dimension in this discource and that is the inclusion of structural breaks during the period under review. This study on the Ugandan economy used the VAR and VECM models. The study takes a different approach through use of DOLS as well as FMOLS, including ARDL models, none of the previous studies used these approaches.

Uganda's monetary and fiscal policy dynamics seems ambiguous given its structural transformation. The operation of the central bank largely centres on monetary policy management on one hand, on the other hand, the objectives of government and its economic conduct may vary accordingly. This is characteristic of developing countries since there faced with complex socio-political and underdeveloped financial systems. Contemporary research reviews on monetary-fiscal interrelation indicates that fiscal policy is an efficient macroeconomic tool beyond automatic stabilisers. The studies include; Auerbach (2003) And Favero and Monacelli (2005). Studies such as Giavazzi and Pagano (1990) illustrate the increasing role of expansionary fiscal policy and its potential role to stimulate growth in the economy. Various studies in Uganda have examined the conduct of monetary policy in Uganda.

Studies such as (Adam, 2009; Nyorekwa and Odhiambo, 2014; Nampewo and Munyambonera, 2013) have particularly investigated monetary policy conduct in Uganda and monetary policy with relation to growth dynamics. (Kayizzi-Mugerwa, 2002, Fagernäs, 2004) examined fiscal policy with poverty reduction and Aid dependence respectively. (Kayizzi-Mugerwa, 2002) observes that the fiscal reforms were importatnt in the creation of a stable economic environment, low inflation and stable currency, increasing investment, and a high level of economic growth. Although the fiscal reforms have improved Uganda's budget portfolio, increased revenue receipts and strengthened essential expenditures however, private sector growth remains inadequate moreover, the revenue situation remains sluggish.

The predictive relationship between several variables as well as monetary and fiscal policy variables is unknown in the Ugandan context. Essentially, understanding the predictive power is crucial in order to assess the relative efficacy of variables concerning alternative macroeconomic variables. This study investigates the conduct of both monetary and fiscal policy on unemployment and inflation using time series data. It is in this aspect that this study makes a contribution towards the

macroeconomic discourse in Uganda. The results of this study can go along way in steering the economic stabilisation agenda in Uganda.

1.8   DEPLOYMENT OF THE STUDY

This thesis is divided into ten chapters:

Chapter One provides the background of the srudy. The introductory discussion of this chapter presents the problem statement and a brief literature review on monetary and fiscal policy as tools ofr macroeconomics. This followed by the hypotheses which is subdivided into two hypotheses: the first hypothesis tests monetary policy against unemployment and inflation. The second hypothesis tests fiscal policy against unemployment and inflation. The chapter further provides the significance and illustrates the motivation sought to undertake particular policy related research reviews especially in the Ugandan perspective and the relevant objectives that are suggested throughout this study.

Chapter Two presents a comprehensive theoretical literature review on monetary economics and inflation. This section presents monetary theories related with inflation dynamics that form the basis of monetary policy framework. These theories include: the classical quantity theory of money; the Keynesian theory; the monetarism theory; the commonly sought Phillips curve; the expectations Phillips curve; and the New Keynesian Phillips curve. This is followed by the discussion of numerous empirical reseach studies undertaken with regards to monetary economics and inflation. This enables a critical analysis of the research problems and also form the basis of the study objectives based on the missing gaps observed in the literature.

Chapter Three presents a comprehensive theoretical and empirical literature review on fiscal policy. Various theoretical studies on fiscal policy such as the Keynesian theory, the Ricardian and non-Ricardian theories are provided in the first part of this chapter. The empirical literature on fiscal policy dynamics at the international perspective, in particular the developed economies like the Orgainsation for Economic Co-operation and Development (OECD) countries, United States; and Asia is provided. The chapter also discusses various empirical literature undertaken in Africa such as South Africa, Nigeria and in Uganda.

Chapter Four presents a detailed overview of the monetary policy framework, conduct and performance in Uganda. It additionally provides the essential contribution of the central bank of Uganda in the monetary aspects of Uganda. Furthermore, the chapter gives a description of money supply growth and its relevant aggregates as well as trends in Uganda. The composition of money supply is examined in relation to its pattern to monetary policy in Uganda.

Chapter Five this chapter presents a comprehensive overview on the unemployment and inflation dynamics in Uganda. Trends on unemployment and inflation in Uganda during the period 1980-2013 are also provided. This is followed by a detailed presentation of the various unemployment policies implemented by the policy authorities to curtail rising unemployment levels in Uganda.

Chapter Six provides a detailed discussion of conduct and performance of fiscal policy in Uganda during the period under consideration. Additionally, the chapter discusses the performance trends of the relevant fiscal determinants and their contributions to Uganda's macroeconomic landscape. The various fiscal aggregates described included: total government expenditure, total government revenue, tax revenue and trade openness.

Chapter Seven this chapter discusses the research methodology approach of the study. It provides; the research methods adopted in the study, research techniques used, data sources as well as the specific model specification implemented for the study.

Chapter Eight presents the analysis and discussion of empirical findings on the impact of monetary and fiscal policy on unemployment in Uganda using the FMOLS and DOLS estimation approach.

Chapter Nine presents the analysis and discussion of empirical findings on the impact of monetary and fiscal policy on inflation in Uganda using the ARDL estimation method.

Chapter Ten presents a summary of the main findings of the research study, conclusions and relevant policy recommendations. The chapter additionally provides prospects and areas for future research.

1.9   CONCLUDING REMARKS

Having presented the introductory chapter, the following chapter presents the conceptual framework of the study. This is done through a presentation of both theoretical and empirical literature review.

CHAPTER TWO

THEORETICAL LITERATURE REVIEW ON MONETARY ECONOMICS AND INFLATION

2.1   INTRODUCTION

This chapter presents a theoretical debate on the various underpinnings on monetary economics and inflation. Arguments related to the definition of monetary economics according to numerous schools of thought are discussed in the chapter. Hence, the aim of this chapter is to evaluate the theoretical debates on the effectiveness of money supply and conceptual arguments related to the role of money supply. The role of money in the economy as postulated by classical, Keynesian and monetarists schools of thought is undertaken. Prior to the great depression, the perceived notion was that an economiy would deviate from equilibrium full employment or prices. Such disturbances would only be of a temporary nature and flexible price and wage adjustments would restore equilibrium (Snowdon and Vane, 2005). The chapter also consists of a review on empirical literature related to monetary policy and inflation. The last part of the chapter presents the theoretical debates on the conceptual definitions of inflation in relation to unemployment through the Phillips curve and keynessian postulations of the link between inflation and unemployment.

2.2   THEORETICAL LITERATURE

The theoretical presentation in the chapter covers the evolution of economic theories on monetary policy, it begins with the traditional classical economics' views such as Fisher (1911) who postulated the role of money through the classical quantity theory of money. The ideas of Keynes (1936) built on heavy criticism of the classical economists' definition of money. The great depression presented the backdrop of Keynesian economics. The theoretical section additionally constitutes the monetarists concept of money particularly Friedman (1956). Friedman states that inflationary pressures emanate from "actions of legislators and central banks".

The implication of this view suggests that in modern times inflation is inevitably associated to ineffective economic policies by the policy makers either directly or indirectly. The final section of this chapter presents theoretical underpinnings on

inflation, starting with the Phillips curve, the new Keynesian Phillips curve, the expectation augmented Phillips curve as viewed by Friedman and Phelps.

2.2.1 The Classical Quantity Theory of Money

The classical economics led by Irving Fisher, Pigou (1917) and Alfred Marshal (1923) is built on Fisher's (1922) model about "The Purchasing Power of Money", they hypothesize the operation of monetary policy on grounds of the quantity theory of money as noted by Friedman (1989). Owing to the assumptions of significant role of supply of economic variables on which the theory is established, the classical economists observed, the greater the supply of money the greater the likelihood of its increased demand which results into enhanced value for money in the economy, this in turn is bound to push commodity prices ever higher. The theory contends that equilibrium is achievable in the long-run since the level of supply of commodities is able to automatically self-correct due to the forces of both demand and supply, resulting into flexibility of prices. Hence according to the classical economists in the long-run full employment can always be a normal situation ascribed to the view that resource under employment and/or demand deficiency is impossible in the economy. Hence, Pigou (1917) that individuals and business enterprises desire to hold money driven by the uncertainties around its value in the financial market as well as the power it commands in the commodity market. Money also facilitates the exchange of products; moreover it "acts as a medium of exchange". The quantity theory views perfect information in the market therefore do not merit any significant value towards money thus its function in the market is insignificant.

The classical economists maintain the notion of neutrality of money (Humphrey, 1974); they postulate that the amount of money printed by the central bank only impacts economic variables like GDP, employment and consumer spending indirectly, albeit can affect nominal variables like wages, prices and interest rates. Nonetheless, as also observed by Handa (2002), the classical economists conceived that subject to different elements in the market conditions economic agents tend to wish to hold real money balances. Thus, consequently established the foundation for Fisher's quantity theory of money, the classical work did not explicitly formulate demand for money theory but their views are inherent in the quantity theory of money, they emphasized the transactions demand for money in terms of the velocity of circulation of money

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(Jhingan, 2008). The theory affirms general prices (P) in the economy to be directly influenced by the quantity of money (M). Irving Fisher (1911), in his acclaimed work "The Purchasing Power of Money" applied the "Equation of Exchange." Evaluated the correlation between aggregate volume of money (M) and the aggregate consumer demand for production goods in the country P x Y whilst cited transaction money velocity (V) to present a correlation between M and P x Y, importantly Fisher seemed to contend that demand for money is attributable to the simple exploration that it's merely a medium of exchange, therefore he interprets velocity as number of times a unit of currency is exchanged on average throughout the year.

Symbolically the equation develops into $V = \dfrac{PxY}{M}$ …………………………………… (2.1)

Whilst the equation of exchange is denoted by $M \times \overline{V} = P \times \overline{Y}$ ……………………….(2.2)

Fisher's above equation symbolizes **P** with average prices per transaction, and **Y** symbolizes real GDP. Therefore, P **Y** equals aggregate value of output; **M** indicates money supply that the central bank is empowered to modulate; yet **V** signals the velocity of money circulation, which is the average number of times a dollar is exchanged in transaction of final products during the year. The classical economists considered the economy inevitably operated at the natural level of real output, hence reckoned $\overline{Y}$ to always be constant particularly in the short-run. Furthermore, the classical economists argued the value of **V** to be fixed in the short-run yet independent of the values of M**, P** and $\overline{Y}$. Moreover, the classical economists held the view that of an apparent causation between money and price level. On the assumption that **V** and **Y** remain constant, Mankiw (2007) notes that the tendency for high nominal quantity of money affects money income to change non-proportionately between economic agents.   The attempt to undertake a monetary action which doubles the nominal quantity of money would also result in an escalation of prices. Certainly, any increase in **M**, will automatically increase price levels **P** proportionally to the rise in **M** and reversely true with diminishing levels of **M**. therefore any expansive monetary policy action will consequently trigger inflationary pressures whilst a restrictive monetary policy action will abate the prices in general. It is in this sense that Friedman (1991) suggests the role of fiscal policy in stabilizing economic variables is insignificant simply

because it of its inability to influence prices in the economy as opposed to monetary policy. In an attempt to steer the economy in the right direction modern central banks have the choice between monetary policy and fiscal policy however their efforts are constrained by the inadequacies of the roles that both fiscal and monetary policy play in influencing variables.

The role of monetary policy is narrow in a few aspects, it can leverage nominal variables especially price levels but unable to impact the real economic sector whilst fiscal policy can potentially influence real aggregates and interest rates yet as regards to price control its role is restrained. However, as observed by Humphrey (1974), the theory indicates numerous inconsistencies; first, the theory fails to fully describe unemployment because it assumes to only operate at full employment of resources. Since it assumes that only the employment of resources in an economy will stimulate production, furthermore the theory attaches little attribute to money as a resource therefore any eventful adjustments in money should have no effect on adjusting production. Accordingly, anticipated changes in the quantity of money will only affect price levels yet is ineffectual to amplify employment levels. In reality, full employment is a rare situation, and only unemployment and/or underemployment is experienced.

Secondly, the quantity theory as advocated by the classical economists considered money supply to influence price levels. According to Keynes the impact of variation in quantity of money on prices is indirect and disporoportional and maintain the impact of aggregate demand than variations in monry supply in influencing inflation.

Finally the classical economists placed essential importance to the supply of money however in a dynamic economy with unanticipated change in variables besides exogenous adjustments like upsurge in oil prices by the Organization of Petroleum Exporting Countries (OPEC), increase in wage levels attributed to trade unions, rise in cost of production for goods, or soaring raw material prices, all these can be attributed to push up the level of prices in an economy regardless of full employment or not. Despite numerous shortcomings presented by the classical quantity theory of money it also exhibits irrefutable merits, any irregular increase in money supply over years gone by throughout the economy tended to trigger inflationary situations. Nevertheless, exceptional growth of money supply can provoke inflation.

Friedman (1950) in his notable thesis "inflation is always and everywhere a monetary phenomenon" further validated the quantity theory of money through his thesis moreover he further confessed that price levels can only be affected by abnormal growth of supply of money. It's on this note that the theory was attacked by numerous economic observers who further elaborated its shortcomings in the f arguments below.

2.2.2 The Keynesian Phillips Curve

John Maynard Keynes built his theory of money around heavy criticism of the classical theory of money. Johnson, Ley and Cate (2001) also note that, Keynes totally disagrees with the positive relationship that exists between quantity of money and price (classical dichotomy) as generated by the classical economists, neither did he believe in the concept that the economy can operate at the natural level of real output moreover real GDP can never be fixed. However, Keynes subscribed to the wider notion of the quantity theory of money that indicated quantity of money to possess an indirect connection to output, he contended that any adjustment in the quantity of money can perpetually provoke similar adjustments in real aggregates like employment levels, output, interest rates and income. Moreover, as noted by Snowdon and Vane (2005), Keynes termed this situation as the "unemployment equilibrium". The Keynesian theory of money further contend that unemployment equilibrium exists when the rise in money supply sparks-off an indefinite multiplication of output, although the impact of money supply over prices primarily hinges on retaliatory reactions of aggregate expenditure as well as elasticity of supply of total products. Hence (Johnson, Ley and Cate, 2001) also observe the Keynesian theory of money maintains that money plays an essential role in the economy albeit very skeptic with regards to the potency of monetary policy in steering balances in the economy.

According to the Keynesian theory it is demand for money and supply of money that precipitate the interest rate adjustments, the imbalances in the rate of interest exist with either adjustments in demand for money or supply of money however, the supply of money in the economy is stipulated by the empowered monetary authority and known to be constant in the short-run, therefore under such circumstances there would perfect inelastic supply for money. Ritter *et al* (2004) argues that an increase in GDP in turn generates rise in money demand since people hold more cash balances to facilitate transactions. Under normal circumstances money held for speculation

purposes is a product of interest rates or prices of bonds in the financial market but the money meant for transactions or precautionary motives is attributed to changes in income levels. Keynes postulated that whenever people anticipated interest rates or bond prices to alter, they would demand cash for speculative motives, nevertheless, Keynes only regarded two assets to establish his approach; money and bonds.

It is observed in (Bibow, 2005), According to Keynes people would rather hold bonds than liquid considering that the returns on bonds appear in the form of explicit interest rates yet the returns on money are not visible enough. Furthermore, the theory postulates demand for money will naturally accelerate as interest rates plummet, thus indicating a decreasing money function of rate of interest rates. It is this negative relationship between demand for money and interest rates which establishes the connection between money supply adjustments and production, distribution and consumption of products. In the Keynesian tradition, purposeful monetary expansion by the central bank leads to offsetting changes in monetary velocity that render monetary policy inefficacious (Hetzel,2012). Accordingly, in the event that bank advances are insufficient, although expansionary monetary policy can reduce interest rates it may not necessarily amplify aggregate investment or consumer spending.

According to orthodox doctrine, consumption, saving, and investment were all functions of the rate of interest (Johnson, Ley and Cate, 2001). Keynesians assigned a significant value on the role of fiscal policy on economic aggregates rather than the role of monetary policy. Snowdon and Vane (2005) argue, this was on account of his personal practical knowledge that monetary policy could possibly only achieve its objective under particular limitations which included; *one*, for monetary policy to achieve its objective the monetary authority had to increase quantity of money simultaneously with reduced interest rates on condition that the money demand curve did not become perfectly inelastic.

The *second* limitation is the fall in interest rates should trigger rise in investment demand contingent of the fact that investment demand does not increase less than the fall in interest rates. It is noted that monetary policy role becomes insufficient in the event of depression therefore Keynes advocated for public spending by governments. Keynes wrote, "*I am now somewhat skeptical of the success of a merely monetary policy directed towards influencing the rate of interest.*" (Keynes, 1936),

notwithstanding he recommended the supplementary application of monetary policy with fiscal policy. It is believed that fiscal policy can implicitly cause changes in real output but not prices because Keynesians maintain that inflation is independent of changes in consumer expenditure and therefore inflation is a cost-push situation especially when the economy is below full employment inflation. This can develop into trade-off linkage between inflation and unemployment. Nonetheless whenever economic policy is geared towards diminishing unemployment levels it clashes with the objective of lower inflation rates. Although Keynesians attach a pivotal weight on money as observed by, the causation believed to prevail between the change in the volume of money and prices, Keynes made the rate of interest dependent on the state of confidence as well as the money supply (Snowdon and Vane, 2005). Inevitably immediately upon aggravated volumes of money, the shock initially strikes across interest rates which deeply tumble. Considering the marginal efficiency of capital, when interest rates tumble so does the proportion of investment as a result via the multiplier effect, effective demand will intensify.

During periods of unemployment in the economy, over time the supply curve of input factors takes the shape of perfectly inelastic further, constant returns to scale materialize therefore under such conditions the growth of output will not spark a hike in commodity prices. Yet the egalitarian rise in both employment and output is normally symmetrical to rise in effective demand which is also symmetrical to the quantity of money. Keynes was of the view that in the event of unemployment output adjustments will uniformly follow the adjustments in quantity of money and price levels will remain unchanged. However, full employment will push prices to rise proportionately with the amount of money. Therefore, the Keynesian theory asserts that price escalation that develops as a result of inflated amounts of money will occur upon attainment of full employment.

In (1958) Phillips established a chain of causation between inflation and unemployment across the United Kingdom (UK) on account of statistical applications, his findings recorded none existent link of expansion of nominal wages with unemployment ratio. Phillips further confirmed the negative connection between inflation rate and unemployment. The Keynesian theory stresses the causal efficiency of money, thus "*The degree of money's importance depends upon its ability to alter*

money interest rates and upon the degree to which consumption, investment, and government expenditures are sensitive to changes in the interest rate. To the extent that a given change in the money supply can induce large changes in the interest rates and that expenditures are highly sensitive to those changes".

Keynes' presence in the history of economic thought is immense, but duly revolves around his diagnoses of global economic crises, in addition to his responsibility to offer neutralized ideas to them; for example, his numerous invaluable writings include; The Economic Consequences of The Peace (1929), post hoc remarks on British deflation in 1920's and hyperinflation experiences in other economies. Various research works have demonstrated that his critics used fallacy by asserting Keynes as a not so much votary of monetary policy implementations. The effectiveness of monetary policy over the economy especially on unemployment and inflation has long been a heated debate between the monetarists and Keynesians which therefore leads to the monetarists' views below.

2.2.3   The Monetarism Theory

Monetarism is attributed to the followers of Milton Friedman who held the view "*that only money matters",* (Dwivedi, 2005). Monetarists ascertain that monetary policy is the most powerful instrument to stabilize the economy and thus has substantial leverage on economic activity than fiscal policy. The monetarist theory is attributed to the attack on the Keynesian views who considered that "money does not matter". According to the Keynesian theory on the role of money supply is passive in an unbalanced economic landscape. On the other hand, Jhingan (2006) argues, the monetarist theory affirms that money and monetary policy are significant in economic policy analysis due to three reasons; *one*, it is possible to explicitly regulate the quantity of money with the employment of conscious policy actions; *two*, the monetarists believe that adjustments in the volume of money is capable of aggravating both values of income and prices; *three*, there exists parallel solid links between the stock of money and other assets. This theory maintains that the constant imbalances that manifest are a product of restrictive and/or loose monetary actions by the monetary authorities. Consequently, they advocate for a fixed money supply approach to counter massive increases in prices levels or decreases. They argue central banks

to employ strict monetary policy actions intended to maintain growth rates of money stock unbalanced yet proportionately to the growth levels of the economy.

As suggested in Dwivedi (2005), the monetarists assign important weight to the role of money with respect to short-term fluctuations in national income. It is conceived that depressions and recessions result from tightened regulation of money and bank advances whilst inflationary pressures besides economic booms result from expansionary monetary policy by policy makers. Monetarists reckoned supply of money to fundamentally warrant economic balance especially in the short-run. According to them considering that aggregate expenditure is a result of money supply, likewise it can influence employment levels, output and prices in the economy. They supposedly established a relationship between money stock and national income which they postulated to be fixed velocity of money denoted as Y/M.

Monetary authorities can precisely gauge the level of economic activity since the money velocity is known to be steady; any alterations in stock of money will be accompanied by a shift in aggregate expenditure and national income thereafter. To the monetarists money demand is the outcome of people's desire to transact finances which is primarily leveraged by income, quantity of money in real terms, Mishkin (2000). This implies that When the BOU amplifies money stock in Uganda by procuring securities from the public which will accelerate money, this will in turn expand investment demand and consumer demand hence elevate growth rate of income. On the other hand, the sale of securities by the central bank will lower liquid held by the buyers of these securities therefore shrink money stock in the economy. As a consequence, the buyers of government securities will sell their assets and curtail their expenditure habits in an effort to raise their cash holdings in turn diminishing national income.

Friedman (1956) is of the view that if the monetary authorities exactly know the level of money demand assuming the economy to operate at less than capacity, growth of money supply is bound to elevate output and employment in addition to aggregate spending in the short-run. This will sequentially lead to proportionate adjustments of between money stock and /or prices or both. Following rise of stock of money, consumer expenditure will double until equilibrium is attained in both demand for money and supply of money, leading to growth of national income. According to the

monetarists, inflation is purely a monetary situation because Friedman (1956); the short-run expansion of money stock by monetary authorities will spark upsurge in GDP, levels of employment and income however the long-run shift in money supply will be accompanied by soaring demand, prices, and growth in wage rates. But inflation expectation will generate additional situation of a wage-price spiral hence leading to inflation caused by undesirable growth in money supply. The theory considers interest rates as an insignificant variable to cause any changes in money stock or demand for money notwithstanding the effects of money supply on the economy will always be directly through interest rates adjustments.

The monetarism theory reckons the transmission mechanisms of monetary influences on the economy curtails economic agents' portfolios undergoing restructuring in form of financial and real assets like gold, oil, real estates. Whereas Keynes considered only two assets, the monetarists are of the view that purchase of securities by the monetary authority pushes up their prices, however, the returns on these securities will decline due to the fall in market interest rates. As a result, the sale of securities in the Open Market Operations (OMO) further multiply, hence lifts individual cash balances which additionally augment expenditure on real assets as well as financial assets. Further shift of aggregate spending on assets and final products tends to accelerate national income causing a trade-off between financial assets and products in relation to liquid surplus. The monetarists theorize this phenomenon as the substitution effect of investment adjustment operation. Notwithstanding, acquisition of securities in the open market improves peoples' nominal values of wealth that results from decline in market interest rates accompanied by upsurge in the market value of stock of capital, which the monetarists called the "*direct wealth effect*". When net financial reserves raise demand for financial assets and real assets will spiral a situation that materialize into production of new output.

The monetarism theory of money postulates that the monetary authority is incapable of regulating volumes of money stock in the economy via interest rates. Also, inflation will only further multiply in the event of pumping more money into the economy through sharp cuts in interest rates in spite of full employment level. Monetarists contend such a situation to further stimulate interest rates in addition to excessive condensing of real money stock. According to the monetarism theory of money, it is the market forces of

demand and supply for money in the long-run that provoke movements in real national income. On the assumption that there exists intrinsic flexibility in both price and wage values in the market, both prices and wages effected by movements in demand or supply of money. Shift in Demand results in price and wage increments whilst their decline is prompted by supply residue. Friedman further postulates the existence of "*natural rate of unemployment*" when the economy reaches or close to full employment and there is no possibility of involuntary unemployment. Friedman differs with Keynesian's views that unemployment is an involuntary phenomenon and that under employment equilibrium is a normal situation.

Unlike Keynesians who support the idea that the economy always experiences sharp and unexpected imbalances that result from the impact of adjustments in people's propensity to invest and consume; Dwivedi (2005) observes, the followers of Milton Friedman held that the economy is always stable and that fiscal policy is absolutely irrelevant in policy analysis (Dwivedi, 2005). According to monetarists it is government's rigid controls of both the monetary and fiscal policies that enhance economic volatility. Regulations by the policy makers tend to upset economic variables in addition to reactions by economic agents. Friedman reckons that time lags can negatively aggravate the impact of monetary stock towards national income in the event that the monetary authorities engage in strict contra- cyclical monetary actions. Nevertheless, Friedman prescribes comprehensive monetary mechanisms by the monetary authorities to keep the economy at equilibrium without prejudice to rising prices, these include careful attempts to enhance the quantity of stock of money proportionately with rate of GDP.

The monetarism theory established the rational expectations hypothesis; according to the monetarists "*expectations are self-reinforcing and stabilizing, provided government does not create false signals by erratic and rational interventions*" (Galbács, 2015). They maintained that expectations on the economic outlook are coherent. The most widely accepted view of the monetarists considered extra revolutionary in the history of economic thought by academics, policy analysts and modern economic thinkers was the idea of rational expectations hypothesis that supposedly disregarded any potential trade-off between inflation and unemployment irrespective of time periods (Jhingan, 2006). Although the theory transformed

economic philosophy in various aspects, nonetheless, faced severe criticism from various economists owing to its limitationsfor example; one, demand for money has never been steady (Kaldor, 1985).

Critics of the monetarists contend money supply to be predominantly endogenous hence refute Friedman's thought of exclusive exogeneity of money stock. They cited the example of creation of monetary reserves by the note-issuing authority in the United States of America (USA) which is based on bank deposits that multiply subject to the impact of transformation of bank credit by financial agents. It is bank credit in the USA that sequentially is determined by increase or shrinking of bank reserves accompanied by non-banking financial intermediaries' withdrawals as well as deposits. The monetarism principles did not fulfill a lot when applied to the USA and U.K economies during the period 1979 to 1980 when there was unbalanced enhancement of money stock whilst both interest rates and inflation escalated rapidly.

According to Kaldor, (1985) the monetarism theory is inadequate since it did not take into account the diverse dynamics of cost-push inflation and demand-pull inflation. In the modern global economic aspect, it is not always guaranteed that prices and wages automatically change together in unison, notwithstanding that in some courtiers, notably Uganda prices accelerate rapidly compared to nominal wages.

Despite numerous empirical research works conducted to evaluate the theory's principles, the research include work done by Friedman and Schwartz, (1975), Friedman and Meiselman, (1963) which all disclosed a slight link between money stock and national income than between national income and the Keynesian proposed variables. However, the monetarists strongly advocated for the application of monetary policy mechanisms to improve economic activity, they seemed doubtful of the true achievements of monetary actions in achieving pre-determined outcomes in contrast to the efficiency of fiscal policy. Moreover, there was a wider agreement that in an effort to stabilize the economy, actions by the monetary authorities would lead into excessive shocks. It's the notable relevance of monetary policy on unemployment and prices that triggered the development of the Phillips curve hypothesis which provided a stepping stone in macroeconomic policy framework.

2.2.4   The Phillips Curve

Graphically, it can be described with a scatter presentation or as time series flaunting unemployment rates as well as CPI rates in a given economy. Kitov and Kitov (2011) state that the idea of policy authorities worrying about CPI inflation rates alongside unemployment rates was initiated by London School of Economics that put up a review of the relationship between rates of unemployment and changes in rates of money wages across the British economy for the period 1861 to 1957.

In its simplest form, the Phillips curve is a statistical link between price inflation and unemployment (Kitov & Kitov, 2011). The relationship between unemployment and inflation was exhibited by A W Phillips (1958) in his famous Phillips curve that argued policy authorities to have been confronted with a critical dilemma in their macroeconomic management. This is compounded by the fact that their endeavors to diminish unemployment rates yield soaring inflation rates, whilst the price of low inflation rates trigger escalation of unemployment. The argument is that during periods of economic slumps, it follows that wages are cut by labour firms a move that is agitated against by trade unions and labour suppliers. This will ultimately lead firms to lay-off jobs driving up unemployment levels. Consequently, the volatile situation in the labour market will generate considerable growth in unemployment faster than the decline in wages; hence Phillips postulates theory that there exists a nonlinear relationship between unemployment and rate of money waged changes. And as a tool of modern policy analysis the Phillips curve was rightly approved by economists and critics. Humphrey (1985) cited the following observations:

- Temporal stability in the relationship of the variables. The curve was tested for the British data between 1861 to 1913 and 1948 to 1957 and demonstrated smooth and stable relationship despite being applied over two different time periods.
- The ability to accommodate a variety of the inflation theories. According to the hypothesis inflation is a consequence of boost in demand for labour which automatically propels up wages as well as prices. Hence this argument incorporates and satisfies the theories of cost-push in addition to demand-pull inflation.

Numerous economists interpreted his observations to a rather trade-off between the unemployment and the rate of inflation or change in the general prices on the basis that when wages rise rapidly more than the productivity of workers it drives up prices yet if both wage rates and productivity of workers expand proportionately, prices remain unchanged. Although the Phillips curve has been scrutinized for its inability to present a comprehensive theoretical foundation to his argument about the negative relationship between unemployment and wage inflation, since its original establishment it has undergone various economic modifications and transformations. For example, the expectations-Augmented Phillips curve to the New Keynesian Phillips Curve (NKPC). Despite inadequacies of the Phillips curve, in the context of policy implications numerous monetary policy authorities particularly the central bank policy makers employed its framework since inflation and unemployment are still regarded as one of the essential benchmarks of economic accomplishments in addition it explores the elements of price and quantity as a consequence of deviations from nominal income adjustments and the likely impact. As expressed by the subsequent quotes:

The fundamental application of the Phillips curve in relation to inflation dynamics is demonstrated by Donald Kohn (2009). Whilst Bernanke, (2009) states that; "to protect core inflation at longer-term horizons, the staff consults a range of econometric models. Most of the models used are based on versions of the new Keynesian Phillips curve, which links inflation to inflation expectations, nature of economic slack and indicators of supply shocks". Therefore, the Phillips curve specifies the provisions paramount for better policy implementations to combat inflationary pressures.

The Phillips curve is concerned with the controversy over the relationship between inflation and unemployment and is one of the most famous relationships in macroeconomics (Smith, 2002). Phillips established an inverse relationship unemployment and wages, the fall in unemployment was in turn followed by rapid increase in wages and vice versa. A. W. H. Phillips's study of wage inflation and unemployment in the United Kingdom from 1861 to 1957 is a milestone in the development of macroeconomics (Hoover, 2008). Phillips postulated that during periods of low unemployment, firms ought to augment wage rates in order to stimulate labour supply in the tigher labour market.

Figure 2.1: The Phillips Curve 1961-1969
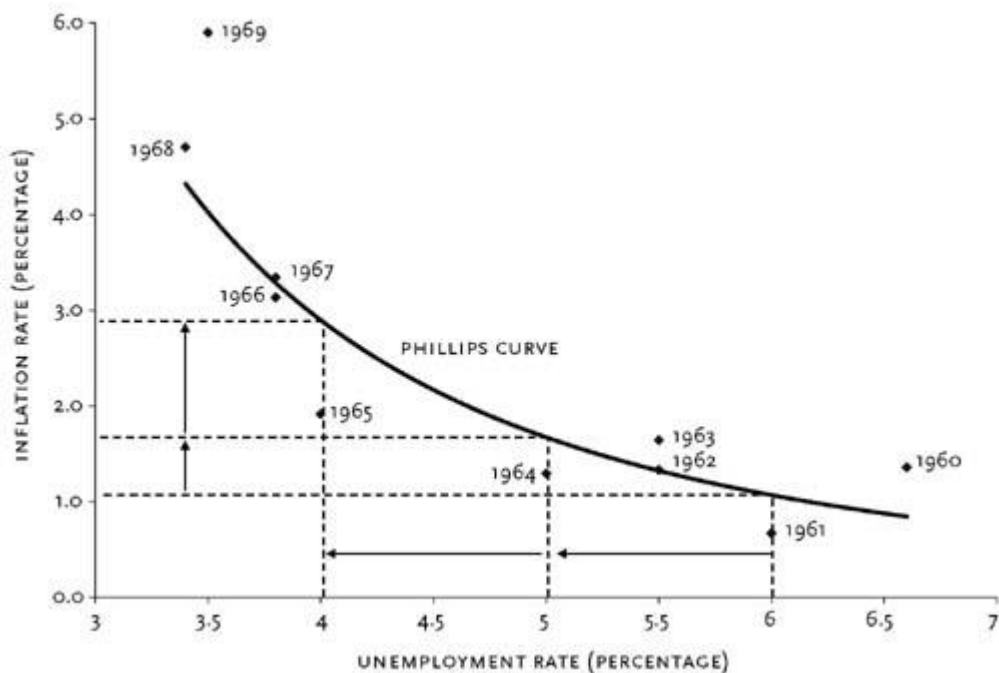
Source: Hoover (2008) (Bureau of Labour statistics)

Figure 2.1 denotes the traditional Phillips curve plotting the United States data the period 1961-1969. Following the works of Samuelson and Solow (1960), the Phillips curve gave way for the foundation in macroeconomic approaches. For example, the economy experiencing unemployment levels of 6% will compel the monetary authorities to attempt to abate these levels lower, which may ultimately trigger inflationary tendencies. Importantly, suppose the economy recorded benign unemployment rates then, the ripple effect emanating from such a situation would be significant sine rates of inflation would be superfluous beyond expected.as a result Friedman and Phelps asserted that the possibility of modest unemployment rates intended to be supplemented with aggravated levels of inflation seem practically perverse. Hence, Friedman and Phelps' postulations earmarked the short and long-run Philips curves.

2.2.5   The New Keynesian Phillips Curve

Prior to the 1960's the Phillips curve was heavily regarded as an empirical equivalent to testing the corresponding parallel between inflation and unemployment. The link between unemployment and inflation was a consequence that during periods of low

unemployment labour would seek for more wage rates in spite of the economy operating at less full capacity. Lipsey (1960) and Solow and Samuelson (1960) are responsible for what is called the neoclassical interpretation of the Phillips curve (Palumbo, 2008).

The 1950's marked the history of the new macroeconomic perspective led by the establishment of the Phillips curve. The theory has been tested and critically scrutinized in relation to modern economic application taking into account both its merits and limitations. However, the newest contemporary edition of the Phillips curve established by (Roberts, 1995) called the "New Keynesian Phillips curve" is in harmony with the rational expectations view. The New Keynesian Phillips curve (NKPC) is a linear approximation to the dynamic stochastic general equilibrium with nominal rigidities and rational expectations (Walsh, 2003). The new model of the Phillips curve widely applied by monetary authorities and policy makers currently established that prices increases during a particular time will have a positive relationship with; rigid adjustments in GDP beyond its potential capacity level as well as expected price hikes in the future.

The NKPC has been regarded a more applicable theory of inflation and has transformed the   central banks' approach to tackling inflation and monetary crises. It has been predominantly employed by economies that follow inflation targeting regime as their monetary policy framework. It is based on the principles of previous inflation rates, current expectations about rising prices and quantity of real of marginal cost and they affect current inflation. Although the NKPC is parallel to the Friedman and Phelps expectations augmented Phillips curve, its attempt to elucidate the Phillips curve into the current economic perspectives, like highlight the impact of nominal rigidities directly is remarkable. The absence of price-stickiness leads to inflexible macro-economic shocks considering that nominal rigidity affects the attainment of market equilibrium levels in the economy.

Keynesians were questioned for the view that monetary authorities in the country have the potential to mitigate unemployment levels albeit at the expense of price escalation. The critics of Keynes argued that unemployment levels would decline for a short-term but would then spiral excessively leading to high inflation figures. Therefore, the natural rate of unemployment also known as the "non-accelerating inflation rate of

unemployment" (NAIRU) is considered as the moderate rate of unemployment during which constant inflation rates are recorded. This is parallel to the general proposition that in the event that the central bank attempts to stabilize economic activity through adjustments in monetary aggregates as well as total expenditure, in the short-run there will be a negative reaction between inflation and unemployment.

2.2.6 The Expectations Augmented Phillips Curve

Phillips (1958) original establishment of the Phillips curve faced severe backlash from economists but none more so than specifically the monetarist economists led by Milton Friedman and Phelps who in spite of their acknowledgement of the existence of the Phillips curve in the short-run they rather challenged its stability and the trade-off between unemployment and inflation in the long-run. The monetarists rather expounded the fact that owing to the changes in inflation expectations, the curve tends to shift upwards.

Friedman maintains that after a certain period of time the Phillips curve will be contrived from its original position as a result of the influence from different variables in the economy thereby becoming vertical in shape. According to the monetarist school of thought, such a phenomenon can be attributed to the consistence between the actual inflation rate and the expected inflation in the long-run. This has been commonly referred to as "adaptive expectations" hypothesis/ "accelerationist" (Humphrey, 1985). Throughout his argument of the long-run Phillips curve Friedman developed the theory of natural rate of unemployment which he professed as the situation where both the actual rate of inflation and expected inflation rate are both in equilibrium. At this lowest level of unemployment there will be a rise in inflation whilst at its highest inflation will decline until the economy reaches equilibrium so that inflation rates stabilize. Friedman asserts that over the long-run period at the natural rate of unemployment the Phillips curve becomes vertical moreover the economy starts to operate in the long-run period as a consequence Hoover (2008). Subsequently, throughout the economy owing to structural elements in the labour and goods markets which include; insufficient and highly skilled labourforce, lack of information on nature of job market, wage rigidities like establishment of minimum wage bills, consequences of the mobility of the work force as well as market imperfections, based on the above economic disturbances the equilibrium unemployment rate will tend to shift however, according

to the monetarists essentially the Phillips curve is largely influenced by the expected rate of inflation.

Importantly the monetarists based their argument on the fact that if the time period is abundantly long then soon or later economic agents accord consciously to the prevailing market prices as well as inflation, so that price adjustments consequently have insignificant influence on the rate of unemployment; hence the Phillips curve becomes vertical at the natural rate of unemployment. As a result, there cannot be a long-run trade-off between inflation and unemployment because inflation expectations are attributed to previous incidents of inflation which are impossible to explicitly anticipate. Hoover (2008) indicates, the natural rate of unemployment consists of the following;

- It's the rate at which normal full-employment equilibrium is achieved in the labour and goods markets.

- Two, it is not influenced by the equilibrium rate of inflation as well as alterations in aggregate demand.

- Three Rather it is real economic structural elements that impact the natural rate of unemployment such elements include; taxes, unemployment benefits and market frictions.

Humphrey (1985) views the three innovations that modified the original Phillips curve equation to the expectations-augmented hypothesis as;

- Incorporating future expectations of prices into the original Phillips curve.

- Incorporating the error-learning mechanism into the Phillips curve to explore characteristics of price expectations notwithstanding the subsequent consequences.

- Modifications into the theory of demand surplus.

The concept of the natural rate of unemployment was observed to have significant macroeconomic policy inference. Policy makers have to choose between preferring to limit unemployment levels or alternatively preserve inflation rates, choosing to control

unemployment would culminate into soaring inflation since rates of inflation are triggered by declining unemployment rates that sump lower than the natural rate. On the other hand, preferring steady inflation pushes up unemployment due to the fact at any anchored level of inflation, unemployment will restore back to its natural rate. Hence unlike the Phillips curve, unemployment cannot be controlled at particular fixed rates of inflation although; a natural rate of unemployment is achievable at a steady-state inflation rate. The second policy is that to achieve the required steady- state of inflation, policy makers would need to apply any of the unconventional impulsive regulatory mechanisms provided inflation expectations are downgraded.

The drawbacks in the adaptive expectations hypothesis inspired the critics to advance the rational expectations into the Phillips curve giving rise to the rational expectations hypothesis.

Having outlined the theoretical literature in the foregoing paragraphs, the following section presents the empirical literature.

2.3   EMPIRICAL LITERATURE

The impact of monetary policy on both inflation and unemployment is inadequately reported. Owing to the diverse and changing framework subjected to the employment of monetary policy, policy makers have had to adjust their approach of monetary policy conduct with the adjustments in the economic landscape. The rigorous evolutions in economic principles sparked various econometric probing with regards to the potency of monetary policy on inflation and unemployment. This segment explores suitable empirical research pieces on the efficacy of monetary policy on inflation and unemployment. The available literature conducted on how monetary policy impacts both inflation and unemployment seem insufficient, notwithstanding the limited research works on the impact of different monetary policy regime evolutions on various economic variables in Africa particularly in the context of Uganda. Consequently, this study investigates corresponding literature on the effects of monetary policy on inflation and unemployment in Uganda.

2.3.1 Literature from Developed Countries

Numerous empirical academic works in the western capitalist countries have provided some impetus to the discussions on the approaches of monetary policy action on inflation and unemployment, most notably the empirical examination of the Phillips curve. The studies comprise of Klein and Ball (1959), Turner and Seghezza (1999), Bhattarai (2004), Hansen and Pancs (2001), Arratibel *et al* (2002), Ewing and Seyfried (2000), Hart (2003), Fumitaka (2007), Abachi (1998), Onwioduokit (2006), Hodge (2002), Hume (1971), Koshal and Chapin (1970), among others.

Klein and Ball (1959) employed quarterly data on wage-rates and correlated it with productivity during 1948 to 1958 to a maximum likelihood estimation method in analyzing the U.K economy. Klein and Ball tested the hypothesis of adjustments in wage-rates which result from adjustments in cost of living, labour demand as well as the political landscape in the country. The correlation of wage-rates on productivity is fuelled by the investigation of correlation patterns inherent in various economic variables so as to trace out any independent structural linkages. In an effort to examine the behavioral aspects of the post-war inflation in U.K. the wider of the research piece considered quarterly series from 1948-1958 incorporating diverse economic activities in U.K.its believed that Klein and Ball's explorations are similar to Dicks-Mireaux (1959) who suggested the existence of gaps in wage bargaining between labour and trade unions. In their exploration, they are unable to take into account the adjustment lag between wage-rates against price adjustments, despite the fact there exists various types of inflation. This study emphasized more on demand-pull inflation as a consequence of the effect of unemployment on adjustments in wage-rates.

The attempt to explore the determination of absolute prices and wages ignored the direct structural impact of industrial productivity on wage-rates and/ or prices of goods to clearly identify various impediments to inflation regulation in U.K post- war period. The results indicated that adjustment process in the wage-rates and price is chiefly affected the level of demand for labour. It is believed that the labour hours offered result into increased labour demand; however, their study is on assumption that alterations in cost of living play a significant role in bargaining however in many cases even when cost of living has accelerated due to the weaknesses of the bargaining power, workers' earnings do not increase excessively.

The Klein and Ball (1959) assumed that it is proportion adjustment in money wages that determines unemployment in addition to proportional price change, in the modern economic world exhibits international crises and austerity measures which spread on to other countries as a result of economic integration and globalization. Although they appreciated the time-lag in the adjustment process the size of the lag is unknown, nonetheless the time period under investigation was long enough to describe the degree of the lag.

To determine the wage-price mechanism in U.K the period 1948-1958, seasonal and political factors were accounted for, using quarterly averages of consumer price levels. The application of least-square estimates indicated a small and insignificant effect between profits and prices moreover the study findings concluded that movements in indirect taxes have little impact on inflation.

Turner and Seghezza (1999) investigated the evidence of the Phillips curve relationship between inflation, output gap and imported inflation in twenty-one (21) Organization for Economic Co-operation and Development Economies (OECD). These include; USA, Germany, Denmark, Finland, Italy, Austria, France, Australia, Norway, Sweden, Switzerland, Japan, U.K, Spain, Greece, Portugal, Canada, New Zealand, Belgium, Ireland and Netherland. The study was initially administered to analyze the strength and effectiveness of demand effects with the aid Phillips curve observations to assess the OECD countries. The second phase was conducted in the form of separate country equations exposed to estimation approaches using the Ordinary Least Squares to investigate the impact of restrictions on various countries in the OECD. They employed semi-annual data for 21 OECD countries over the period 1970-1997. The single equation results revealed that sixteen out of twenty-one countries in the OECD, have long run determined effect from the output gap to inflation.

The results also show speed of adjustment parallel for output price inflation to adjustments in import price inflation with eleven countries, although countries in the EU show a higher speed of adjustment. Hence the results therefore show the relevant systematic re-specified Phillips curve in explaining variations in inflation across major OECD countries.

Turner and Seghezza (1999) also found out that from the single equation method that sixteen out of the twenty-one countries reviewed exhibited a long-run relationship between the output gap and inflation, it indicated that the output deficit; which determines the actual goods and services generated by producers compared to the potential GDP produced under conditions of full capacity, can potentially affect changes in inflation. The report also revealed the feasibility of restrictive means in most countries, eleven countries out of the 21 countries exhibit changes in output-price inflation to changes in import-price inflation considering the economic openness. Notwithstanding the rate of change in the European Union countries like Germany and France appeared pronounced. However economic openness improves growth and stability in the country on account of its government regulation over capital and labour flow.

Consequently, inflation results from various exogenous and endogenous aspects apart from output gap and imported inflation. However, Arratibel *et al.* (2002) explored the dynamics of inflation across Central and Eastern Europe, with an emphasis on dual inflation (which is known as variation in inflation rates against tradable and non-tradable goods in an economy) using of the New Keynesian Phillips curve method with the aid of forward-looking expectations against panel data. The results included notable linkages between unemployment and non-tradable inflation rates. Their inquiry revealed that endogenous factors greatly influence non-tradable goods inflation whilst the tradable goods inflation to be highly pressured by exogenous factors.

Bhattarai (2016) also extensively investigated the unemployment-inflation trade-off in OECD countries in addition to examining the magnitude of the unemployment-inflation relationships, Okun's law and the correlation between inflation and rate of growth. The study employed quarterly data the period 1990Q1 to 2014Q4 to also assess the composition and size of the relevant relationships, cointegration as well as causality across 35 countries which included, Australia, Austria, Belgium, Italy, Spain, France Greece, United States of America, United Kingdom, Germany, Finland, Brazil, Poland, Portugal, Canada, New Zealand, Norway, Denmark, Japan, Korea, Chile, Estonia, Czech Republic, Russia, Slovakia, Hungary, Iceland, Ireland, Israel, Luxembourg, Mexico, Netherlands, Slovenia, Sweden, Euro area and the E.U.

Battarai (2016) empirically evaluated the applicability of the Phillips curve in these countries using both unemployment and inflation data across these economies. The results indicated variability of economic circumstances between the reviewed countries.

The study revealed the presence of trade-off between unemployment and inflation in Australia, Denmark, France, Italy, Netherlands, Spain, New Zealand, the UK and the U S, whilst, the trade-off was non-existent in countries such as Austria, Germany, Israel, Brazil, Iceland and Norway. However, according to the review, the power of labour unions tends to constrain the performance of labour markets thereby diminishing the inflation-unemployment trade-off. This is very prevalent in countries like France, Italy and Spain that exhibit labour markets that operate under stringent circumstances as compared to economies that allow flexible labour markets like the U.S and U.K whilst Germany individually has recently minimized the aggravation of unemployment levels. Moreover, the estimation analysis demonstrated the strong reality of the natural rate of unemployment.

The calculation of the panel VAR model showed the trade-off between unemployment and inflation however, the general observation is that the adoption of inflation targeting monetary framework in the countries in the recent past was reported to have curtailed inflation fluctuations. Countries such as Korea, Russia, and Slovakia exhibited a "positive counter-intuitive" relationship implying the relevance of the arguments put forward by the rational expectations hypothesis. Although the Phillips curve hypothesis is reported to manifest in a few countries, it's ultimately insignificant in other countries combined with the revelation of robust coefficients in the aggregate supply functions especially in the short-run in three countries and the strong coefficients representing growth on unemployment in thirteen countries. Hence Battarai's (2016) study empirically showed the validation of the Phillips curve in twenty-eight countries in a pool of thirty-five OECD countries.

In Australia Kitov and Kitov (2011) investigated the Australian Phillips curve through their methodology assessment of correlations between the transformations in the quantity of labour force, inflation rates and unemployment. Their results indicated that both "price inflation" (GDP Deflator as a proxy of price inflation) and unemployment are dependent on the adjustments in the quantity of labour force albeit, in isolated

circumstances. They used the deflator GDP as a proxy to estimate inflation on grounds that both product prices and growth of monetary stock have insignificant impact on changes in inflation across Australia. Hence it detected evidence of a long-run causation between the amount of labour, inflation and unemployment. The study also argued that the relationship between labour force and unemployment as well as the relationship between inflation rate and labour are both linear and cointegrated in nature implying that there is directly proportional linkage. Kitov and Kitov applied cumulative curves to their model although with the incorporation of the Reserve Bank of Australia's (RBA) transformation in monetary policy stance to Inflation Targeting in 1994 as a structural break. The study unveiled a linear relation between the CPI inflation rate and the quantity of unemployment the period 1974-1994, however there was no empirical evidence of the reality of the Phillips curve in Australia the period 1974-2009.

Furthermore, their estimation analysis established that the adjustment in the volume of labour and the unemployment proportion are negatively related but largely attributed to the participation rate of labour which was also observed to be non-linear. Importantly, the empirical evaluation proved that unemployment volumes in Australia exhibit a linear as well as lagged consequences towards labour transformation. The study also unveiled the apparent existence of a canonical Phillips curve in Australia although its extent and time period was uncertain.

Karanassou and Sala, (2009) probed about the long-run inflation and unemployment trade-off in United States of America (USA). They employed the structural vector Auto regression (SVAR) as well as the Generalized Method of Moments (GMM) approaches to test the response of unemployment and inflation towards growth of money. They assert that the growth rate of money in USA displays a significant barometer of the monetary situation better than the Federal funds rates; hence, their examination concentrated more on inflation-unemployment reactions towards monetary distortions in the economy. The analysis revealed that the USA Phillips long-run curve is not vertical, which not only demonstrates no relationship between inflation and unemployment but also reveals that both real sectors and nominal sectors of the economy move in symbiosis. Karanassou and Sala, (2009) uncovered that in 2007 climbing rates of quantity of money supply displayed a flattening Phillips curve,

however, the study further recorded that the period 2008 the growth rate of money supply did not signal the actual financial landscape in the economy. The research revealed that during the period 2008, monetary authorities struggled to reduce the impact of the financial crisis on banking system as well as strengthen the credit system, although they applied experimental actions to the monetary aggregates, these actions are too passive to be influenced by the growth of money. Notably the study was conducted at a critical time in the USA financial history as that was the period of the 2008 global financial crisis, findings suggested for the reappraisal of the application of the classical dichotomy approach by policy authorities.

By contrast Israel (2015) conducted an examination into the long-run relationship between unemployment and inflation in Germany, USA, France and U.K over time. The annual time series results revealed a positive relationship between unemployment and inflation in the long-run which further substantiated the preceding findings of Niskanen (2002) and Mulligan (2011). They tested the trade-off of these variables in the United States although with divergent approaches. The research indicated that prior actions of monetary growth by the monetary authorities in form of increase in money supply triggered unintended economic shocks which in turn further necessitated more central banks actions.

In Asia, Dua and Gaur (2009) explored the inflation diagnosis in an open structured economy through both the forward-looking and traditional backward-looking Phillips curve across eight developed and developing Asian economies which include: Japan, Hong-Kong, China Mainland, India, the Philippines, Thailand, Korea and Singapore. They exploited quarterly data the period 1990's- 2005 and assigned the instrumental variables estimation model to their data. Their outcomes of the review reveal that the causation of inflationary pressures in developed Asia economies is typically similar whilst those for the developing countries are also correspondingly alike. For example, across four developed economies which include: Japan, Hong-Kong, Singapore, Korea the output gap was found to possess a positive relation towards inflationary pressures implying that it conditions the changes in the rates of inflation. Subsequently, inflation expectations also trigger inflation adjustments in these economies, however, there are divergent exogenous inducements to inflation in developed economies such as exchange rates in Japan and Korea, imported inflation

in Hong Kong and oil price shocks in Singapore. Significantly the impact of agriculture on price related factors in the developed economies was also established to be inconsequential therefore the study ignored its equivalent supply disturbances in the methodological analysis.

In China, India and Philippines output deficient also positively controls the direction of inflation. However, in Thailand it was discovered that the monetary gap which is equivalent of nominal money gap less increases in the price inflation. The monetary was observed as a determinant of aggregate demand. The study uncovers that both forward-looking and backward-looking inflation expectations notably provoke inflation across most countries, but it was observed that the forward-looking rather than the backward- looking Phillips curve was a more effective tool mechanism. Therefore, with respect to developed countries Dua and Gaur (2009) suggested the implementation of monetary policy actions by the policy makers to curtail inflationary pressures through the output gap instrument whilst for the case of developing countries, the disturbances emanating from the supply side particularly the agricultural aggregate supply upsets exert colossal pressure on inflation than the stress caused by aggregate demand. The countries under consideration have diverse demographics, for example India and China are large countries in terms of ratio of land as well as population, it is noted that high populations can have positive and negative effects on the economy.

2.3.2 Literature from Developing Countries

Fumitaka (2007) investigated the existence of the Phillips curve in Malaysia from the period 1973-2004, he employed the Vector Error Correction Model (VECM) to his hypothesis. With a view to appraise the extent of the Phillips curve in Malaysia the review utilized techniques such as Johansen cointegration tests, Unit root tests and Granger causality based on the VECM. Fumitaka's research piece indicated reality of a long-run trade-off relationship between unemployment and inflation, in addition to causal relationship among these two powerful variables in Malaysia. The period 1970 Malaysia recorded a negative relationship between unemployment and inflation, unemployment figures moved upwards barring in 1981and 1982 where unemployment decelerated to less than 5% the period 1983 to 1987 it again rose further eclipsing 8.7% in 1987. However, owing to the economic expansion in Malaysia since 1997 to 2004, rates of unemployment lessened to average 3.5% in Malaysia albeit Malaysia

recorded mixed reactions with respect to inflation figures. The inflation oscillated numerous times in the Asian economy.

Fumitaka's report findings are one of a few that has validated the Phillips curve hypothesis. He also advocated for a broader inspection of the Phillips curve hypothesis to a larger Asian perspective.

Al-Zeaud (2014) probed the unemployment-inflation trade-off in Jordan the period 1984 to 2011 applying the Granger causality test between unemployment and inflation. His inquiry demonstrated no causality between unemployment and inflation. The results implied no trade-off between the two variables yet it extended its empirical endorsement to the encouragement to the monetarist theory. However, Al-Zeaud 92014) suggested the attributed aspects of foreign labour that was not accounted for in the research.

Whilst, Cacnio[1] (2012), investigated the trade-off between inflation and unemployment in Philippines particularly in the short run. The study further explored the relationship and unemployment trends over a period 1989 to 2011 in Philippines in addition to the impact across execution of monetary policy in the country. He noted numerous studies that demonstrated the existence of the trade-off in the short run in Philippines that included; McNelis, Bagsic and Guinigundo (2006) and Dumalo, (2005) nevertheless Dua (2006) results indicated non-existent trade-off between inflation and unemployment. The study highly demonstrated the disappearance of the trade-off since 2000's, despite the fluctuations in inflation rates unemployment rates continued to stabilize. The research study observed implications for the sudden "flattening" of the Phillips curve after the period 2000 which include:

- Inflation targeting framework by the Bangko Sentralng Pilipinas (BSP) which anchor expectations.

- Globalization

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[1] Faith Christian Q.Cacnio is the Bank Officer at the Department of Economic Research of the Bank Sentralng Pilipinas.

- Excessive supply of labour in Philippines. The adjustment in the monetary policy mechanism by BSP also influenced the positive relationship between unemployment and inflation.

Conversely in India, Kumar (2012) empirically investigated the validity of the Phillips curve in India exploiting data using the Expectations Augmented Phillips curve approximations which implicitly involves incorporating adaptive expectations of variables into the traditional Phillips curve. The results observed presence of a shot-run Phillips curve in addition to evidence of a trade-off between unemployment and prices in India since both fiscal and monetary policy can potentially trigger changes in growth of output as well as levels of employment particularly in the short-run. The causation tests demonstrated a unidirectional causation between output gap and inflation an indication that output gap Granger causes inflation yet inflation has no Granger cause on the output gap. Although, inflation and growth rate of output gap exhibit bidirectional causality, the findings refute the essence of the vertical form of the Phillips curve, hence suggesting the non- existence of the long-run trade-off between inflation and unemployment in India. However, the review of the study used GNP Deflator as a proxy of inflation rates moreover, unemployment estimations lacked uniformity. The inadequacy of the expectations Phillips curve is that it presents imperfect conclusions of economic agents' perceptions of price transformations. As Humphrey (1985) suggested, the adaptive-expectations mechanism in implausible because of its incompatibility with rational behavior.

Consequently, Kumar's empirical observations indicated that policy authorities in India ought to attempt to erode involuntary unemployment by establishing swift yet encouraged inclusive economic expansion without sacrificing inflationary tendencies in the country.

Abachi (1998) evaluated the trade-off between unemployment and inflation in Nigeria the period 1970 to 1995. He employed a trade-off model applied by Rea (1983). The review indicated non-existent trade-off between inflation and unemployment, nonetheless, the observations recorded were of non-linear curve sloping upwards. Moreover, the research piece detected a significant causality between these two variables. Therefore, the researcher contended that monetary policy interventions employed by policy makers to gauge both unemployment and inflation results in

aggravation of the other. The causality implies these two variables can influence other variables in the economy such as improvement in GDP, hence investment in Nigeria especially in the oil production in Nigeria.

By contrast, Orji, Onyinye, Orji, and Okafor, (2015) explored the unemployment-inflation relationship in Nigeria the period 1970 to 2011. To empirically verify the Phillips curve, the study regressed consumer's price index (as a proxy of inflation) against real variables that included; unemployment rate, growth rate of money supply, budget deficit, real GDP and interest rates. The outcome demonstrated that both unemployment and inflation change in tandem, in addition inflation was heavily influenced by rates of unemployment in Nigeria which nullifies the Phillips curve theory. The study argued for robust, diversification policy actions to mitigate the existence of stagflation.

However large economies that exhibit divergent economic elements require a variety of both exogenous and endogenous policy implementations, particularly removal of supply rigidities.

On the other hand, Onwioduokit (2006) analyzed the relationship between unemployment and inflation in Nigeria, the outcomes detected a negative coefficient of -0.412 further indicating a negative relationship between inflation and unemployment as postulated by Phillips (1958) hypothesis. Notwithstanding the investigations implied no causality between unemployment and inflation in Nigeria. This echoes the findings of Umaru (2012) who also analyzed the trade-off the period 1977 to 2009, Ola (2012) indicated no causality between the variables.

In South Africa, Gallaway, Koshal and Chapin, (1970) explored the scope of the existence of the Phillips curve in South Africa the period 1948 to 1963. The contribution of their review sought to formally evaluate the probable trade-off between inflation (rate of change in money wage rates) and unemployment. The evidence revealed glaring negative correlation between quantity of nominal wages and unemployment; this validated the Phillips curve hypothesis. The study was examined and gathered with the application of the distributed lag time series empirical methodology alongside the deterministic trends in data whilst incorporating the Phillips curve.

Conversely, Vermeulen, (2015) explored the impact of monetary authorities' emphasis on inflation, the research studied the marked ramifications of inflation across output and hence employment levels in South Africa. Vermeulen (2015) observed, that although there has been a plethora of studies in South Africa in respect to the inflation-unemployment trade-off, the previous reviews embarked on the investigation from a different angle; which had been to examine the relationship between inflation and unemployment (growth of output as a proxy) thereby examining the Phillips curve theory in South Africa. It is noted that evidence of a trade-off has been inadequate due to limited data in the past; nevertheless, the numerous past studies detected a relationship between inflation and economic growth. The previous studies used adjustments in output as a proxy for measuring the unemployment levels in South Africa on the assumption that growth of output enhances economic growth hence improvement of employment levels.

According to Vermeulen, (2015) the previous studies did little attempt to empirically test the perpetual correlation between economic growth and employment levels in South Africa. To investigate the long-run trade-off between increase in output and generation of jobs hence the capability to conceptualize quantity of labour demand in South Africa, the analysis explored the impact of growth of output (economic growth) on unemployment. The research employed the Engle-Granger Error-Correction model (ECM).

Below are some significant contributions that emanated from the study results by Vermeulen (2015): The findings indicated a positive correlation with the inflation coefficient (0.12) implying that inflation is not a function of employment augmentation the period 1970-2014, although the cointegration link between the rate of inflation and employment levels is statistically insignificant to make any significant impact. Hence, nullified the intense debate of loose inflation targeting approach to potentially amplify levels of employment in South Africa.

The results also exhibit the confirmation of cointegration bond between employment and quantity of output. Besides, it affirms causality between these two variables thus, an indication that growth of employment is significantly influenced by adjustments in output. The long-established negative link between inflation and output propels an

argument from the researcher that skyrocket inflation rates tend to lead to a negative long-run influence over employment in South Africa.

The research study recorded zero positive connection between inflation shocks and growth of output in the short-run, notwithstanding, it did not indicate any signs of relation between level of inflation and growth of employment. Hence by examining the consequences of inflation disturbances on production in South African, the study attempted to evaluate any indirect link between rates of inflation and employment generation, the investigation concludes that monetary policies partially influence the demand side of the economy with respect to employment.

2.3.3   Literature from Uganda

Although a few study approaches analysed inflation dynamics in Uganda across various economic variables using quarterly data, there remains a massive gap on the broader analysis of monetary policy dynamics particularly using all the monetary aggregates like money supply, interest rates and real effective exchange rates against inflation. The consequences of BOU's monetary policy efforts against inflation and employment as well as the Phillips curve hypothesis for Uganda will therefore be investigated. Owing to the dynamic macroeconomic landscape in Uganda, in which monetary policy operates and how the policy approaches affect the adverse adjustments. As a result, it has galvanized econometric analysis on the influence of monetary policy on changes on both inflation and unemployment. Among the studies of monetary related dynamics; Kabundi (2012), Barungi (1997), Opolot and Kyeyune (2012), Kihangire and Mugyenyi (2005), Adam (2009), Nyorekwa and Odhiambo (2014).

Barungi (1997) presented a detailed investigation on the prime basis of the skyrocketing price increases during the period 1980's – 1990's along with the exchange rates mechanisms. The study applied Engel Granger-Causality models via two paced approaches to examine Variations in the stock of money, real exchange rates in addition to their influence on Inflation in Uganda. Owing to the rapid escalation of prices in Uganda in 1987 Barungi (1997) investigated the principle elements that stimulated inflationary pressures and tested the cointegration links between nominal money supply and inflation. To establish a relationship between the pace of inflation

and exchange rates in Uganda, the research employed time series data to establish a link between a long-run correlation between the consumers' price index, money supply as well as real exchange rates, the review derived a long-run link between inflation and money supply. Although the period 1989 to 1992 recorded a positive money supply coefficient, the growth of money supply deteriorated whilst inflation however accelerated. According to Barungi (1997) the negative exchange rate coefficient implied an insignificant role of exchange rates (devaluation of the Ugandan shilling) in influencing changes in inflation.

To estimate an Error- correction technique the second Engel-Granger approach employed the 1987 data in Uganda to explore the long-run inflation patterns. The findings confirmed that in the short-run variations in money supply tended to greatly result into movements in consumer prices which acted as a proxy for measuring inflationary pressures. This propelled the suggestion that its variations in money supply (M2) that greatly influence prices in the short-run. The study ascribed the negative exchange rate coefficient on largely multiple volumes of imports and government spending. The study confirmed the existence of excess money supply as the prime causes of inflation pushing the demand for consumer commodities upwards which in turn additionally triggered prices spiral out of control. Hence inflation and broad money moved simultaneously in Uganda.

The review strongly advocated that in spite of the indirect link between devaluation of the shilling and commodity prices via parallel exchange rates as well as the government budget, devaluation's transmission across prices and other economic variables gravitated to deflationary pressures rather than inflation. This preliminary argument was not consistent with the establishment by some policy analysts and academics that contended that inflation in Uganda was largely provoked by central bank's devaluation of the shilling. The study however deliberated that market forces of supply as the prime source of inflation in Uganda particularly in the short-run.

Kihangire and Mugyenyi (2005) examined the various dynamics of inflation in Uganda for the period 1994-2004.their equation was estimated applying the Autoregressive Distributed Lag (ARDL). The study investigated the validity of earlier intense debates that suggested that "Ugandan inflation was always and everywhere a non-monetary phenomenon". They also tested Uganda's inflation model by employing Durevall and

Njuguna (2001) inflation model yet assimilated it with rates of changes in exchange rates, terms of trade, as well as the growth rates.

Although the research investigated was fueled by IMF's assessment that general prices in Uganda were a result of exogenous elements rather than monetary aggregates, accordingly, the findings derived from the estimations demonstrated were not consistent with the argument. The hypothesis revealed that inflation dynamics in Uganda were a combination of both monetary and non-monetary aggregates. Accordingly, the diminished monetary growth, government fiscal deficit in addition to exchange rates primarily stifled prices. "BOU's monetary and exchange rate policies have a role to play in stabilizing the rate of inflation; however, there are also factors that affect inflation, the most important one being fiscal policy" (Kihangire & Mugyenyi, 2005).

The estimation results of the inflation model combined with the correlation analysis of inflation and interest rates made significant contributions towards the macroeconomic landscape in the country, these contributions include;

A correlation coefficient of (0.9423) demonstrating strong evidence of a positive link between food prices and headline inflation although very insignificant across the underlying inflation. There is also existence of a strong relationship between headline inflation and underlying rate of inflation an implication that suggested that inflation innovations (inflation expectations) resulted from the headline inflation's influence over underlying inflation. In addition, there is no correlation between real interest rates and food crop inflation moreover the regression empirical model indicated the highly significant effect of the expansion of quantity of money on the overall economy consistent with Mikkelsen and Peiris (2005)'s research findings. This revelation disproved the hypothesis that inflation is not a monetary phenomenon but rather endorsed Friedman's proposition as well as being consistent with previous studies like Nachega (2001), De Grauwe and Polan (2001).

The wider exposition discovered notable presence of both short-run and long-run correlation between headline inflation and its determinants which included: variations in exchange rates, monetary base, fiscal deficit. In addition, the empirical investigation uncovered that a 100% rise in the fiscal deficit automatically prompts a 65% expansion

in prices, this assessment further designated the fiscal deficit in relation to GDP as the prime macroeconomic variable that described Uganda's inflation rates. Notwithstanding the investigation noted that "exchange rate is the second most important and significant factor to explain inflation, with an elasticity reaction of -0.201 further denoting that a 100% increase in NEERO (nominal effective exchange rate variability) will lead to inflation deterioration by 20%". However, its impact over inflation is negligible. Moreover, in spite of oil price increases and its influence on inflation its impact is uncertain which is ascribable to the presence of both demand and supply shocks inevitable to a heavily oil importing country like Uganda.

Kihangire and Mugyenyi (2005)'s results were that inflation (core and headline) in Uganda is highly provoked by expansion in broad monetary aggregates (M2) in addition to shocks emanating from the exchange rates side. Attributed to the fact that inflation in Uganda is a consequence of both monetary and non-monetary elements like the exogenous structural disturbances that inhibit BOU's attempt to curb down inflation, the authors advocated diverse actions to mitigate inflation rather than sole reliance on monetary policy which is highly constrained to effectively end the escalation. The study however, recommended monetary policy as an ideal tool to regress inflation expectations through curtailment of prices of non-related food products. Therefore, the most significant contribution from the hypothesis was that BOU's stabilization mechanisms can potentially reduce inflation in Uganda provided it is accompanied by tight fiscal policy actions. Therefore, the above research examination invalidated the previous arguments that contended that inflation in Uganda is always and everywhere a non-monetary situation, yet rather confirmed that both monetary and non-monetary aggregates stimulated rates of inflation.

Adam (2009) studied the Ugandan experience of monetary policy. The research enquiry shed light on various questions regarding monetary policy prior to and post-stabilization period as well as for the commencement of the Inflation Targeting Lite (ITL) regime by BOU. The results implied that BOU's coordination of monetary aggregates has propagated outrageous fiscal sacrifice moreover, the escalating fiscal budget has suppressed stabilization as well as financial prudence. The findings suggested that the prevailing persistent deviations of inflation from BOU's principle target was chiefly attributed but not limited to market supply shocks as well as global

growth in food and oil prices. Consequently, owing to the unforeseeable perpetual existence of high inflation rates in Uganda the research observation prescribed BOU's rigorous monetary policy as necessary to achieve the desired inflation rate target; however, it warned that such stringent mechanisms would inflate rates of exchange in addition to higher endogenous interest rates. The study made a very critical evaluation on the conduct of monetary policy in Uganda. That is, in order to regulate the impact of government Quasi-fiscal activities, BOU ought to effectively align in harmony with Ministry of Finance, Planning and Economic Development. In addition, it seems paramount for government to undertake tough policies necessary to control bond sterilization and a further shift of BOU to a full- fledged inflation targeting.

By contrast Opolot and Kyeyune (2012) investigated the various inflation dynamics in Uganda. In their analysis, they assessed the effect of disequilibria in both the money market and traded goods market using quarterly data for the period 2000Q1 to 2012Q3. Approximations from the Long-run equilibrium homogeneity across the money market as well as external sphere were assimilated with a short-run using the ECM approach. Their findings pointed to existence of long-run inflation largely precipitated by: imported inflation, monetary stock, exchange rates, TOT and real output whilst in the short-run, real output, money, exchange rates and international price adjustments. The exploration of the inflation equation also revealed a valid presence of long-run coefficient embedded across the money market, hence an implication of the pronounced money market misalignment and its correlation to inflation. However, the research observed that despite the symbolic presence of disequilibrium in both the financial and commodity market, the adjustment time lag was noted to slack. This revelation may obscure effective evaluation of the causes of inflation in Uganda. In their study, they proposed for stringent approaches by BOU to offset the impact of monetary shocks to the domestic economy emanating from exogenous factors.

Nyorekwa and Odhiambo (2014) empirically analyzed the relationship between monetary elements and economic growth in Uganda. The study offered a detailed characterization of the primary hallmark to the country's monetary regime as well as its macroeconomic accomplishments from the post-independence era to 2014. In their studies, they established that BOU's Inflation Targeting Lite (ITL) displayed

remarkable accomplishment in the short-run, the upgrade to fully fledged inflation targeting necessitates "institutional" as well as "operational" sovereignty. The study emphasized recognition of thorough comprehension of various monetary transmission mechanisms which include:

- Enhancement of the financial outlook meant for a forward-looking application of monetary policy (forecast targeting)[2].

- Financial sovereignty with respect to BOU's operations as well as other financial institutions.

- "Robust institutional framework in addition to successfully manage the impossible trinity.

Nyorekwa and Odhiambo (2014) cautioned BOU of the potential obstacles to smooth administering of monetary policy reforms across the economy with regards to switch over to the East African Monetary Union (EAMU) by regional East African Countries. This sentiment was consistent with IMF Boss Christine Lagarde who also offered some remarkable advice albeit seemed skeptical to the East African community with regards to EAMU[3], she noted that "*The recently signed roadmap to East African Monetary Union is very ambitious. Don't rush, take all the steps and learn from the mistakes of Europe and other monetary unions". "The regional monetary union will only hold when all the member states are able to respect and strictly observe the convergence criteria".* Therefore, the study illustrated that Uganda's evolution to EAMU necessitated comprehensive adaptation of both monetary policy landscape as well as the exchange rate approaches, which would alternate BOU's monetary policy dynamics.

On the other hand, Mawejje and Lwanga (2015) employed a Vector Auto Regression methodology (VAR) in analyzing the impact of supply disturbances that emanate from the agricultural sector on Uganda's inflation. They used monthly aggregated data over the same period 2000 to 2012.The results demonstrate that in the long-run inflationary

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2 Forward looking approach is a significant attribute of central banks' inflation targeting. It entails forecasts of the economy's future adjustments (M, Woodford)

3IMF CEO Christine Lagarde held a forum on 02-January-2014 organized by Kenya private sector Alliance (KEPSA) along with Kenya's Treasury cabinet secretary Henry Rotich in Nairobi.

pressures are prompted mainly by disequilibria across monetary aggregates, the external as well as agricultural systems moreover, in the short-run agricultural elements play a significant capacity in explaining the inflation dynamics in Uganda. Notwithstanding variables like: money stock, variations in exchange rates, output per capita and inflation inertia[4]. Mawejje and Lwanga (2015) conducted a single equation inflation model that was lagged against numerous Vector Error Correction terms originating from the financial, exogenous and endogenous agricultural sectors.

Furthermore, they assessed the impact of seasonal variations, exogenous components on Uganda's economic outlook in addition to BOU's monetary transformation to inflation targeting Lite (ITL) regime. Besides incorporating Uganda's output gap (defined as "approximated monthly deviations of realized from potential agricultural output") into the VAR model to estimate agricultural supply shocks. More importantly their scholarly report showed that, "the Granger Causality tests and Impulse Response Functions estimated from the VAR show there is scope for monetary policy to supplement fiscal policy by promoting the growth and expansion of productive sectors such as agriculture".

To this end, they argued monetary policy actions intended to infuse investment advances towards agricultural enhancement in an effort to mellow down the negative potency of shocks in agriculture hence abating any inflationary tendencies. They also endorsed the application of fiscal policy deliberated to galvanize agricultural capacity yields and coherence thereby alleviating the inflationary consequences that emerge from the agricultural shocks. Consequently, Implementation of stringent mechanisms earmarked to amplify aggregate productivity, suppress the growth rates of monetary stock and preserve exchange rate solidity across the financial spectrum lessens soaring prices in the economy. The Granger Causality revelation tests that monetary policy should be supplemented with fiscal policy substantiate the Keynesian Phillips

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[4]Inflation Inertia is an economic phenomenon experienced across the economy where by in spite of central bank's attempt to regulate inflation, rapid elevation of prices still prevails primarily as a consequence of past inflationary pressures. Inflation inertia tends to manifest itself across countries that had a past experience of hyperinflation like Uganda encountered in 1986/1987 with an inflation rate of over 200%. This is mainly driven by the use of bureaucratic inflation indexes like consumer price index (CPI).

curve hypothesis which also postulated monetary policy application along with fiscal policy.

The Keynesian school of thought highlighted the substantial role executed by fiscal policy and monetary policy in economic stabilization, although the Keynesians attributed economic stabilization principally to the operation of fiscal policy. Keynes' contribution to policy analysis was his realization that in execution of economic actions to confront economic crises, both monetary and fiscal policy needed to be complementary to each other rather than independent of each other. This proposition drew parallel to Walter Heller's the recognition[5] that: the "new economics", if you will, assigns an important role to both fiscal and monetary policy. Indeed, the appropriate mix of policies has often been the cornerstone of the argument…………to anyone who might fear that the new economics is all fiscal policy, the record offers evidence, and the new economists offer assurance, that money does matter".

However, Lewis (1954) advanced that a big percentage of agricultural labour in less developed countries (LDC's) present insufficient and/or negligible economic augmentation to the total agricultural GDP. Owing to the fact productivity tends to zero or negative in agriculture particularly in LDC's, it is noted that capitalism tends to mop up the excessive labour into the manufacturing sector hence enhancing development. Significantly, rapid investment in human capital expands the human productivity which in turn escalates aggregate GDP in real terms.

Empirical works on the effectiveness of monetary policy on unemployment and inflation have taken on a critical role in macroeconomic research in many countries in recent years including SSA countries. However, empirical evaluation on the impact of monetary policy on both unemployment and inflation in Uganda are inadequate whilst there are no investigations that have been undertaken on the analysis of the Phillips curve as a guide in policy management in Uganda. The fact that unemployment remains at high rates and inflation persistently fluctuates over time in spite of the adoption of the inflation targeting regime implies more intense

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[5]Walter.W. Heller (1966) The New Dimensions of Political Economy.

macroeconomic reviews are required. Hence, these inadequacies and other gaps that have been initially intimated will be filled in this current study.

2.4 A CRITIQUE OF EMPIRICAL LITERATURE

A few of the evaluated studies have been criticized on both the theoretical and empirical premise. Particularly apprehensions emerged on the rationale of the utilized theories for econometric modeling. For example, Arratibel *et al.* (2002) insisted that estimation of the equation of the inflation dynamics is certainly not possible. In their review of the evaluation of the presence of "dual inflation" with the application of Harmonized Index of Consumer Prices (HICP) the generation of long data series was inadequate for the accession countries whilst the estimation of the diverse differences between the tradable and non-tradable goods with respect to dual inflation as adapted from Balassa and Samuelson (1964) lacks consistence in the accession countries. Notwithstanding, Arratibel *et al.* (2002) experienced issues with derivation of idiosyncratic components in traded and non-traded data relative to the modeling of inflation equation courtesy of the New Philips Curve as postulated by Clarida *et al* (1999) and Gali´ *et al.* (2005). The inability of the model to enlarge approximations of segments of dual character in data evaluation is cumbersome.

Bhattarai (2016)'s application of majority of their data using static panel approach met obstacles due to the challenges of lags estimation as well as unearthing undetected response trajectories between the variables under consideration. Dynamic panel data techniques allow controlling the dynamics of the process introducing in the regression equation temporal dependency (lags) of the dependent variable (Brañas-Garza *et al.*, 2011). There is likely to be paradoxical outcomes in the estimation modelling as a consequence of utilization of endogenous variables in regression analysis, with respect to static panel data. The absence of measures of lagged dependent variables used to regress towards other variables generates high degrees of data variability and indiosycrancies. Model specification through the regression analysis compels economists to effective correlation between lags of the predicted variable and the error term, which is indispensable. The study results indicated pronounced differentials of unemployment rates across the economies under consideration, although the model used was ineffectual to describe wholly all the unemployment deviations.

Karanassou and Sala (2010) employed structural Vector Auto Regressive (SVAR) methodologies to their enquiry in the unemployment-inflation trade-off; this necessitated the identification of simultaneous equations (SE) and chain reaction theory (CRT) to interpret their model. The VAR technique has previously been subjected to fault-finding by numerous academics. Monetary policy shocks can be generated from two realistic sources which include: (a) imperfect information on the part of the central bank regarding the current economy, (b) changes in the relative weights placed by the central bank on moderating fluctuations in output and inflation (Bernanke & Mihov, 1997). The use of SVAR approaches allows for detection of any existence of dynamic elements in the model through investigation of the path of monetary policy shocks. Hence in the SVAR methodology policy shocks are a result of the conduct of central banks which are assumed to be "random number generators" in policy evaluation. Hence, economic inference drawn from impulses remains a contentious issue. As Gottschalk (2001) argues, the drawback of SVAR methodology is that due to the low dimension of typical SVAR models the assumption that the underlying shocks are orthogonal is likely to be fairly restrictive. Moreover, in their study review, without the presence of values of impulse response functions (IRFs) of the endogenous variable, the evaluation of the degree of external sensitivity of the exogenous variable becomes cumbersome. The approximation of simultaneous equations (SEs) and chain reaction theory (CRT) pertains to the assortment of the exogenous variables which in turn necessitates assessment of lags; however, this seems subjective since it hinges more on disposition rather than indifference. Hence this may lead to inadequate policy prognosis and deceptive economic execution of strategies.

Israel (2015) holds that the basis for the long-run relationship between inflation and unemployment in U.S, U.K, France and Germany include: allocation of income and wealth which widen the income gap further, progressive taxes, and the fact that the high-level unemployment rates induced by cyclical-fluctuations subsequently dwindle in the long-run. Nonetheless, inflation rates have been maintained in most developed economies at benign levels but one can so contend that unemployment rates revolve notably with real GDP and to a large extent the economy's sensitivity to external pressures. In addition to the appreciation of the U.S dollar, as Keshab (2016) postulates; complimenting macro stimulations by microeconomic structural and

institutional reforms can bring efficiency in bargaining for wages and employment among firms and workers to make unemployment-inflation trade-offs more significant and relevant in advanced economies.

In the developing world, Abachi (1998) reviews ratified a non-linear curve which slopped upwards. According to Abachi (1998) the causality that emerges between unemployment and inflation signifies that the endeavor to mute inflation will alternatively inflate unemployment rates, however in open economies, both exogenous and endogenous factors may cause inflation rates to spiral especially if the economy is operating with an output gap as a ratio to the fiscal components.

Furthermore empirically, Vermeulen (2015) drafted the Engel-Granger Error-Correction in his model assessment; nevertheless, the study did not uncover any relevant short-run correlation originating from the economic disturbances of inflation and their influence over unemployment. However, the model could not accurately approximate the causality between inflation and growth of output. Accordingly, the outcomes from the hypothesis suggest the expansion of employment levels swiftly relative to the supply of labour. Consequently, this implicitly requires aggravation of the labour demand compared to supply of labour. However, in the long-run the reduction of unemployment entails diverse components, moreover; the policies to tackle structural unemployment so as to meet the required compatibility between labour firms and potential labour are very complex yet the adjustment process needs also to be taken under consideration before policy authorities can attempt to speed up the growth rate of employment faster than the potential supply of labour.

Table 2.1: Summary of Selected Empirical Literature on Monetary Policy, Inflation and Unemployment

Study	Country(s)	Methodology	Findings
Battarai (2016)	OECD	Panel VAR	Presence of trade-off between unemployment and inflation in twenty-eight countries but no presence of trade-off in six countries. Adoption of inflation targeting in the recent past notably minimised inflation volatility.
Karanassou and Sala (2009)	United States of America	SVAR	U.S Phillips curve not vertical
Orji, Orji and Okafor (2015)	Nigeria	Distributed Lag Model	Unemployment significantly drives inflation There is causality between unemployment and inflation
Vermeulen (2015)	South Africa	Engel-Granger ECM Model	Inflation not a function of growth of employment. Existence of cointegration between employment and quantity of output.
Opolot and Kyeyune (2012)	Uganda	Various	Existence of long-run inflation
Mawejje and Lwanga (2015)	Uganda	VAR model	Long-run inflation is provoked by disequilibria in monetary variables, the external and agricultural sector.

2.5   CONCLUSION

The subject of economics, particularly macroeconomics presents a wide range of theoretical approaches over the management of monetary elements for a long time. These assorted theoretical evolutions originate from ideological arguments put forward by multiple contentious schools of thought for example; the Keynesians, the Classical school of thought and Monetarisms. All these varied economic thinkers share

akin resemblances in their approaches as well as dissimilarities of ideas. This intense dialogue was initially provoked by following the establishment of Irving Fisher's classical Quantity theory of money who first introduced the abstraction that in any given economy, money is always neutral and as a result repudiates any government inferences in the market. On the other hand, Keynesians (followers of J.M Keynes) entirely refute the Classical thinkers' hypotheses. Moreover, the Keynesians further reinforced the credibility of the Phillips curve (1958) popularity of a trade-off between inflation and unemployment on grounds that the Phillips curve concept is parallel to their economic stance. Consequently, Phillips curve was appraised as the essential building block in the execution of macroeconomic policy actions.

On the other hand, the Monetarists led by Friedman (1966, 1968) and Phelps (1967) typically challenged the true essence of the Phillips curve in addition to the perceived trade-off premise. Alternatively, Friedman and his colleagues developed the rational expectations theory. This postulation rather argued the vertical nature of the Phillips curve therefore challenging Keynesian's validation of a downward slopping curve. This consequently generated the Expectations Augmented-Phillips curve hypothesis. Economic methodology has evolved over the years, since the log-established VAR models, VECM, IS-LM, GMM and DSGE models. Numerous macroeconomic research works have over the years empirically tested the substantiality of these models. Nevertheless, their success has been met with ambiguity, various applied reviews have reinforced the rationality of these models especially with regards to the considerable adequacy of monetary policy conduct over nominal as well as real economic variables, although a few challenged its superiority in decoding macroeconomic crises in the economy. Is noted that in many countries, the genuine reliability of the Phillips hypothesis has been estimated to be uncertain, nevertheless, there has been a recorded negative relationship between unemployment and inflation in Jordan, Nigeria and Malaysia.

Whilst in Uganda the reality of the Phillips curve is yet to be empirically verified on an extensive level since the variety of studies investigated have largely focused on the evaluation of the consequences of BOU monetary actions towards the economy across various divergent monetary transmission mechanisms like interest rates,

exchange rates. This study however investigates the consequences with respect to aggregate variables.

CHAPTER THREE

THEORETICAL LITERATURE REVIEW ON FISCAL POLICY

3.1   INTRODUCTION

An important economic issue facing policymakers over the past decades has been the interaction of monetary and fiscal policy (Assadi, 2015). Ugandan fiscal policy can thus be illustrated by government fiscal instruments in relation to GDP ratio. This review chapter therefore investigates the classical question: how does government fiscal policy affect the economy? Specifically, what are the potential ramifications of government fiscal efforts for monetary policy? Macroeconomists are divided on the answer: the Ricardian view argues in support for superiority of monetary policy over fiscal policy whilst the non-Ricardian view favours the use of fiscal policy rather than monetary policy.

The fundamental purpose of application of both monetary and fiscal policy by policy authorities is further highlighted by Sims (2011) who notes, there *is no excuse for econometric models intended for monetary policy analysis to continue to omit serious treatment of fiscal behaviour".* Following the Keynesian economics, fiscal policy has been based on three premises namely: that economic variations are largely prompted by systematic changes in market performances; that it is imperative that the government expands its role in the economy in order to repress these variations; and that governments are perfectly empowered to regress the various economic instabilities. David Ricardo and John Maynard Keynes developed the widely recognised theories of fiscal policy known as the Ricardian Equivalence and the Keynesian Revolution respectively. Keynes (1936) pioneered the debate on monetary and fiscal policy particularly, following the experience of the Great Depression whilst, David Ricardo's theory referred to as Ricardian Equivalence, establishes that fiscal policy has no adverse effects on the economy besides private purchases as government purchases are assumed constant subsequently. Hence, it implies basically that economic agents do not respond to fluctuations regarding to Fiscal Policy (Paulusma, 2012).

Recently, there has been presentation of extensive and contentious literature relating to the performance of fiscal policy. Hence the chapter seeks to review the various

theoretical and empirical observation on fiscal policy. The subsequent sections examine the performance of fiscal policy with relation to various determinants like; unemployment and inflation. To investigate the influence of fiscal policy on the macro economy, the conceptual analysis in this chapter seeks to highlight the various theories in order to exhibit theoretical framework which is essential for empirical analysis. The relevant theories on fiscal policy include: the Keynesian approach, the Ricardian and non-Ricardian approach and the Fiscal Theory of the Price Level (FTPL).

3.1.1   The Keynesian Approach

Keynes argued his theory of unemployment initially in the famous publication "The General Theory of Employment, Interest and Money" (1936). Keynes asserted the proposition of unemployment and its impact on real output. He was the first to originally publicize the concept of government's significant role in the stabilization effort of the economy further repudiating the classical economists' view of zero government intervention in the economy since the economy automatically always self-corrects. Itself. Such an argument was heavily disapproved by Keynes who noted that although in the long-run the economy self-corrects, needless to say that it may be a lengthy period of time before the economy automatically corrects itself. The Great Depression consequently further substantiated his views by elaborating that "in the long run we *are all dead"* Keynes (1936).

According to Keynesian view, an expansionary fiscal policy, in the form of either increase in government expenditure or reduction in tax rates, can stimulate aggregate demand in the short-run by increasing disposable income and generating a positive wealth effect (Branson; 1989, Elmendorf & Mankiw; 1999, and Wickens; 2008). The old debate between the monetarists and Keynesians was again reignited in connection to their divergent views on unemployment. The suggestion by classical economists that labour market disequilibrium results in unemployment was clearly renounced by Keynes. He insisted that it is rather the inability of the economy to produce jobs abundantly a factor largely exasperated by inadequate aggregate demand. Although, demand and supply equilibrium could be possibly attainable in the economy, the acute instability alongside severe oscillations would not guarantee full employment based on the premise that not all individuals would acquire employment. Keynes notes that

expansionary fiscal policy will remedy the problem of deficient aggregate demand hence expanding employment levels. Elmendorf and Mankiw (1999), and Wickens (2008), observe that in an open economy, soaring interest rates are associated with real appreciation of the domestic currency and crowding out of the foreign sector. The impact of fiscal policy in an open economy is established in the Mundel-Fleming model which consequently illustrated the influence of exchange rates based on the assumption of perfect capital mobility, and inelastic prices and wages. The Mundel-Fleming model is further extended in the IS-LM model. The Mundell-Fleming model, which is an open-economy version of the IS-LM model, posits that an increase in budget deficit increases consumer spending as it increases disposable income and hence, financial wealth (Brown & Bidemi, 2015).

The Keynesian theory of unemployment is based on the assumption of sticky wages in the labour market implying that employees backed by unions would strongly reject any wage cuts and consequently unemployment will persist since wages would never fall to the market clearing position. Keynesians advocate for government intervention to adjust quantities of demand on the assumption of existence of the equilibrium in the economy. However, they noted public demand management actions through aggregate demand calibrations as a requirement for attainment of full employment equilibrium. Deflationary gap during recessions cause reduction in demand which necessitates growth of demand, money supply by the government to stimulate the economy whilst economic booms associated with demand surplus require government interference to depress economic activity.

It is noted that an aggregate demand can be expanded through either expansionary monetary or expansionary fiscal policies by the government. These include; stimulation of growth of money supply, stimulation of economic savings through reduction in interest rates, aggravate government spending and reduction in taxes to boost private expenditure. Through their effect on the economic climate, both aggregate demand and output levels can be intensified. Shifts in the aggregate demand curve either leftwards or rightwards is a consequence reflationary policy, when aggregate demand is amplified and further augments output which also elevates labour demand based on the impression that demand for labour is derived by demand of goods and services. Significantly, although prices tend to be triggered by

reflationary policies, this outcome tends to be inconsequential compared to the influence on demand which results into what Keynesians referred to as demand-pull inflation. The theory maintains that fixed interest rates accompanied by escalation in government expenditure as well as considerable tax cuts will intensify aggregate demand however, the increased aggregate demand should be followed by a rise in output levels. Due to the uncertainty of investment demand in the private sector the aggregate demand originating from the private sector enterprises tends to be fickle.

In view of the fact that at any level of money supply, the aggregate demand adjustments in the public sector will automatically generate notable shifts in levels of employment the theory prescribes for the implementation of fiscal policy to neutralize the shifts in aggregate demand which would constantly stabilize employment levels. The Keynesians assert that aggregate demand can also potentially be downgraded by the autonomous fall in investment implying that in the short run output will drop lower than its original level; however, in the long run workers would likely alter their expected prices downwards in anticipation of further curtailed de facto prices. The fall in prices causes the aggregate supply curve to move rightwards since workers anticipate declining prices parallel to lesser aggregate demand.

It is on the backdrop of these circumstances that Keynes endorsed the application of macro- management actions to guide aggregate demand levels through expansionary fiscal policies. One of the underlying assumptions of the Keynesian theory of unemployment is that the amount of profits expected from a given level of output by producers will basically determine the level of employment. This is because production firms attempt to fix the desired level of employment expected to yield maximum profits over and above their production factor costs. If at a given level of employment producers' proceeds exceed the aggregate supply price then producers will be inclined to hire more labour therefore according to the theory the increased number of employment in the economy is a function of where the aggregate demand and aggregate supply curves cross each other, moreover this point is termed as the effective demand according to the theory. However, Friedman (1940) largely challenged the Keynesians specifying that government expenditure would ultimately push out the private sector spending because of less accessibility of money for loans by the private sector. The argument is on grounds that the negative economic

consequences that emanate from the use of fiscal policy can be abated by the implementation of monetary policies. The monetarists are famous for their proposition of the large significance of money in an economy and greatly refute the idea of government interference through its public spending, rather they advocate for critical control to the stock of money provided there is free market enterprise. This is an indication that in the absence of government actions through the use of fiscal policy markets tend to be more coherent in managing unemployment crises. The Keynesian theory was also greatly questioned by the New Classical economists who insisted that the theory fails to explain the fundamental operation of the economy at a micro level. To enhance the microeconomic performance of the economy The Classical economists developed macroeconomic theories such as the Real Business Cycle theory which maintains that it is largely real shocks rather than nominal shocks that clearly explain the existence of economic fluctuations in business cycles.

It is noted that the Keynesian idea of a centrally planned economy is a fallacy because according to the monetarists it sparks-off mal-adjustment of capital thereby promoting business cycles; the suggestion that government expenditure is basically intended to derail depressions denotes that the government can accurately guide the economy in the right direction a clear indication that Keynesian policies present the collectivism ideology hence the motivation for central planning. There is an argument that economic recessions are a consequence of microeconomic elements although in the real world short term government solutions tend to persist longer than anticipated thereby further straining on the already large public undertakings. Therefore, the Keynesian approach of aggregate principles is spurious as government expenditures tend to subdue private sector operations.

Hemming *et al* (2002) observes, the traditional role of fiscal policy in the classical economic theory is considered to be in fostering sustainable long-term growth through carefully designed tax systems and spending programmes. The effectiveness of fiscal policy largely differs for developed and developing economies. Although in developed economies fiscal policy intends to sustain full employment level and steady fast growth, however, in developing economies it is designed to foster rapid growth through an enabling economic environment. Importantly, fiscal policy can be discretionary or automatic depending on the intended purpose and mechanisms to be employed in the

economy. In developing countries, the performance of countercyclical fiscal policy is less successful due to the size, composition and budget framework moreover, there is inadequate presence of automatic built-in stabilisers in the budget in these countries. Although, Giavazzi and Pagano (1990) indicated the fundamental role of expansionary fiscal policy and its role in stimulating growth, (Deverajan *et al.*, 1996) proposed switching government expenditure from investment to consumption in order to boost growth. According to Reinhart and Rogoff (2010), and Cecchetti *et al* (2011), when public debt is high, further increases in debt may lead to lowering of economic growth. Although, the rise in government debt can be curtailed through expansion of tax rates or contraction in government spending, developing countries like Uganda are faced with underdeveloped taxation structures.

3.1.2   The Ricardian and non-Ricardian Approaches

Traditional theories like Keynes' theory, indicate that expanding the government debt stimulates the economy in the short-run, on the other hand the Ricardian Equivalence implies that increasing government debt has no adverse macroeconomic effects in the short-run (Seater, 1993). This basically implies no significant adjustment to the macroeconomic performance of the economy. The Keynesian theory of fiscal policy in based on the assumption that fiscal strengthening may undermine growth prospects which in turn diminishes aggregate demand. This can be directly either in form of curtailed government purchases, investment patterns or indirectly in the form of acute tax rates or contraction of subsidies hence, further adversely affecting household spending patterns.

According to Friel (2015), the idea of Ricardian equivalence is mainly associated with Robert Barro, although it was James Buchanan, replying to Barro, who revived the allusion of Ricardo. Assadi (2015) observes that, the primary inadequacy of the Keynesian concept lies in effectiveness further suggesting the impact of fiscal policy on the economy can be categorized into: the Ricardian view and the non-Ricardian view. The Ricardian view refers to a situation in which either taxes and/or seigniorage adjust to ensure that government's budget constraint is satisfied (Assadi, 2015). On the other hand, the Non-Ricardian view explains fiscal policy as a process when the fiscal authority sets its budget independently from the government's intertemporal budget equation (Sims, 1994; Woodford, 1995; Cochrane, 1999). Keynes argues that

fiscal expansion can possibly stimulate the economy particularly when private expenditures are intensified via the wealth channel effect. This is especially possible through tax cuts whilst not downsizing expenditure patterns. However, Elmendorf and Mankiw (1999), and Wickens (2008), argue that the Ricardian view challenges the policy as ineffectiveness as the situation with tax cuts is equivalent to the non-policy situation. The Ricardian view is based on the hypothesis that when tax cuts or expansion in public expenditure generates a public debt which can be financed in the future through inflated taxes or a downturn in spending. Hence Ricardian view postulated forward-looking analysis. This implies that fiscal policy would have little adverse effects on aggregate demand considering the upsurge in government purchases proportionately aligns with diminishment in public sector spending. A Ricardian perspective is therefore supportive of counter-cyclical fiscal policy (Friel, 2014). From the above observation, Sims (2016) notes, the Ricardian equivalence is based on the following assumptions;

- Taxes are lump sum

- There exist no borrowing constraints

- Households are assumed to exhibit forward-looking performance

- No overlapping generations which indicates that government does not "outlive" the existing households.

Thus, Ricardian Equivalence indicates that the capacity of financing public expenditures by the government either through debt or taxes is inconsequential in relation to interpreting equilibrium effects of variations in spending. Based on the theoretical premise in the Ricardian view, households anticipate tax burdens in future and therefore take into consideration their counter-effects to the prevailing changes in fiscal policy. Thus, the fall in public saving would be matched with an equal increase in private saving implying national saving is unchanged (Elmendorf & Mankiw; 1999, Wickens; 2008).

Elmendorf and Mankiw (1999), and Walsh (2010) further note that, basically, the Ricardian hypothesis is embodied on two propositions: (i) the government constraint (ii) the permanent income hypothesis. The government budget constraint is based on the argument that current curtailed taxes implicitly entail elevated tax rates in the future particularly, according to (Assadi,2015) if government purchases remain unchanged

as the present value of the tax burden would be invariant to the path of tax burden. The permanent income hypothesis assumes individuals as rational hence, their expenditure patterns are determined by their permanent income which in turn is determined by the present-value of the available income after tax. On account of Ricardian's view that tax cuts financed through debt acquisition solely transforms the scope of the tax burden with less effect on its present-value, thus, it will neither change permanent income nor consumption (Elmendorf & Mankiw (1999). Based on the Ricardian view that households' real wealth is not impacted by enforcement of tax cuts on the basis that the current value of their tax indebtedness remains unaffected, Canzoneri *et al.* (2011) notes that, it would lead to an increase in private saving as households expects that they will be taxed in the future to pay the government debt arises from tax cuts. Thus, this policy has insignificant effect on both total spending and prices.

Whilst the Ricardian view holds that only monetary policy can shift the aggregate demand and influences prices and output, the non-Ricardian view holds the opposite view. It holds that a tax reduction policy can generate a positive wealth effect as agents expect that government will issue new bonds to finance the deficit (Assadi, 2015). However, this is likely to prompt an influence in prices. According to (Canzoneri *et al*, 2011), if the monetary policy makers implement an interest rate rule for example; the Taylor Rule, or if the implementation of fiscal policy constitutes the release of new debt, then the central bank would rather accommodate the price of bonds at a level implied by its interest rate target, which would affect the aggregate economy.

Comparably, the Ricardian view of fiscal policy that predominantly focuses on the money aspects, postulates that in order to regulate monetary variations or the growth rate of money, the budget frame work ought to constitute of taxes, spending dynamics or borrowing. Hence, Ricardian argument deduces that in the long-run, prices are significantly influenced by money supply. On the other hand, the non-Ricardian view which is largely underpinned on fiscal influence, establishes that regardless of the scope of monetary policy, adjustments in government debt involves fluctuating inflation rates. Canzoneri *et al* (2011) explains, households do not expect the tax cut to be offset by future tax increases; they think that the present value of their tax liability has fallen, and that their wealth has increased. Canzoneri *et al* (2011) further suggests

that a complete analysis of price level determination requires taking monetary and fiscal interactions into account. It further insists public debt to be subsequently financed through seignorage particularly via the circulation of the monetary base. Household consumption demand rises until the price level jumps enough to eliminate the discrepancy between and the expected present value of primary surpluses. Note that by this reasoning, government debt is net wealth to the household, and the model is non-Ricardian in this sense as well (Canzoneri *et al*, (2011).

From the above observations on the twin-deficit hypothesis, their arguments are based on the assumption of a positive link between fiscal deficits and private consumption. Nickel and Vansteenkiste (2008) indicate Ricardian or Keynesian behavior is at least in part determined by the government debt to GDP ratio. Nickel and Vansteenkiste (2008) further note that in many Keynesian models, private consumption depends on disposable income (i.e. income minus taxes). Therefore, fiscal deficits (and lower taxes) increase private consumption and the current account deficit.

3.2   EMPIRICAL LITERATURE

Numerous research investigations have been undertaken reviewing fiscal policy with various economic variables like unemployment, economic growth, investment and exchange rates in different countries employing different methods. This section examines the different research studies conducted and to empirically asses the various research outcomes from developed and developing countries and to a large extent studies conducted in Uganda.

3.2.1   Literature from Developed Countries

Empirical studies have been undertaken in developed countries to investigate the extent of fiscal policy and its influence over unemployment. Such research studies include; Anorld (2008), Auerbach and Kotlikoff (1987), Wilson (2010), Sørensen (1997), Spilimbergo *et al* (2009a).

Arnold (2008) studied the relationship between compositions in the tax systems and economic growth in 21 OECD countries over the period 1971-2004. The selected countries included; New Zealand, Sweden, Ireland, Australia, West Germany, United Kingdom, The United States, Austria, Norway, The Netherland, Denmark, Greece,

Italy, Japan, Portugal, Spain, Finland, France, Switzerland, Belgium, Canada. Annual data obtained from the 21 countries was assessed into panel growth regressions employing the ECM method. The evaluation established that income taxes are more related to economic growth than consumption or property taxes. The study estimated income taxes data and compared with the data on consumption, property taxes to examine the impact on economic growth. The estimation analysis displayed that income tax cuts generate expansions in GDP per capita instead of property and consumption taxes. There is also a negative relationship between individual taxes, corporate taxes and GDP per capita although corporate taxes illustrate severe negative implications than income taxes, implying that the negative relation is notably consequential than personal income taxes however, in the long-run property and corporate taxes tend to promote GDP per capita as compared to income taxes. Moreover, a shift from consumption taxes to property taxes facilitates economic growth. However, it is noted that the study could not investigate the distributional aspects of the various taxes and its implications on economic growth. The illustration of trade-offs in some policy objectives is limited.

Gorodnichenko and Auerbach (2011) examined the output reactions to fiscal policy in the U.S employing quarterly data across the period 1947Q1 to 2008Q4. The study incorporated dynamic transformations into the regime-switching VAR model implying that they estimated the analysis using the smooth transition autoregressive methods (STVAR) as established by Granger and Teravistra (1993). Their findings revealed that the fiscal outlook of the U.S economy is significantly affected by; expectations, structural transformations during recessions or booms and extension of multipliers towards a variety of elements in government expenditures. They found that policies for stimulating public expenditures are more effective during recessions than other economic circumstances. The forecast estimates also illustrated that if foreseeable fiscal shocks elements are managed then the size of the multipliers will inflate particularly during recessions. However, the study's forecasts in terms of severe budget crisis were inadequate. However, Hayes and Vidal (2015) explored the consequences of fiscal policy on economic inequality across numerous states in the U.S over the period 1976 to 2006 analyzing specifically the tax and expenditure aspects. In an attempt to examine the degree that state government through redistribution effects have over the levels of income inequality the review used the Gini

coefficient used as the dependent variable yet employing the Error Correction Model (ECM).Their findings revealed that unemployment benefits greatly diminish income inequality implying that state taxes like corporate taxes and public expenditures impact economic disparities across U.S states, therefore distribution performances can potentially be triggered by fiscal measures hence resulting in adjustments in people's income levels across divergent groups.

3.2.2   Literature from Developing Countries

The debate over the role of fiscal policy in recent times has intensified in economic circles, its role as a fundamental policy mechanism to limit unemployment and other macroeconomic variables like economic growth, interest rates, investment and income differentials has notably developed. The relevance of fiscal policy specifically in developing countries has sparked a wider scrutiny from academics and policy analysts to probe its impact on various essential fluctuations. The research studies include; Ocran (2011), Ocran (2009), Agu *et al.* (2015), Khandare (2016), Krasniqi (2013), Ogbole *et al.* (2011), Audu (2012), Swanepoel and Schoeman (2003), Alkahtani (2013), Abdullah, Habibullah and Baharumshah (2009), Isaac and Samwel (2012), Hussain and Nor Salwati (2012), Ali and Ahmad (2010), among others.

Abdullah and Habibullah (2009) employed a Generalized Method of Moments (GMM) in view of the dynamic panel data methodology in analyzing the effect of fiscal variables on economic growth in thirteen Asian economies over the period 1985-2001.the countries include; Thailand, Japan, India, Pakistan, Sri Lanka, Hong Kong, Korea, China, Malaysia, Indonesia, The Philippines, Singapore, Bangladesh.

In their analysis, they evaluated the impact and correlation between fiscal policy and economic growth, estimating the growth equation of the countries adopted from GMM by Arellano and Bond (1991) in addition to the GMM-system estimator by Blundell and Bond (1998). Their findings observed that:

Firstly, government expenditure positively impacts health and education considerably. Secondly, total government expenditure as well as the sum of other total fiscal variables also affects GDP per capita. Thirdly, Public spending on defence, budget deficits and changes in taxes possess a significant and negative relationship to GDP per capita. The model estimates also revealed that investment is positively related to

the steady state of growth rate of GDP per capita hence investment affects the GDP per capita positively notwithstanding, the population growth coefficient is negative moreover it detects a highly statistical significance. Importantly, the most notable observation is that with an expansion in population the steady state level of GDP per capita also deteriorates through less capital to labour ratio. Their empirical observations are in accordance with Solow's (1956) neoclassical growth model. They advocated the use of fiscal policy as a fundamental mechanism of government macroeconomic policies particularly in the long run. The research study provided powerful insights into the dynamics and components of the effectiveness of fiscal policy besides presenting an important highlight in policy management by policy authorities. However, the countries under consideration present divergent economic and structural complexities when compared individually with the other economic systems in other countries. The use of fiscal policy by policy makers might present different consequences in some Asian economies; thus, its effects on different economic variables will be spurious.

Khandare (2016) conducted an evaluation of the fiscal management elements and economic growth in India over the global crises period for the period 2005 to 2011. The study evaluated the following contentious debates in India; (a) role of fiscal management practices in India towards economic growth. (b) Review the effect of government fiscal stimulus provisions on India's fiscal management. (c) Investigated the consequences of government's fiscal management actions in combating the global crisis shocks on the Indian economy.

The results revealed the following findings: (a) India's GDP growth rate largely deteriorated after the global economic crisis, implying that India's economy is greatly shaken by external economic factors such as the global financial crisis. (b) The reductions in the rates of taxes such as excise duty, customs duty as well as service tax that will boost expenditure on manufactured goods in addition to intensified government spending in an effort to promote demand. (c) The contractionary monetary and fiscal policies simultaneously undertaken by both the Reserve Bank of India (RBI) and the government have triggered a slump in India's growth rate. (d) The country's fiscal balance rose owing to the public fiscal stimulus provided, yet the revenue balance also heavily dwindled. However, the fiscal indicators applied and the

extent and magnitude of responses of different economic variables to the government stimulus packages is illustrated as a small coverage. The economy is also greatly affected by other external disturbances as well as economic shocks emanating from the fiscal side moreover the empirical econometric methodologies are not clearly explicit in addition to the statistical observations.

In South Africa, Ocran (2009) investigated the magnitude of the impact of fiscal policy on various fiscal determinants like; government consumption spending, tax receipts plus grants which was applied as a proxy for taxes, government investment spending was reflected in form of total government fixed capital formation and the budget deficit. Considering that the past decade (1995 to 2004) has yielded steady growth in South Africa particularly 3% annual growth rate of real GDP, albeit with sluggish reflection of employment creation, Ocran (2009) sought to examine the degree of the impact of fiscal policy on economic growth in South Africa over time. To empirically estimate the effect of synchronic shocks on multiple fiscal variables in South Africa, Ocran (2009) employed a Vector Auto regression (VAR) model. The estimation approach also additionally examined un-anticipated and equivalent structural shocks to simultaneity in relation to pair-wise composition of relevant fiscal variables. Ocran's investigation analysis considered the frequency quarterly data over the period 1990 to 2004.The review employed numerous fiscal policy economic variables which include: government expenditure, public budget balances, government investment purchases and taxes which denoted aggregate revenues as well as grants, in addition he incorporated rates of interest and GDP deflator as equivalent of monetary policy variables. This is in view of deliberated extensive economic variables that could trigger distortions in the pace of growth outside fiscal components.

Ocran's (2009) investigation analysis uncovered notable deductions which include; one, the pace of economic growth in South Africa is largely stimulated by positive government expenditure patterns. Two, gross fixed government investment potentially affects the growth of output in a positive manner albeit the magnitude of government outcome is insignificant compared to the far greater implications caused by consumption expenditure. Consequently, the notable highlight of the study observation is the revelation of the inconsequential influence that the volume of government deficit has towards the economic growth rates. The findings largely

refuted the observations reflected in studies in developed countries which noted economic growth being severely obscured by expansion of the government capacity. In other words, the thoughtful study discourse has extended empirical confirmation to reinforce the expansion in public purchases as well as investment to promote rapid growth rates.

On the other hand, Brown and Bidemi (2015), examined the scope of the effect of fiscal policy approach on the BOP situation in Nigeria. Importantly, the review study particularly sought to establish the real effect of particular fiscal variables towards the BOP situation in Nigeria. The analysis explored the fiscal policy dynamics on variables; government tax revenue, government debt and government expenditure towards the BOP in Nigeria. The study estimated a Cointegration test particularly the Error Correction model (ECM) to a model specification approach, which was employed to time series data sourced from the statistical issues Bulletin of the Central Bank of Nigeria over the period 1980 to 2012. Cointegration was also performed in an attempt to establish any causal relationship between the relevant variables under consideration.

The dependent variable BOP was regressed against n various independent variables; government expenditure, government tax revenue and public debt. The estimated ECM revealed a 0.802 result for the determination coefficient, implying that public spending, government tax receipts and the public debt influence systematic 80% changes in BOP. The F-statistic test result of 12.776 indicated a 5% level of significant for the general model specification, this also corroborated with the alternative hypothesis in the study that there existed a significant link between fiscal policy and BOP in Nigeria especially for the period undertaken by the study. The result of the ECM coefficient test shows a negative sign and a significant level of 5%. Brown and Bidemi (2015) regression estimations notably shows that although all variables exhibited a 5% significant level in the lag periods, however, government expenditure exhibited a negative link but statistically significant, indicating that in spite of an inconsequential effect between growth in public spending and change in favourable BOP position, nevertheless, increase in public expenditure will significantly affect the BOP situation of the general Nigerian economy. Furthermore, according to the p-value results, both government tax revenue and public debt (foreign and domestic)

negatively impact Nigeria's BOP whilst the ECM displays a long-run link between fiscal policy and BOP for the period investigated. Ultimately, Brown and Bidemi (2015) established that the implementation of fiscal policy greatly influences a favourable BOP in Nigeria. However, the success of the operation of fiscal policy on a positive BOP position is highly dependent on appropriate availability of public revenue, administration and prudent management of public spending and its implementation.

However, Isaac and Samwel (2012) investigated the effectiveness of fiscal policy measures on both private investment and economic growth in Kenya exploiting the time series data over the period 1973 to 2009. The study review is administered considering economic variables such as: investment, GDP growth, government consumption expenditure, real interest rates, the budget balance, influx of external capital, exchange rates, adjustments in terms of trade, change in exports, tax deficit. The investigation approach regressed the data through a "Two stage instrumental variable approximation" approach in order to empirically test the regression estimation. The fiscal variables were estimated via two linear equations which comprise: the group approximation representing investment and the other approximation representing economic growth. To test the hypothesis between fiscal policy, investment and growth prospects in Kenya, Isaac and Samwel (2012) employed two linear estimation equations.

The model specification tested the dependent variables of investment and GDP growth rates against the investment equation variables; government consumption expenditure, real interest rates, tax burden, budget deficit, foreign capital influx and external debt whilst the growth equation variables included; export growth rate, rate of exchange and TOT. The lag estimation results display previous investment to affect investment in the subsequent period, the positive foreign capital inflow coefficient show a positive but insignificant impact on investment in Kenya. According to Isaac and Samwel (2012), the t-statistics result of -1.8832 on the real interest rate coefficient indicate a negative link between real interest rates and investment which basically substantiated the Keynesian theory of investment. The t statistics values of 2.5638 and -0.30842 of the tax burden and budget deficit respectively signify that rather than the budget deficit, it is the tax burden that significantly impacts the investment level in Kenya whilst the negative coefficient of external debt services validated a priori

expectations of the study review which reveals an insignificant 5% level, hence, the growth rate of the debt service ought to be realized through the diminishment of domestic absorption. Furthermore, a critical investigation uncovered a negative causal relation from economic liberalization to investment in Kenya which in turn suggests that economic liberalization does not precisely guarantee investment growth in Kenya. The findings revealed that investment as well as growth patterns in Kenya are significantly influenced by: volume of exports, tax incidence, TOT, deficit budget, real interest rate, debt service, external capital, lagged investment and public consumption expenditure. The notable observation of the review is its inability to estimate accurate forecast estimations with regards to policy implication covering the period 1973-2009.

In conclusion, the extensive review studies related to developing countries present a seemingly contentious insight into the capacity of fiscal policy and various fiscal variables. The objective of fiscal policy in developed and developing countries differs depending on the purpose of fiscal policy, whether it is stimulating or a constraining fiscal policy. The evidence from the various reviews indicates that fiscal policy reacts differently to macroeconomic shocks in different countries. In some instances, fiscal policy reacted differently to different instruments in different countries. In developing countries policy authorities assess the right fiscal policy that stimulate growth prospects besides studying the consequences of various fiscal policy instruments on the economy's performance.

Devarajan, Swaroop and Zou (1996) suggest that, for developing countries, switching public spending from investment to consumption type is growth enhancing. Basically, in developed economies fiscal policy is implemented to perpetuate full employment and stiffen growth ratios, in contrast to developing economies which employ fiscal policy to foster a conducive environment to boost growth aspects. The notable observation from the review studies emanates from the fact that several studies examined fiscal policy in relation to divergent fiscal instruments across different economies. Leeper (1991), explained in his Seminar paper on monetary and fiscal policy interactions, the differing macroeconomic effects of monetary and fiscal policy subject to the premise of whichever policy is restrained in favour of the other to actively respond to macroeconomic shocks in the economy. Public expenditure has been intensified in both developed and developing countries as a perceived fundamental

economic phenomenon, however, in developing economies, the cost-benefit ratio related to government spending is inadequately evaluated. Kweka and Morrissey (2000) notes that developing countries have been experiencing growing levels of public expenditure over time. The growth in public spending seems to be linked to expanding fiscal deficits which can hinder growth.

3.2.3   Literature from Uganda

The vigorous circumstances under which fiscal policy performs compelled the economic scrutiny on the consequences and significance of fiscal policy on unemployment in Uganda. There are a wide number of extensive reviews undertaken to explore the unemployment catastrophe in Uganda and government counteract techniques to hamper its escalation. Studies investigating the fragile macroeconomic situation in Uganda and the approach and extent policy authorities attempted to address the crises have been documented. This study identifies a gap in the literature on the inherent contribution of fiscal policy on growth prospects in Uganda. Empirical works on the conduct of fiscal policy and other macroeconomic variables particularly unemployment, investment and economic growth in recent times have occupied a significant role in economic research. Few studies have been directed towards describing fiscal policy operation in Uganda as well as other SSA countries. In particular, there have been no studies that have probed fiscal policy, unemployment and its performance on the Ugandan economy. These and other gaps will be addressed in the current study.

Kayizzi-Mugerwa (2002) conducted an analysis on the performance of fiscal policy, growth and reduction of poverty in Uganda. He observed that through increase the increase in grants and Aid, the government expenditure has escalated although its focus was primarily on health care, education and agriculture. Moreover, fiscal policy was strengthened through the budget. The tax base of 11.5% of GDP was established to be significantly low. However, the study indicated massive government consumption on defence, as well as fiscal policy trade-off through the budget such as taxes on coffee which happens to be Uganda's largest export commodity, import taxes and commodity taxes. Accordingly, government is faced with an economic dilemma of not hampering the poor class majority through commodity taxes. The economic reforms like the decentralization and poverty reduction reforms appeared insufficient to serve

the purpose. In addition, the modest tax base and the narrow public sector have also obscured efficient fiscal policy management by policy authorities. Fagernäs and Roberts (2004) investigated the performance of Aid, growth and relevance of fiscal management as well as public expenditure in Uganda. The review observed a sharp economic recovery which was attributed to massive aid convergence; in addition, the consistent GDP growth rates were a result of digesting the Aid influx through development budget spending patterns. Accordingly, the pursuit of intense commendatory policy actions stimulated the economy's supply-side, essentially the public-sector environment via acquisition of education and infrastructure development.

The country's macroeconomic landscape significantly transformed accompanied such as Medium-term expenditure framework (MTEF), Poverty Eradication Action Plan (PEAP) as well as public administration amendments that is; local government decentralization. However, the study revealed notable inept budget expenditures exhibited in ineffective administrative provisions and defense. The estimation analysis and policy implications were insufficient as a result of large structural breaks illustrated in the time series data and the significant presence of inconsequential fiscal alterations hence leading to inaccurate economic predictions. Their findings demonstrated little attempt by the policy makers to condense tax rates with the large aid influx but more importantly the growth prospects could not be thoroughly interpreted.

The huge public expenditure on defence for a low-income country like Uganda demonstrates the persistent institutional inadequacies that are still prevalent in not only Uganda but Sub Saharan Africa. As noted by the World Bank[6] (2007*) Economic policy making entails the pursuit of growth, full employment with price stability and a stable BOP. Since fiscal policy is the most accessible tool for economic policy makers facing these multiple objectives, it has become embroiled in the trade-offs between growth, equity and stability.*

On the contrary Ayoki, Obwona and Ogwapus (2005) examined the behavior of tax reforms and domestic revenue mobilization in Uganda. The study explored Uganda's

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6The detailed report was presented in a report titled; Uganda Fiscal Policy for Growth: Public Expenditure Review 24-june-2007. Poverty Reduction and Economic Management 2 East African Country Department 1 Africa Region. http://documents.worldbank.org/curated/en /997361468346739742/pdf/401610VOL1020E10BOX327397B01public1.pdf

revenue inadequacies, tax management principles and the effect of adjustments in GDP to the performance of taxes in the economy. Uganda initiated fiscal policy reforms since the late 1980's therefore the study empirically investigated the relationship between amendments in the tax system and the stimulation in revenue proceeds covering the pre-reform and post-reform periods in Uganda. They found the presence of divergent consequences of the tax amendments with regards to the various taxes. The results also demonstrated a significant and positive effect on direct taxes than on indirect taxes.

The post-reform period illustrated a sharp deterioration of tax revenues hence in turn exhibited inelastic responses to GDP. The regression estimations revealed international Aid, fiscal deficit and inflation and depreciation of the Uganda shilling can potentially impact the direction of the tax receipts significantly. Subsequently, the empirical results indicated excise duties as the most feasible of all other fiscal variables to accelerate tax revenues. The authors proposed the enhancement of tax mobilization, corruption alleviation and fast employment provisions. However, in SSA countries the biggest impediment to enhancing fiscal revenues is the policy dilemma that macroeconomic policy authorities face, especially with regards to the policy actions subject to the private sector. Moreover, in low income countries private sector investments play a significant role in increasing employment as well as GDP growth.

Lofgren *et al* (2008) analyzed the economic growth patterns and public spending in Uganda. They studied the impacts of growth patterns, domestic policies and the inflow of external Aid in the country. Their empirical analysis employed the World Bank country-version as well as the Computable General Equilibrium (CGE) model Macroeconomic Activity Model (MAM). Their empirical findings demonstrated that the agriculture sector particularly in terms of export market inducements through exposure to external markets as fundamental to the advancement of output productivity in the economy. The increase in size of the government seems to expand rather aggressively as compared to the rise in the external Aid which may provoke policy trade-offs. However, the private investment in addition to aggregate demand is still glaringly insufficient.

In Uganda, a substantial gulf prevails in literature relating the effect of fiscal policy on unemployment. Some of the evaluated studies on Uganda have demonstrated that

unemployment has been and remains a daunting situation in the history of Uganda. Although in most African countries like South Africa, Kenya and Nigeria as well as other SSA countries, government consumption expenditure and taxes have been used as efficient tools by macroeconomic policy authorities to mitigate unemployment and economic growth, in Uganda the government and policy makers seem to focus most of their fiscal attempts towards taxes.

Auriol and Warlters (2005) contend that the larger size of the informal sector in developing countries arises from the higher costs of entry into the formal economy in developing countries, moreover, Gordon and Li (2009) insist that taxation by its very nature, has to depend on the formal economy. The notable exposition from the reviewed studies indicates the characteristically volatile nature of fiscal policy in Uganda. Jha (2007) argues that the movement of fiscal variables in developing countries is pro-cyclical however, the standard Keynesian models imply that fiscal policy should be countercyclical. The combination of meagre revenues and inelastic public expenditures which increasingly over and above revenues makes the implementation of fiscal policy in Uganda inadequate. Improvement of growth rates in an economy entails minimizing poverty levels in order through implementation of sound tax and expenditure reform policy in order to boost savings and investments. The most important determinant of savings is the level of per capita income and the rate of growth of the economy (Schmidt-Hebbel & Serven, 2000).

3.3.4 Conclusion

This chapter has presented relevant theoretical underpinnings related on fiscal policy namely; the Keynesian approach, the Ricardian and non- Ricardian theories. The Keynesian theory on fiscal policy highlights the stabilization role of fisdcal policy ibn the economy, hence the statndard view suggests that budgetary expansion promotes growth. On the contrary, the satabilisation role of fiscal policy is disputed by the Ricardian equivalence theorem. Mankiw (2003) asserts that the Ricardian equivalence applies to the concept of the forward-looking consumer. The theoretical literature highlights various fiscal issues viz, the role of the government size, optimal fiscal policy as well as fiscal transmission mechanisms. However, Reicher (2014) observes that the evolution dynamics in modern labour markets entails increasing focus on rule-of-thumb fiscal application.

The later part of the chapter analysed numerous empirical studies conducted previously on fiscal policy across a wide economic spectrum from developed to developing countries. The studies reviwed analysed the impact of several fiscal determinants on the economic performance. Most of the studies examined in developing countries underline the critical relevance of total government expenditure and taxes.

CHAPTER FOUR

MONETARY POLICY IN UGANDA

4.1   INTRODUCTION

This chapter presents a detailed description of Uganda's monetary policy framework and the implied underlying macro-economic composition. Most importantly the will highlight the conduct of monetary policy by Bank of Uganda (BOU) in Uganda. Furthermore, the evolution of monetary policy in Uganda over time as well as the composition of money supply growth in Uganda will be discussed in this chapter.

4.2   HISTORICAL MONETARY REGIMES IN UGANDA

There is still a wider debate with policy analysts and academics over the argument of whether monetary authorities should consider a discretionary approach or rules-based approach in fighting inflation. Barungi (1997) notes, following the post-independence period, Uganda experienced serious financial crises and as such it adopted varying monetary regimes. Previously Uganda followed the British enforced monetary regime that was loosely tied to the British currency. It entailed integrating its money aggregates with the rest of the East African region. Later on, Uganda then subscribed to the self-imposed monetary regimes that comprised of extensive restrictions on economic variables besides greater authority by the policy makers on the banking system.

Like most African economies Uganda adopted inadequate monetary arrangements to curb the financial crisis that ensued however the lack of independent central bank besides a volatile money market it further derailed the economy when the monetary authorities prematurely enforced insufficient mechanisms to the financial woes choosing to address the urgent instead of the important inadequacies. The evolution of monetary regimes in Uganda begun with the EACB currency board in the East African region. Duesenberry and Mcpherson (1992) note, while most African countries inherited a rules-based, fixed exchange rate regime at independence, the institutional changes that they adopted foe development purposes had the result that, that overtime, the monetary regimes of different countries evolved very differently from one another. Like many SSA economies, Uganda had not accurately planned the transition

from a Currency Board and as such faced numerous monetary and institutional distortions in the transitional period. Some of the approaches that were adopted were insufficient, thus limited their prospects for growth. Uganda like the rest of SSA switched from the direct monetary controls to the indirect restrictions. From the period 1970- 2000 Uganda transformed to varying monetary regimes in order to reform its finances. Following introduction and of its own new currency and central bank, after ceasing the EACB, numerous SSA economies including Uganda subscribed to various monetary regimes albeit restructured, these include; (Honohan and O'Connel, 1997).

(b) The "printing press" approach

(a) Rules-based approach

(c) The controlled economy approach

(d) Market-oriented approach yet with credit ceilings

(e) The discretionary regime

In response to the intricacies associated with direct monetary controls, many countries in SSA shifted to indirect market-oriented monetary arrangements. (Duesenberry & McPherson, 1992). To boost Uganda's macroeconomic prospects, the investment climate needed restoration alongside steady international financial institutions. Improvement of monetary management is paramount particularly the public sector's confidence over BOU's capability to manage the country's economy efficiently.

Over the years there has been wide debate in both academia and policy circles over the success of discretionary monetary policy or the rules-based monetary policy control (Dwyer, 1993). In low income economies considering the volatile financial markets, weak institutions, and fragile exchange rate system, yet discretionary regimes highly impede the market-clearing mechanism. BOU attempted to examine their implications on the Ugandan economy given the massive political, social and economic distortions that the country experienced post-independence (World Bank, 1997). According to (Katarikawe & Sebudde, 1999) Thus post-independence Uganda's monetary situation greatly evolved. Hence the period 1960 to 1990 it adopted numerous monetary regimes which included:

(i) Regime I

This is called rules-based approach also known as the currency board of 1960 that was adopted by colonial Britain to work in the East African regions of Uganda, Kenya and Tanzania. Under this regime Uganda also followed a fixed exchange rate; it follows the rules-based monetary policy approach. As introduced in colonial times, currency boards had the purpose of economizing on the use of the currency of the colonial power, thereby allowing the seigniorage to accrue to the local administration (Honohan & O'Connel, 1997). Under the EACB regime the central banks had no authority to print any currencies hence some of the provisions made Uganda's financial system susceptible to massive accumulation of external debts. According to Honohan and O'Connel (1997), the powers of a pure currency board are limited to issuing local notes in exchange for claims on the colonial government. Yet it is descriptive of limited government financing an attribute almost absent in most African monetary authorities' implementations. The EACB was perceived as a rules-based approach that inhibited the central banks discretion in Kenya, Uganda and Tanzania.

(ii) Regime II

This regime is called the automatic monetary financing approach or "the printing press." it was established in Uganda in 1980 under the flexible exchange rate. That it's rules-based monetary policy. This is an institutional arrangement that has the effect of meeting shocks, fiscal or external with a passive monetary accommodation (Honohan & O'Connel, 1997).

Thus, can be applicable to the circumstances of SSA because of the lack of the influence by the central bank in controlling market distortions. However, it is attributed to huge government finances moreover susceptible to rising rates of inflation hence creating financial uncertainty due to the fact that unanticipated macroeconomic shocks like the budget deficit tends to be financed through the inflation tax nonetheless this regime has the potential to create a hyper-inflation as the fiscal shortfall can aggravate into a financial crisis. The fact that monetary authorities are unable to detect any potential market off-sets, there is every possibility that inadequate mechanisms may be explored to curb any imbalances which can prove detrimental. It has been used in a few African countries that finance their budget deficiency using expected inflation

rate tax to moderate success albeit with run-away inflation figures like Zaire. Although this regime was adopted in Uganda in 1980 it was not that successful largely due to its political and economic complexities.

(c) Regime III

In controlled economies, authorities refuse to allow prices or quantities to adjust in order to clear markets (Honohan & O'Connel, 1997). consequently, this is a discretionary monetary arrangement characteristic of arbitration in the economy therefore exhibiting great interference in restrictions and economic rationing albeit emphasizes more pressure on foreign exchange and demand for commodities. The greater the shocks the bigger the gravity of the rations and more restrictions of other monetary aggregates, as a consequence of massive rationing its symptomatic of government financing which further explains the fact that it follows a fixed exchange rate regime. Controlled economies are purely based on the sturdy attachment to the paths of the socialist doctrine. Bevan, Collier and Gunning (1994) observes that the dynamics of controlled economic systems can become unstable when market interventions and fiscal requirements are not mutually compatible.

Uganda was characterized with massive restrictions in 1970 notably credit restrictions and commodities (Barungi, 1997). There were extensive distortions to the financial market yet were still suppressed by more rationing and restrictions thereby spawning the economy into uncertainty. In controlled economies, automatic responses to shocks are nonexistent.

(d) Regime IV

An empirically important deviation from the pure market-clearing approach is the case in which commercial banks face ceilings on credit expansion. These approaches are largely principle components of several sub Saharan economies common on stabilisation programmes recommended by IMF. Hence, the monetary authority seeks its commitment to improve economic disequilibrium and parallel markets through credit ceilings albeit tends market-oriented principles. Discretionary central banking was employed in 1990 the period that government established the "cash-budgets" endorsed by IMF intended to eliminate the effects of crowding out practices. In effect, the 1990s became the true period of reform in Uganda-designed as it were to remove

market rigidities in the economy in general and financial sector in particular (Nabbido, 2007). Even post-independence, like many African transitional economies, Uganda's direct controls imposed on the banking sector aggravated the financial situation in spite of government establishment of development banks like UCB. Barungi (1997) notes that, following the closure and/or nationalization of banks, little progress was achieved as financial investment greatly declined moreover, the domestic institutions had become insolvent. Consequently, policy authorities embarked on restoration of the financial system through approval of foreign assets in the country albeit to a small degree.

A notable obstacle to the conduct of monetary policy in low income countries is how monetary policy addresses the effects from the fiscal burden moreover, at times it's hindered by the structure economic rigidities. The global economic crisis may prove to be a watershed for monetary policy in many SSA economies. In the decade or so prior to the crisis, monetary targeting frameworks provided a relatively successful anchor against high inflation (Kasekende & Brownbridge, 2010). Opolot and Kyeyune (2012) maintain, the extent and speed with which financial shocks emanating either from the interest rates or portfolio changes are transmitted to the real domestic economy through the exchange rate channel depends on the degree of openness of the economy to cross-border financial transactions and the exchange rate regime in place. In recent times, there has been a considerable attempt to expand the formal financial sector, for example through, the expansion of rural bank branches and micro-credit lending as part of government policy (Nabbido, 2007).

Considering the underdeveloped asset markets, the period 1999-2003 foreign revenue substantially escalated, moreover, private sector portfolio also recovered remarkably whilst liquidity grew extensively which generated into multiplication of private assets as well as foreign exchange rate (Di john & Putzel, 2005). Towards the end of the last decade however, and in line with most economies in the region, domestic inflation rose sharply and substantially above the Bank of Uganda' medium term target of 5 percent per annum. Annual headline and core inflation which rose to 15.6 percent and 13.4 percent, respectively in August 2008, declined to single digit levels for most of 2010 before rising to peak at 30.4 percent and 30.8 percent, respectively in October 2011 (Opolot & Kyeyune, 2012). Efforts to curb liquidity growth

proved fruitless as GDP fell sharply and by 2002 the domestic debt service ratio to tax returns comprised of 5% hereafter accumulated into a surge in domestic interest rates from 7.5% in 2000 to 20% in 2002 indicative of the BOU's aggravated high cost of monetary control.

According to (Opolot & Kyeyune, 2012), The premium between the official exchange rate and the parallel market rate rose steadily, and by 1981, the exchange rate in the parallel market was more than 30 times the official exchange rate. In an effort to restore macroeconomic stability, a first reform programme was initiated in 1982, and a managed float exchange rate regime was introduced. Opolot and Kyeyune (2012) additionally note that in 2009, the RMP was modified, and flexible version of the RMP adopted with Net Domestic Assets (NDA) as the operating target. BOU shifted from the adherence to the RMP and/or rules-based monetary policy alternatively to discretionary policy control hence generating flexibility towards monetary shocks. Since the post stabilization period in Uganda, government has grappled with numerous monetary policy challenges in its efforts to manage the financial landscape of the economy; (I) liquidity expansion to the banking sector that was literally dominated by only 3 banks resulting into imbalances moreover the deposits, assets and liabilities of the dominant banks in terms of the rest of the banks appeared to rise, (II) over supply of liquidity driven by expansive foreign donations to finance public expenditure. (III) The foreign exchange burden as a consequence of export trade shocks.

Considering the above obstacles GDP shrank to 4.6% in 2000 from previous 7.6% in 1999 besides the plunging TOT as well as coffee prices perceived to be Uganda's biggest share of export trade. BOU's monetary objective has moved to control money supply increases besides parallel markets notwithstanding adoption of severe cash budgets rules to avert the effect of crowding-out albeit with deterioration of the fiscal structure, in spite of the massive increase of budget deficit share to GDP, Uganda has achieved tremendous improvement of both the service and industrial sectors however structural transformation requires government competent and adequate execution plans to enhance the comparative advantage of agriculture sector.

Over the last decade Uganda has achieved positive monetary policy controls attributed to government's appreciation of the evolving global economic dynamics as a result

government has been open to emulate the industrialized countries as well as policy actions adopted by the emerging market economies. Through implementation of flexible policy controls like sale of TB's, rediscounts rates and central bank rates (CBR), in 2000 the repurchase agreement (REPO's) was initiated as a monetary policy instrument. Moreover, commercial bank reserve requirements were also inflated upwards to encourage flexibility in the financial sector whilst TB's were introduced via monetary policy management in 2004 (Kuteesa, 2010). Accordingly, the 2002 amendment act of financial institutions sought to bolster the supervisory and regulatory duty of BOU, as a consequence the MFI act was also introduced, further more in 2011 as an instrument employed to mitigate the volume of base money, RMP was transformed instead into "inflation targeting lite" (ITL) with a view to control interest rates/ central bank rate (CBR).

It is important that BOU's monetary policy changes are augmented by prioritizing on the goals that BOU can achieve, further a forthright policy mechanism should advocate for public understanding of its blueprint, paths yet endorse independent government institutions that enhance policy initiatives hence Mugume[7] acknowledges that BOU's ITL framework embodies the following propositions;

- Priority given to long-term price stability as a firm nominal anchor with an explicit quantitative definition of what is meant by price stability. BOU's focus on explicit inflation targets via the CBR is proof of its devotion to keep inflation rates as benign as possible. The shift away from money supply growth as the priority target to central bank interest rates is indicative of BOU's policy changes. Inefficient and less reliable targets were employed previously yet further escalated the volatility across markets in Uganda. By contrast administer of CBR as a target would facilitate the bank to insulate the pressures from the money supply shocks.

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[7]Report presented by Mugume.A, Director Research Bank of Uganda. [online], Accessed 12-03-2016, *cmi.comesa.int/wp-content/uploads/2016/03/Uganda.docx*

- A medium-term orientation in the pursuit of price stability, giving scope for short-run flexibility to dampen real economic fluctuations. ITL's flexibility approaches apply both the gains of the rules-based principles of monetary policy as well as the discretionary approaches in an effort to curb the pressures from future inflation expectations. Pragmatic observations from the global perspective are a sign of rationality towards programme to unearth Uganda's full potentialities.

- A forward-looking approach in the pursuit of its objectives, through use of an inflation forecast as the primary indicator, successful policies are a result of broad MTMs. Although there is an extensive debate among economists how monetary policy can achieve its main goal of price stability effectively without overriding the other importance of economic aggregates. BOU uses CBR as their intermediate target to anchor policy decisions hence steer economy towards recovery through its influence over interest rates, this greatly empowers its necessity to predict business cycles, future prices whilst monitoring the constraints attached to time lags in policy direction.

- Flexible implementation of monetary policy, through the announcement of a target range for the 7-day interbank rate as an operational target. Flexible monetary channels allow BOU to be proactive in its operational review; it uses REPOs as policy instrument notwithstanding the significant role in guiding the direction of interbank rates. In order to stabilize financial markets, it uses the 7-day rate as a steering mechanism towards boosting economic activity yet hinder general price increase, this in turn ultimately restrains uncertainties in inflation forecasting.

- Transparency and accountability as central principles of a successful policy concept. These two components increase the public understanding of BOU's strategy and road map towards steady prices, previous public perception of BOU as a monopoly power has always been bleak. The published inflation forecast enhances its communication with bankers about plans and objectives in addition to how it hopes to fulfill these objectives. Transparent inflation targets adequately anchor future inflation projections throughout the Ugandan economy moreover inflation targets have the ability to track potential medium-term inflation trajectory, mitigate the magnitude of inflation "surprises" besides

could facilitate financial damage control. It is believed that changes in inflation expectations can influence changes in long-term interest rates therefore low inflation expectations can in turn down grade long-term rates. Thus, simultaneously encourage steady movements in medium-term, long-term and future inflation rates along with a positive impact on prices, investment and financial markets. The key hallmark to absolute monetary policy management in SSA particularly in Uganda with inherent corruption and competence is public accountability, making policy makers subject to punishment makes it more likely that incompetent authorities are replaced by competent authorities and create better incentives for policy makers to do their jobs well (Mishkin, 2007).

4.3   THE ROLE OF BANK OF UGANDA (BOU) IN MONETARY POLICY

It is the mandate of Bank of Uganda (BOU) to provide a conducive environment for the economy to expand in line to its potential production limit but also keeping inflationary pressures to moderate digits. If the economy operates at full aptitude, then the prospects of employment, people's incomes generally subsequently accelerate accompanied with progress in living standards. By virtue of that, BOU provides the underlying basic principles in an effort to boost confidence on basic economic agents. Modern economies yearn for a sound and robust financial outlook denoting a potent regulatory infrastructure, impressive financial markets inherent of well-founded and resilient financial institutions. Such attributes typify BOU's dedication to financial stability.

Monetary policy also attempts to avert any money supply variations with a view to intercepting unnecessary aggregate demand oscillation. BOU endevours to minimize output and employment volatilities in the short-run indicative of resolving the unwarranted upswings and downswings associated with economic cycles thereby strengthening the economy. Many low- and lower-middle income countries (LLMICs) have made substantial progress in achieving price and macroeconomic stability (IMF, 2015). Furthermore IMF (2015) notes that they have succeeded in reducing inflation to single digits, while also deepening financial markets and achieving high growth, due in no small part to better macroeconomic management. Consequently, the past decade inflation in Uganda has surpassed the central bank's target range, a reason attributed in addition to food and fuel costs. In the absence of strong-willed policy

formulation, conduct and management of monetary policy, successful macroeconomic management is constrained. Ultimately, the solid and firm macroeconomic perspective is the core nucleus of attainment of a country's growth prospects.

According to Barungi (1997) during the financial year 1998/99, twelve years after the current NRM government seized power, the government sought to revive a battered economy identifying the weak private sector as the underlying element to basic economic recovery. Through its pursuit to provide a prudent macroeconomic environment particularly from private sector perspective, BOU embarked on an aggressive economic strategy to minimize inflation to single digits of (5%) in efforts to stimulate the financial sector so as to boost private sector confidence in the economy. High rates of economic growth in Uganda have been delivered alongside macroeconomic stability and considerable structural reforms. Tighter monetary and fiscal policies reduced inflation from well over 100 percent in the 1980s to single digits in the early 1990s (Selassie, 2008).

Kayizzi-Mugerwa (1999) indicates that, though still a poor country, Uganda was by the end of the 1990s no longer a crisis economy. However, even after a decade of reform-generated growth, per capita incomes are still lower than in 1972. Kayizzi-Mugerwa (1999) further elaborates that from the point of view of the economy, a major negative event was the expulsion of the Ugandan-Asian business families in 1972. Subsequently, the country reached a tipping point when current president Museveni. The ruling National Resistance Movement party (NRM) deposed Idi Amin triggering an economic contraction of forty percent (40%) in 1982. It is on this background that the NRM government formulated a comprehensive recovery plan to rejuvenate the economic landscape which constituted implementation of radical reforms across various sectors. According to Katarikawe and Sebudde, (1999), The Bank of Uganda adopted the Reserve Money Programme (RMP) as a framework for short term monetary policy in 1993. After a long period of economic and financial management and political instability, Uganda adopted in 1987 a rehabilitation and recovery programme to rebuild the economy and restore macroeconomic stability under the auspices of the International Monetary Fund, the World Bank, and the donor community at large (Musinguzi and Katarikawe, 2001).

Originally, Bank of Uganda's monetary policy responsibilities to effectively regulate and oversee financial operations in the country had been compromised following government's resolution of the monetary policy formulation to be conducted by the Ministry of Finance. Realizing the need to rationalize the activities of the central bank, the Bank of Uganda Act of 1966 was amended as per the Bank of Uganda Statute of 1993, empowering the Bank of Uganda (BOU) as the only monetary authority in Uganda, with the autonomy to formulate and implement monetary policy. BOU was also empowered to supervise and regulate the financial institutions under the Financial Institutions Statute of 1993 (Katarikawe & Musinguzi, 2001). As a result, BOU was vested with the prime mandate to formulate and implement monetary policy conduct in Uganda.

Until the establishment of BOU, the East African Currency Board (EACB) issued a common currency that circulated in Uganda, Kenya, and Tanzania. BOU did not issue its own currency until January 1967 and its currency was allowed to co-circulate with EACB currency. Its notes continued to be legal tender until September 1967 and its coins until April 1969, but were still accepted by BOU for conversion purposes only (Katarikawe & Musinguzi, 2001). The large donor financial assistance facilitated the country's fiscal and current account deficits as well as improved the central bank's foreign reserves. Musinguzi and Katarikawe (2001) explain, monetary policy in Uganda is set within the context of the macroeconomic objectives of achieving real economic growth and the maintenance of price stability as defined by Government from time to time. Therefore, formulation of monetary policy is conducted in pursuance of attaining inflation target, stimulation of the private sector through credit advancement as well as improvement in BOP. This means that Uganda uses monetary policy to stimulate the private sector.

Kasekende and Brownbridge (2010) state that Monetary targeting regimes in SSA have proved quite successful in bringing down inflation from high levels, but because of the instability of money demand they are less useful at controlling inflation when it is at low levels.

According to Barungi (1997) inflation in Uganda is a monetary phenomenon, largely attributed to ad hoc government expenditure which expanded the budget deficit, and large increases in domestic financing of the budget during the 1990s. The main

transmission mechanisms of the global crisis onto the economy of Uganda is through the effects on the balance of payments, notably through reduction in exports, remittances from overseas workers, international development assistance and foreign direct investments (Twimukye, Matovu, Levine and Birungi, 2011). BOU persistently operates tight monetary policy due to a weak Ugandan currency owing to increased import volume and food price volatility which all generate inflationary pressures.

Inadequate financial structure also continues to undermine the pursuit of monetary policy alongside structure complexities embedded in the financial sector manifesting into non-monetisation of part of the economy. Antigi-Ego (2000) observes that although the reserve monetary programme curtailed inflation to low levels, the economy experienced shocks such as an unstable velocity of money demand and volatile food prices.

Essentially, a strong and efficient transmission mechanism is fundamental in achieving successful monetary management in the economy. In 2015, Tumusiime-Mutebile informed how economic projections indicated "elevated risks of inflation" fueled by the plunging shilling which is the Ugandan currency. He noted that: "in light of the risks to higher inflation, BOU believes that a tighter monetary policy stance is warranted". "The future path of the exchange rate possesses risk to inflation"[8].

According to Mugume (2011), monetary policy in Uganda involves regulation of money stock or the short-term interest rate to attain monetary policy objectives such as stabilization of output and prices. Mugume further notes that as early as 1990s, the prevailing orthodoxy in Uganda and across much of Africa was that monetary policy could and should be deployed as a purposive instrument in the broader development process. Following the bank of Uganda Act 1993, BOU was vested with the sole mandate of formulating, conducting and implementing monetary policy in Uganda. With the liberalisation of the economy, the Bank of Uganda adopted the RMP, which is based on the conventional financial programming, to guide the conduct of monetary policy using indirect means (Katarikawe & Sebudde, 1999). Originally the Ministry of

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8 Address by E. Tumusiime-Mutebile, Governor of Bank of Uganda, in Kampala, 10 August 2015. From Monitor Newspaper. [Online]. Available: http://www.monitor.co.ug/Business/Bank-of-Uganda-increases-lending-rate/-/688322/2827760/-/f7mwc0/-/index.html

Finance conducted monetary policy in the country and direct monetary controls like credit and fixed interest rates on deposits and loans. According to Katarikawe and sebudde (1999), the Bank of Uganda adopted the RMP as a framework for short term monetary management because it shifted from direct to indirect monetary control for three major reasons:

- Where monetary targeting is adopted, the most effective operational target is one that the monetary authorities can easily control, that is, the central bank's balance sheet.

- Data on base money could become available with a shorter lag than data on broader monetary Aggregates.

- There existed underlying economic relationships among base money, broader monetary aggregates, economic growth and inflation that underpin the RMP.

RMP constituted of central bank's consolidated assets as well as liabilities. According to (Nabiddo, 2007), Uganda's formal financial sector is one of the least developed in sub Saharan Africa (SSA), with only 70% of the economy monetized. The period 1970 to 1980 Uganda experienced destabilizing economy and deteriorating financial system which were a consequence of the 1972 government pursuit of the "national war" virtually emanating in massive expulsion of Asian nationals, this unprecedented move further exasperated Uganda's real foreign exchange reserves and collapse of numerous banks as a result of economic and political failure.

During the 1990s as pointed out by Kasekende and Ssemogerere (1994), the M2/GDP ratio was just about 24%, compared with 40% for Kenya and 35% for Tanzania. Moreover, the financial portfolio of available assets was notably inadequate with nearly all the assets held consisting of liabilities of government, BOU and commercial banks. The situation was exacerbated by massive government borrowing, negative economic activity subsequently disintegrating the monetary system altogether. According to Opolot and Kyeyune (2012), the RMP was premised on a strong relationship between base money, broader monetary aggregates, economic growth and inflation in order conduct monetary policy. The primary macroeconomic objectives included; real GDP, inflation and BOP and the growth of broad money (M2) was forecasted in line with the RMP objectives. The structural transformation of the economy and developments in

the financial sector over the last two decades however weakened the underlying relationship between base money, broader monetary aggregates, and inflation as the money multiplier became very unstable (Opolot & Kyeyune, 2012).

Due to the inadequacies of the direct control measures, BOU transitioned from the direct controls to indirect control monetary policy regulations following the financial liberalization under implementation of SAPs endorsed by the World Bank and IMF in order to rebuild the shattered economy. The central banks of Uganda, Kenya, and Tanzania agreed to maintain their official rates of exchange for external currencies and interest rates in line with one another. They based their rates broadly on the EACB rate for rediscounting B which had been 5% since 1964 (Musinguzi & Katarikawe, 2001). Further note the level of foreign reserves dictated monetary and credit policy aimed at avoiding any unnecessary increase in demand not matched by receipts of foreign exchange.

The period 1971 to 1979 witnessed economic decay in Uganda attributed largely to economic mismanagement, significant slump in real GDP, coffee productivity which was the largest export product as well as severe foreign exchange shortage. The official exchange rate was fixed at 7.80 Uganda shillings per US dollar, but the excess demand for foreign exchange pushed the parallel market rate to 300 Uganda shillings per US dollar (Barungi, 1997). According to Musinguzi and Katarikawe (2001), The leadership took a decision in 1972 to declare a National Economic War, entailing ordering a number of non-nationals who had for a long time dominated a number of economic sectors, to remove themselves from the country so as to give way for Ugandan nationals take over. In June 1981 Uganda adopted its first SAPs with the support of the IMF and World Bank that included price liberalization, devaluation, trade policy reforms, and public enterprise and fiscal reform, including reduced subsidies and rationalization of public spending. The consequences of the economic destabilisation period manifested into hyperinflation alongside a fixed exchange rate regime and financial disorder. The economic recovery programme adopted in 1987 heavily hinges on price, trade and exchange rate liberalization, restoration of fiscal discipline, and adherence to a decidedly anti-inflationary monetary stance (Barungi, 1997).

Having outlined the role of the BOU in monetary policy, the following section presents a discussion on various monetary policy eras in Uganda.

4.3.1 Monetary Policy during the Period 1980-1990

The 1960's was largely dominated by the east African triumvirate monetary board of Kenya, Uganda and Tanzania. Prior to 1967, the three East African economies of Kenya, Tanzania and Uganda followed one currency regime known as the East African Currency Board (EACB) which spread across these three countries (Musinguzi & Katarikawe, 2001). Established in 1919 by colonial Britain, the EACB currency was enforced as an affiliate to the British currency with its headquarters in London albeit begun operational undertakings in 1920.

According to Kwagala-Igaga (2016), the EACB was dismantled in 1965. In Uganda BOU began operations in 1966 with its initial currency issued in 1967 to operate with the EACB currency. The creation of the East African co-operation agreement stipulated that the three governors of the East African central banks was mandatory to convene four times annually, and deliberate as well as debate each other's monetary regimes, BOP and interest rate strategies. However, each central bank individually preserved their official exchange and interest rates albeit harmonizing them with each other's rates. These three East African countries based their rates broadly on the EACB rate for rediscounting bills which had been 5% since 1964.

Treasury bills (TB) were made available to commercial banks on a tap basis at 5%, with an undertaking that they would be repurchased at the same rate to encourage them to invest surplus funds locally rather than use them to purchase foreign exchange (Musinguzi & Katarikawe, 2001). Foreign exchange bureaus were instituted in the 1990s as part of leberalisation of the financial sector. Uganda's monetary and credit policy was steered by foreign exchange reserves volumes although its position was grossly irked by unexpected commercial banks off-shore borrowings of money to facilitate import demand as well as foreign reserves.

Due to the financial predicament that followed, there was a need to enforce fiscal mechanisms as the principal instruments in pursuit of economic acceleration. Foreign reservoirs stock shrinked also there were tight restrictions on credit that had a tremendous acceleration of central banks' foreign exchange stockpile leading to

commercial banks' use of rediscounting bills. However, BOU changed its policy limitations on commercial bank loans so as to bring down the volumes of foreign exchange. Musinguzi and Katarikawe (2001) note that, in order ensure that commercial banks and other credit institutions would operate on sound financial priniciples and in conformity with overall government economic policy, BOU Banking act required liquid requirements of 20% on commercial banks' demand deposits as well as 15% on time and saving deposits. In May 1987, a new Uganda shilling equivalent to 100 old shillings was introduced, a conversion tax of 30%, all intended to reduce the excessive liquidity overhang and generate additional tax revenue (Musinguzi & Katarikawe, 2001). However, the economy still grew sluggishly due to weak private sector. Kayizzi-Mugerwa (2002) states that government expenditures fell notably and a sharp slump in real GDP from 10.7% to 1.9% and falling even further by a whopping 40% by 1980. Kayizzi-Mugerwa (2002) notes, following a further weakening of coffee prices and stranded reforms, the government fell back to money printing in the face of a brief aid interruption in early 1991.

The economic situation was aggravated further by a drain on the foreign exchange pool, unprecedented closure of banks, and collapse of export as well as massive credit advances from the central bank. In an effort to revive the economy, strict regulations and controls were applied by BOU this meant that all public parastatals, co-operatives and financial intermediaries were relinquished to Uganda commercial Bank (UCB) which was the sole local bank in the interim, this triggered tremendous bank closures. To rebuild the macro economy, policy authorities embarked on policy formulation as a result the Ministries of Finance and Planning and Economic Development were merged. There was a revamp of the interest rate policy whilst an increase of near money and treasury bills ensued. Selective credit control to banks and businesses was geared towards financing fundamental economic projects and agriculture whilst the government heeded IMF considerations of careful credit regulations and quotas. Inflation declined from an annual average of 90.6 percent in the period 1971 to 1986 to 66.4 percent in the period 1986 to 1995 (Di john and Putzel, 2005). Di john and Putzel (2005) note that the rapid rates of economic growth with relatively low investment rates in the period 1987 to 1995 indicates that igniting growth in the context of large static inefficiencies and a low base (as a result of civil war) does not necessarily require large investment rates.

4.3.2 Monetary Policy during the Period 1990-2000

The NRM government that came into power emphasised greater commitment in implementing economic reforms since 1987. The period 1990s marked the initial process to rebuilding the financial sector that had been weakened by political instability and misalignment. Although the share of agriculture to total GDP greatly slumped to 24.1% in 2001 from 64.1% in the late 1980's, prolonged pursuit of extensive reforms emphasized primarily economic liberalization as well as privatization of government undertakings to boost rapid growth. According to Warnock and Conway (1999), Private investment rose from 8 percent of GDP in fiscal 1985/86 to 10.6 percent on average for the period fiscal 1987/88 to 1990/91, but settled back to 9 percent of GDP in fiscal 1991/92. Public investment, in contrast, rose throughout the period from 3.5 percent of GDP in the prior fiscal year to 6.8 percent of GDP in the final year. liberalization of the exchange regime which also pioneered the launch of numerous bureau de change outlets with a view to restore export trade side by side with incorporation the existing parallel markets.

The formal financial sector was heavily subjugated by only two commercial banks comprising of Uganda Commercial Bank (UCB) and Uganda Development Bank with over 50 UCB branches widely spread across the country albeit owned by government indicative of little autonomy. In spite of government enacted stabilization reforms and SAP's in 1987 it was not until 1990 that capacity of these reforms reflected on the economy. Consequently, exchange rate devaluations, reductions in price regulations accompanied with successful mitigations of inflation ratios and a shrewd fiscal discipline stimulated the economy to progress. Slowdown of growth of money supply, real GDP rose whilst inflation the apparent primary objective also dropped sharply from 86% to 29% with remarkable improvements in export trade also envisaged. However, in 1992 economic respite was short lived as international prices rapidly escalated driving oil as high as 70% this in turn increased domestic prices. The expansion of the fiscal disbursements primarily due to decline in foreign aid, moreover, export revenue from coffee produce shrank notably. The value of exports continued to fall until the world price of coffee recovered in fiscal 1994 to 95 (Warnock & Conway, 1999). The government, even with the establishment of the Revenue Authority, still suffers from low revenue collection. Foreign aid finances 60 percent of government spending.

Nachega (2001) Observes that in 1993, the cash reserve requirement was ineffective to control monetary aggregates since banks had automatic access to the BOU lending facilities whenever they faced liquidity constraints. Warnock and Conway (1999) noted investment and savings remained insufficient at 18 and 5 percent respectively of GDP by 1995. The government, even with the establishment of the Revenue Authority, still suffers from low revenue collection, Foreign aid finances 60 percent of government spending. To a large extent Uganda's financial structure mainly evolved in 1993 attributed to government implementation of both monetary and a tight fiscal policy. Vast improvements have been made on the inflation front as reduced fiscal deficits and restrictions on government borrowing from the Bank of Uganda brought inflation to below 10 percent by 1993, a far cry from the 200 percent rate observed in the mid-1980s (Warnock & Conway, 1999). In pursuit to restoration of Uganda's financial debacle, BOU reinforced its approach to streamline resource mobilization techniques besides endorsing reforms instituted by IMF and World Bank that included;

- Reform of the legal and regulatory framework of the banking system besides lifting the banking moratorium that existed.

- Reducing financial repression by liberalizing interest rates whilst eliminating credit controls

- Restructuring the commercial banks to encourage both residents and non-residents to own foreign assets

- Establishing freedom of entry and exit into and from the banking industry

- Smooth adjustment from direct to indirect monetary policy

- Enhancing financial markets whilst incorporating sale of treasury bills on the secondary market. (Adapted from Katarikawe & Sebudde, 1999)

In 1997 BOU undertook the initiative to liberalize the BOP capital account basically to augment consumption imbalances whilst the capital markets authority commenced operations. Subsequently, the Uganda Securities Exchange (USE) was instituted. Notwithstanding, the same period government subscribed to an all-inclusive development approach initiating the Poverty Eradication Action Program (PEAP) aiming to reduce poverty from 56% to below 10% by 2017 (Kayizzi-Mugerwa, 2002). Muhwezi, Turyareeba, Abaliwano and Wabukala (2015) indicate that, Since the 1990s Uganda, a small, landlocked country, has experienced the initial phases of

economic transformation, accompanied by important employment progress. UNCTAD (2001) established, Uganda's per capita income grew at an average rate of 3.5% over the period 1990 to 1999, rising from US$197(constant 2005 US$) to US$269, almost continuously surpassing the average for sub-Saharan Africa for the whole period.

The poverty levels additionally fell notably during this period whilst economic growth was supplemented with agriculture diversification. Di john and Putzel (2005) indicate, as a result of sustained economic growth, the poverty rate declined from an average of 55% in the period 1987 to 95 to 44 % in the period 1996 to 2003. Di john and Putzel (2005) further establish that Annual average growth rates increased from 0.6 percent per year in the period 1971 to 1986, to over 6.5 percent in the period 1987 to 2003. Of the post-war economies in Africa, only Mozambique has maintained this level of growth.

4.3.3   Monetary Policy during the Period 2000-2010

The main aim of Uganda's monetary policy is to contain inflation below 5 per cent and maintain stability in the money and foreign exchange markets. In pursuit of these objectives, (AfDB, 2008) observes that BOU engages in sterilisation of excess liquidity through purchases and sales of treasury bonds and foreign exchange. Better macroeconomic management, including better monetary policies, contributed to an improvement in macroeconomic performance in sub-Saharan Africa (SSA) in the 2000s, manifested in higher real GDP growth, lower inflation and larger balance of payments surpluses (Kasekende & Brownbridge, 2010). Uganda has established numerous policies to remedy the financial, political and economic destitute that befell the country post-independence. According to Dijohn and Putzel (2005), during the period 1987 to 1995, aid was greater than gross fixed capital formation, but declined to a still high rate contributing 64.2 percent of investment over the period 1996 to 2003.

 1990's was the post-stabilization period that Uganda established robust reforms seeking to improve the economic situation and the country's financial gains however trivial is attributed to the NRM government with improvements in GDP, falling poverty levels and money supply moreover prices lowered remarkably. Large-scale increases in economic aid helped increase public spending in rebuilding the economy's physical infrastructure, with the financing of road reconstruction the most salient factor in

helping re-integrate the national economy (Di john & Putzel, 2005). Kasekende and Brownbridge (2010) observes, a key distinguishing feature of a monetary policy framework is whether monetary policy is anchored on external or domestic targets.

The growth turnaround in Uganda has not been the result of the state initiating and executing a big push liberalisation and governance reforms. Rather growth has been resumed through a more gradual liberalisation and heterodox policies, and through limited reforms in terms of governance and regulation (Di john & Putzel, 2005). Although export production continued to advance, however, the trade deficit also constantly expanded. Since Uganda established its own sovereign currency and central bank post-independence, there have been numerous institutional proposed reforms to harness the achievement of monetary along with financial objectives. According to the World Bank (2016), during the period 2000 to 2010, mandated by the National Development Plan (NDP), Uganda planned an investment push intended to accelerate and sustain the high levels of economic growth and to spur transformation into a middle-income country. This was intended to address the structural constraints to the country's growth and the underdeveloped infrastructure system. According to (AfDB, 2008), The BoU also uses repos (repurchase agreements) to manage liquidity (intra-auction liquidity). In addition to liquidity management tools, BoU uses the rediscount rate and the bank rate to achieve its monetary policy objectives. Although these mechanisms have to often operate under immense fiscal constraint, this tends to undermine its purpose on the general macro economy.

There are strong a priori reasons to believe that monetary transmission may be weaker and less reliable in low than in high income countries (Montriel, 2013). Uganda's impressive growth in the year 2006/07 was largely attributed to improvement in the performance of the service sector. In 2006/07 broad money supply, M2, grew by 15.4 per cent, up from10.3 per cent in 2005/06. Bank lending to the private sector grew by 20.7 percent, although commercial banks' credit policies remain cautious and banks continue to prefer buying treasury bills and lending to foreign banks rather than to domestic businesses (AfDB, 2008).

Kasekende and Brownbridfe (2010) postulate, the most effective channels of monetary policy transmission are the bank lending channel, through which an expansion in the magnitude of resources available to banks, such as deposits or reserves with the

central bank, allow an increase in bank lending to the private sector, and the exchange rate channel. Twimukye *et al.,* (2011) notes, the main transmission mechanisms of the global crisis onto the economy of Uganda is through the effects on the balance of payments, notably through reduction in exports, remittances from overseas workers, international development assistance and foreign direct investments. The AfDB (2008) report observed that the conduct of monetary policy in Uganda was largely obscured by structural causes of high intertest rates and limited lending to the private sector. Moreover, liquidity sterilisation of Balance of Payments surpluses tends to appreciate the shilling and adversely affect export competitiveness. The average consumer price inflation rate for 2006/07 was 6.4 per cent compared with 7.3 per cent in 2005/06 (AfDB, 2008).

Although inflation increased beyond BOU target of 5%, the increase was attributed to growth in private consumption and energy prices which further reflected on rise in transport costs in the country.

The period 2000, policy makers adopted a flexible exchange rate regime hence, the Ugandan shilling was determined by market forces. AfDB (2008) states, Ugandan shilling appreciated against the US dollar by about 5.9 per cent in 2007 due to an increase in foreign currency inflows from the export sector, NGOs, and foreign purchases of Ugandan government bills and bonds. Under the monetary targeting regime, the challenge is how to determine the volume and price of money, as a result the role of interest rates is limited to secondary role in the economy. Monetary targeting regimes in SSA have proved quite successful in bringing down inflation from high levels, but because of the instability of money demand, they are less useful at controlling inflation when it is at low levels (Kasekende & Brownbridge, 2010). Buffie *et al.* (2008) notes that, in attempting to control monetary aggregates in the face of shifts in the velocity of circulation of money (or mistakes in forecasting velocity), central banks may exacerbate instability in interest rates, exchange rates and output, if prices are sticky in the short run. The principle feature of monetary targeting regimes is that they are based on "rules based" approach as opposed to inflation targeting regimes where monetary policies are determined accordingly based on previous projections. However, the uncertainty on the direction of the velocity of money in the economy may challenge monetary targeting.

Kasekende and Brownbridge (2010) noted that in 2000, faced with strong inflows of foreign exchange (from aid and capital flows), Uganda responded by accumulating international reserves by more than planned, to stem an appreciation of their exchange rates, and by allowing monetary growth to rise above targeted levels in order to avoid having to fully sterilise the inflows of foreign exchange by issuing domestic securities, which could crowd out bank lending to the private sector. According to AfDB (2008), the commercial banks' average lending rate remained very high at 19 per cent in 2007 compared to the time deposit rate of 11 per cent. The high spread indicates lack of competition in the banking sector and high operational inefficiency. According to Tumusiime-Mutebile (2014), the flexible aspect of the monetary targeting framework arose because the BOU had lost confidence in the efficacy of applying rigid monetary targets, but the framework provided no other monetary policy anchor to replace the monetary targets. Mutebile further notes that, "in late 2009 we began the process of transition by adopting what we called a "flexible monetary targeting regime", which involved the introduction of more regular interventions in the money markets to try and dampen volatility in interbank interest rates, although without targeting a particular interest rate, and a monthly review of the monetary targets with the possibility that they might be revised to take account of changes in the macro economy".

4.3.4   Money Supply Growth

Although there has been a contentious debate on the role of money in the economy, the fundamental role of monetary policy in stimulating the economy is inherent. Establishing a stable money demand function is fundamental for effective formulation and conduct of monetary policy in the economy. The growth of money supply in the economy has a powerful impact on the general macroeconomic environment particularly, aggregate demand. Money supply in Uganda comprises of currency notes, coins issued by the central bank as well as deposits held by the public that correspond to M1, M2, and M3. According to Katarikawe and Sebudde (1999), the period 1990 to 1996, the money demand function comprised income, interest rate, nominal exchange rate and price changes. The inflation rates are computed from the composite CPI for Uganda and data of money supply on monthly basis is collected from the two definitions M1 and M2 which are the end of month figures in billions of Uganda Shillings (Nabiddo, 2007).

As indicated by Nabiddo (2007) in Uganda, M1 constitutes of currency in circulation plus demand deposits. M2 consists of M1 plus time and saving deposits. Following liberalization of the financial and trade systems in Uganda, as well as increased net donor inflows, this essentially increased the country's net foreign assets in the banking sector. Though net foreign assets increased, the net domestic assets of the banking system declined and inflation fell from an annual average of 28% in 1992/93 to 6.5% in 1993/94. This trend of monetary growth coming from increased net foreign assets of the banking system has been observed since then (Musinguzi & Katarikawe, 2001). The period 1971 to 1993, Money supply growth in Uganda was regulated through direct controls such as interest rate control, selective and direct credit control. According to (Nyorekwa & Odhiambo, 2014), The monetary policy objectives, even with the adoption of inflation-targeting lite, continue to achieve low and stable inflation, boosting economic growth through enhanced private sector credit and improving balance of payments. Uganda's formal financial sector is one of the least developed in SSA, with only 70% of the economy monetized. The M2/GDP ratio is just about 24%, compared with 40% for Kenya and 35% for Tanzania (Kasekende and Ssemogerere, (1994); BOU, 2005).

The BoU continued to pursue a cautious monetary policy stance aimed at stimulating output without jeopardizing the inflation objective. BoU reduced the CBR by 50 basis points to 11 in June 2014 and kept the CBR unchanged since then (BOU, 2014). The central bank requires an understanding of the transmission mechanism of monetary policy to be able to respond adequately to different shocks (Opolot and Kyeyune, 2012). For small open economies such as Uganda the most common shocks emanate from exchange rate or interest rate side and aggregate demand channel through which monetary policy can be transmitted in the economy. The immediate effect of BoU's policy actions are felt in the interbank market where banks extend loans to one another for a specified term. Most interbank loans in Uganda are for maturities of one week (Mugume, 2012). Nyorekwa and Odhiambo (2014) state, that in In Uganda, since the monetary policy has been tailored towards targeting M2, it is likely that monetary policy will affect only the local currency, not foreign currencies.

The effectiveness of monetary policy depends on the magnitude of financial frictions, which are in part contingent upon the institutional and regulatory environment (Nyorekwa & Odhiambo, 2014). Expansionary or contractionary monetary policy are

used by central banks to control, regulate and conduct to determine the quantity of money supply in the economy. The relationship between changes in money expansion and nominal growth in GDP can have an influence on the availability of credit and liquidity in the country, especially if nominal GDP grows slower than money supply growth (M3). In Uganda, broad money plus quasi money averaged 21.24 the period 2003 to 2014 whilst the period 2003-2014 the growth of annual broad money slowed down by 2.74%(trendy economy.com) however, it peaked again at 38% in 2010. Adam (2009) indicated, Asset markets in Uganda are small, both in absolute terms and relative to the economy as a whole, and trade is thin.

Prior to July 2011, the Reserve Money Program (RMP), which is premised on a strong underlying relationship between base money, broader monetary aggregates, economic growth and inflation, was used to guide monetary policy decisions (Opolot & Kyeyune, 2013). Under the RMP, the growth of broad money (M2) was projected in line with the pre-determined underlying objectives that included growth of real GDP, inflation and BOP.

According to (African Economic Outlook, 2006), in 2005, the broad money supply M2 grew by 12.1 per cent, below the target rate of 15.3 per cent but higher than the 10.2 per cent growth rate in 2004. Much of the growth in money supply reflected an increase in net foreign asset holdings in the banking system. Honohan and Beck (2007) indicated that, in 2004/05 Uganda's mean M3/GDP ratio was at 19 percent as compared to that of Africa which was recorded at 32 percent. Projecting the expansion of the monetary base which was also the operating target was determined by inflation rate and growth in other monetary aggregates. Monetary policy was eased if base money was below desired, tightened if base money was above desired, and left unchanged/neutral if base money was in line with the desired levels. Base money relates to Bank of Uganda's liabilities which the monetary authorities can influence to control money supply. Bank of Uganda needs effective monetary policy instruments to control its liabilities and to ensure that the supply of banks' reserves is in line with desired demand (Katarikawe & Sebudde, 1999).

Considering the dynamic evolution of the economy and structural improvements of the financial sector during the recent past, it generated volatility in the money multiplier which ultimately undermined the link between monetary base, monetary aggregates

and inflation. As a result, BoU shifted to the Inflation Targeting Lite (ITL) framework in 2011. Under the ITL framework, BoU sets the Central Bank Rate (CBR) consistent with the desired monetary policy stance for the month and regulates liquidity conditions in the interbank money market to ensure that the 7-day interbank money market rate is consistent with the CBR for the month (Opolot & Kyeyune, 2014).

Figure 4.1: Annual Monetary Growth and Inflation (1992-2000)
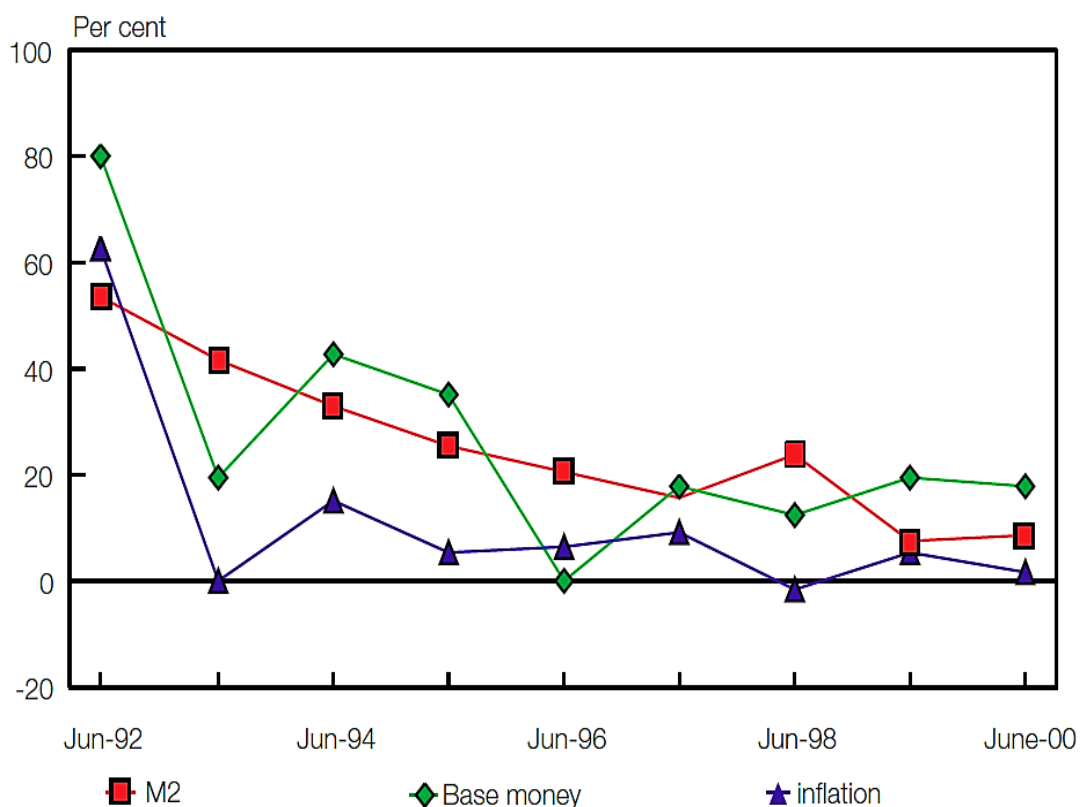
Source: Musinguzi and Katarikawe (2001: 09)

The period 1983 to 2008, the ratio of M2 and M3 in relatuion to GDP initially had upward trend although it later decreased but subsequently increased steadily over time. Growth of domestic credit to the private sector has matched the growth of M2 and M3 to GDP in Uganda during 1983 to 2008. According to BOU (2010), Both M3 and M2 rose by 14.1 percent and 11.3 percent compared to 7.8 percent and 8.3 percent in March 2010, respectively. Although the expansionary monetary policy pursued by BOU was in part intended to encourage lending to the private sector, commercial banks' lending rates remained relatively high reflecting inherent risks in private sector lending (BOU, 2010).

All measures of broad money expanded in the quarter ended June 2010 on account of the accommodative monetary policy stance that the BOU implemented in order to revive aggregate demand (BOU, 2010).

Figure 4.2: Contributions to Annual Growth in Broad Money (M3)
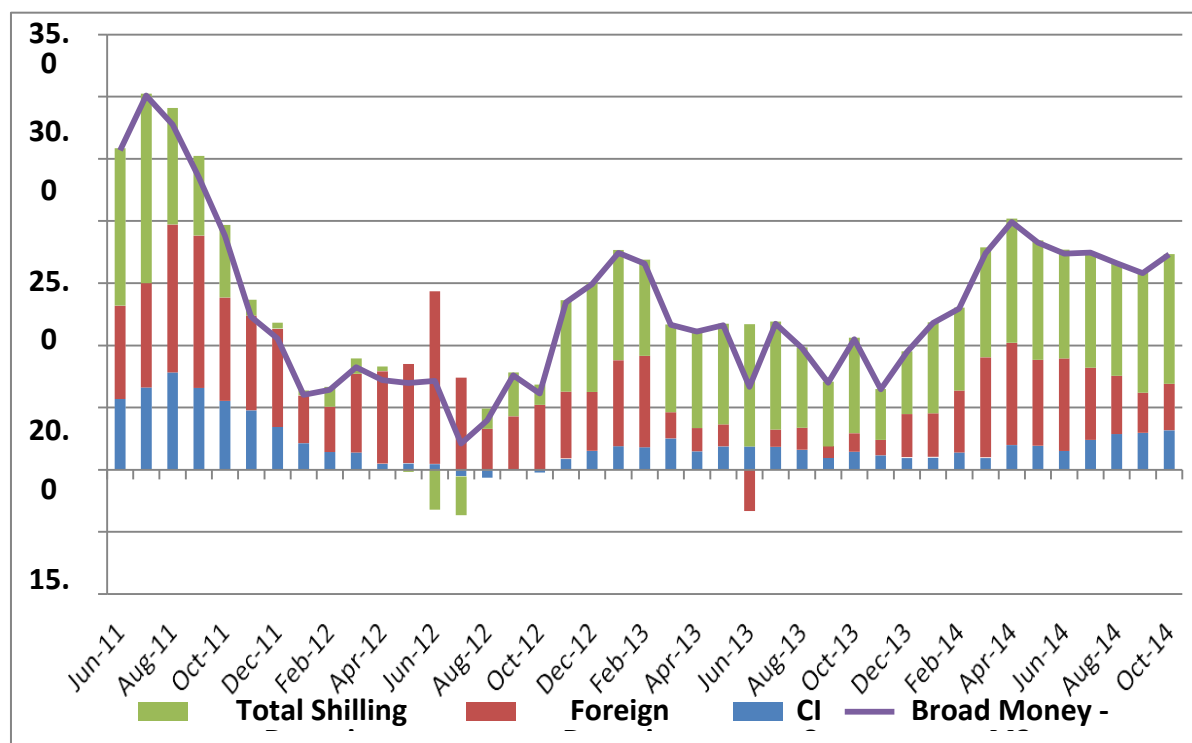
Source: BOU (2014: 09)

Despite the sluggish growth of private sector credit from the commercial banks, money supply growth in Uganda in the 2010Q to 2012Q was attributed to improvement in the banking Net Domestic Assets(NDA). The NDA of the banking system explained about 76.3 percent of the increase in M3. The dramatic contribution of NDA to growth in M3 was on account of a drawdown in government savings with the banking system (BOU, 2010).

BOU (2014) establishes that, Annual growth in M3 since January 2014 has averaged at 16.5 per cent, which is well within the policy support instrument (PSI) trajectory of 17.5 per cent in 2014/15. Bank of Uganda further observes that the growth in M3 was largely griven by growth in shilling deposits as well as currency in circulation which could be reflecting the strengthening of economic activity.

Following the 1993 Bank of Uganda enactment, direct monetary controls were acrapped infavour of the Reserve Money Programme (RMP) and hence the reserve money acted as the monetary operating target in the economy. In 2009, the RMP was modified, and a flexible version of the RMP was adopted, with Net Domes-tic Assets (NDA) as the operating target; and in July 2011, the RMP base-money targeting was replaced by "Inflation Targeting Lite (ITL)" (Nyorekwa and Odhiambo, 2014). This shift in the monetary regime in turn implied changing the monetary policy operating instrument from monetary base to the Central Bank rate (CBR). Under the new regime, an interest rate is the oper-ating target of monetary policy (the CBR), which is set monthly and used to guide 7-day interbank interest rates (Nyorekwa & Odhiambo, 2014). Under the ITL regime, price stability remains the main objective of the central bank hence would supersede the other alternative objectives in case of uncertainity.

According to (BOU) the monetary base targeting framework that operated since 1993 was based on two assumptions namely;

- There existed a stable and predictable relationship between quantity of money and prices.

- There existed a stable and exploitable relationship between the intermediate target, broad money and the central bank's policy instrument, which fopr Uganda's case was base money.

However, considering the evolution of monetary policy dynamics as well as the transformation of the financial system in Uganda, BOU asserted that "it makes the accurate targeting of money quantity untenable". Hence the change to the inflation targeting lite framework. Nyorekwa and Odhimabo (2014) establish that under the ITL regime, a corridor around the CBR is also defined – to signal the allowed deviations of the interbank rate from the policy rate; furthermore, its width is frequently adjusted. The rediscount policy is also often used by the BoU to signal policy.

This chapter presented a comprehensive discussion on the monetary policy dynamics in Uganda. Considering the extensive transformation of the Ugandan economy, starting with the highly volatile economic times of the 1970's, followed by the recovery programme aimed at restoring economic activity as well as composition of monetary supply growth in the Ugandan economy, BOU consequently reformed the monetary

polict mechanism. .to this end, the chapter additionbally presented the various historical monetary regimes since the 1970s. Noticebly, Bank of Uganda's policy formulation and conduct transformed as reflected by the shift of monetary policy targets as well as operational procedures. Essentially Bank of Uganda's policy tools used include: open market operations, reserve requirements and repo rate. Simpasa *et al.*, (2011) established that the growth in private sector credit is the main source of broad money growth in Uganda.

CHAPTER FIVE

INFLATION AND UNEMPLOYMENT IN UGANDA

5.1   INTRODUCTION

This chapter presents the inflation and unemployment composition in Uganda. The various trends on inflation and unemployment in Uganda during the review period is also discussed in this chapter. According to the Uganda National Household and Population Census (UBOS,2014) statistics, the unemployment issue in Uganda is developing into a social crisis in the country. This growing social problem is further exacerbated by rising unemployment trend and persistent inflationary pressures in Uganda over the last five years. Monetary policy can significantly impact real interest rates and thus economic activity. Consequently, regulation of inflation rate in the economy is fundamental for longterm growth. UBOS (2009) states that Uganda's CPI basket is dominated by food, rentfuel and utlity prices, making up almost half of the total consumption basket. Consequently, in Uganda a sharp increase in food and fuel prices are key determinants of inflation.

5.2   INFLATION DYNAMICS

As recently as the early 1990s, the prevailing orthodoxy in Uganda and across much of Africa was that monetary policy could and should be deployed as a purposive instrument in the broader development process (Mugume, 2011). The primary objective of our monetary policy is to hold the annual rate of core inflation to 5 percent over the medium term (Tumusiime-Mutebile, 2012). Uganda's impressive record on inflation over the last decade has been anchored by a relentless adherence to a tight reserve money programme, heavily buttressed by the cash-budget fiscal rule (Adam, 2009). Following use of the RMP in monetary policy management over time, BOU shifted to the Inflation Targeting Lite (ITL) monetary policy framework in 2011. According to (Adam,2009) the use of the RMP presented two challenges the first is that the programme was becoming less successful at anchoring inflation and the second is that its operation had stifled both the lending activities of the banking system and the development of effective interest rate channel of monetary policy transmission. The process of BOU's policy formulation and implementation entails the establishment of the monetary authorities' objective of price stability which will be embodied by

inflation target. How quickly the authorities should seek to bring inflation back towards its target is also a critical question. This is a problem for all monetary authorities, not just those operating explicit full-fledged inflation targeting regimes (Adam, 2009). Currently, the inflation targeting has been determined at 5% demonstrated in the annual rate if the inflation rate particularly core inflation is recorded inside this limit then BOU will have attained price stability in the country. It has been observed that in the short run, inflation in Uganda is largely determined by supply side effects such as energy and food prices.

In Uganda both external and domestic factors explain the dynamics in inflation Uganda (Kabundi, 2012). Hence inflation in Uganda is determined by; the quantity of money, global food prices, agriculture factors through domestic supply and demand aspects. Presently, there is a general view that inflation is a monetary phenomenon implying that it's primarily the persistent growth in money supply that triggers inflation. This has impelled policy analysts to deduce that if central banks restrain the growth rate of money in line with the real economic growth rate in the long-run then the objective of long-run price stability is attainable. In 2012, Tumusiime-Mutebile noted that, "monetary policy cannot realistically prevent inflation from rising in the short term if prices have been hit by a large supply shock, such as a food price shock, in Uganda or anywhere else in the world. What monetary policy can realistically achieve is to bring core inflation back down over a period of time, which in most cases will probably be in the region of a year at least, depending on the size and nature of the shock".

However, central banks focus their formulation of monetary policy to maintaining price stability that real macroeconomic effects like real GDP and unemployment are constantly overlooked hence policy implementation tend to consider the consequences of real variables only following the achievement of their key objective of price stability. Although central banks set price stability as their prime objective the general understanding is that in the short-run, the operations of central banks ultimately influence quantities of real economic variables therefore the dual composition of economic cooperation between monetary policy implementation and the conduct of the economy systematically works in the long-run. These enterprising economic situations generate a dilemma for monetary policy authorities with regards to managing inflation in the short-run as well the trade-off across other economic effects. The general suggestion is that price stability or benign rates of inflation sets

the basis for enhancement of other macroeconomic outcomes thus modern central banks across several countries have formulated straightforward macroeconomic manifestations in an attempt to inculcate coherence across economic agents about their obligation to keeping prices stable. The conduct of monetary policy has evolved since the period 1990 when the Reserve Bank of New Zealand initiated the establishment of inflation targeting regime which laid the foundation for other central banks to follow suit moreover the number has subsequently expanded over time.

Figure 5.1: Inflation in Uganda 1980-2013
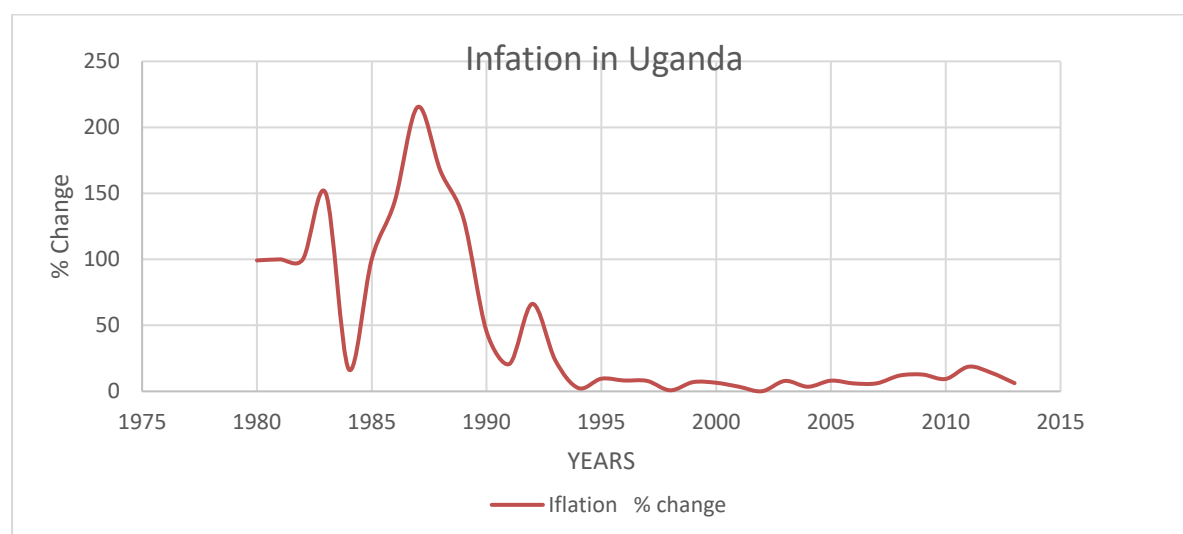
Source: Own compilation based on data obtained from the World Bank

Inflation in Uganda reached exceptionary peak points and sustained during the period of the 1980's averaging in excess of 100% the period 1981-1989 ascending to its elevated annual point the period 1987 of 215%. The results of the sky-high inflation rates in during the 1980's emanated from severe devaluation of the exchange rate but the situation was triggered by the catastrophic crisis during the previous years in which the economy severely crumbled. Coffee which was Uganda's primary export value tremendously deteriorated in production levels as well as real GDP plummeting to negative whilst the budget deficit chronically intensified annually to 23% consequently leading to the central bank's issuance of more money in circulation to finance the deficit. Coffee was then the country's export earner representing 90% of export receipts and 56% fiscal revenue. Triple-digit inflation resulted and the differential between the official exchange rate and the black market was 1:30 (Barungi, 1997). The economy was symmetrized the period 1990's as inflation descended in addition

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the exchange rate was also maintained whilst the growth rates averaged 7% during the period 1990's to 2000's.

BOU maintained the core inflation figures in the range of 5% the period 1990's- early 2000's in spite of the intense agricultural supply side shocks to prices which were reflected by the headline inflation trajectory. The Ugandan economy was subject to various economic reforms during 1980 to 2001 which was the transformation period. However, attributed to the notable economic slumps in most major East African economies, Uganda also experienced sharp rise in inflation rates prompting a deviation from BOU's medium annual target of 5%. As a result, headline and core inflation both correspondingly aggravated to 15.6% and 13.4% in August 2008, notwithstanding that in 2010 inflation rates ultimately declined to single digit figures although further escalating beyond anticipated levels at 30.4% and 30.8% in October 2011 correspondingly. These inflationary pressures were in part generated by supply-side factors, most notably the increases in international oil and food prices.

In November 2011, a disinflation process started, with both headline and core inflation declining to and stabilizing at the BOU's medium- term target of 5.0% by the close of 2012 (Opolot & Kyeyune, 2012). According to the World Bank (2011) inflation in Uganda was mainly triggered by escalation of food and oil prices alongside favourable monetary policy. Sharp increases in inflation could reduce economic growth and exacerbate poverty levels (AfDB, 2012).it generates negative impact on productivity prospects as a result economic agents' actions to the price changes may distort policy implementation. The resultant mal-allocation of resources as well as decline in investment can provoke adjustments in factor productivity and accumulation of capital which ultimately condenses the growth rates. Moreover, interest rates tend to rise with prices so that the financial markets also tumble on account of the contractionary value of bonds in addition to the affected purchasing power although in the long-term inflationary pressures are sheltered owing to government and the underlying lagging stocks. For small open economies like Uganda the price rise may severely shake up the current account deficit in terms of the exports and imports as well as currency depreciation. Although depreciation of the currency may stimulate export demand, its impact on further elevation of prices is far significant in contrast especially with regards to imported inflationary pressures. Subsequently, it's the relative elasticity of prices

between imports and exports that gauge the true reflection of depreciation over inflation.

Accordiong to an investigation on inflation dynamics in selected East African countries that included Ethiopia, Kenya, Tanzania and Uganda, Simpasa *et al.* (2011) established the following as the primary determinants of inflation:

- Exogenous factors (i.e., world food and fuel prices)

- Structural characteristics (i.e., domestic production)

- Policy variables (i.e., monetary, fiscal and exchange rate policies)

These determinants of inflation adversely impact the longt term monetary aggregates and inter-temporal structural changes. In Uganda, growth in money supply, interest rates affect inflation dynamics in the long run. The figure 5.2 below illustrates the dynamics of money supply expansion in relation to inflation in Uganda. Simpasa *et al.* (2011) note that monetary expansion seems to be the main driver of inflation in Uganda in the short-run, accounting for one-third. Moreover, the effect of higher world food prices on domestic inflation is estimated at 13 percent in Uganda.

Figure 5.2: Inflation and Money Growth in Uganda
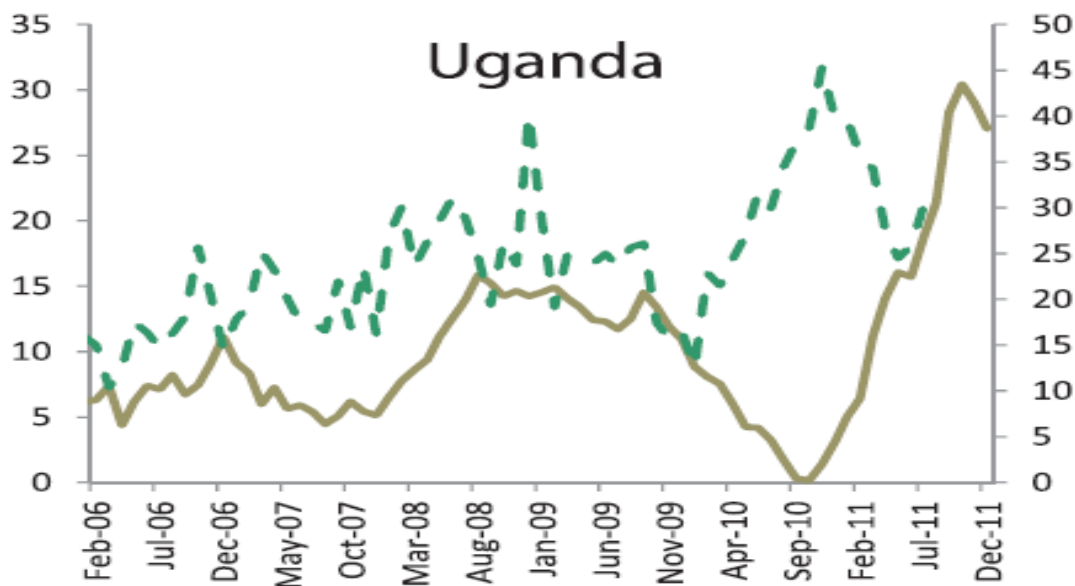
Source: simpasa *et al.* (2011: 05)

———— Inflation (left axis)   – – – money supply growth rate (right axis)

The food price inflation in Uganda is largely attributed to the fact that Uganda is land locked country. Accordingly, the velocity of money illustrates the speed and direction of monetary operations in the economy which in turn explains the prevailing inflationary pressures. Simpasa *et al.* (2011) indicates that the velocity of money has been on an upward trend in East Africa. Since 2006, the velocity of money has been on an upward trend in all four countries, with a sharp jump in Kenya, Tanzania and Uganda from 2009. The increase in velocity is largely due to financial innovations, including the advent of new products such as mobile banking (simpara *et al.* (2011).

Figure 5.3: Velocity of Money in East African Countries
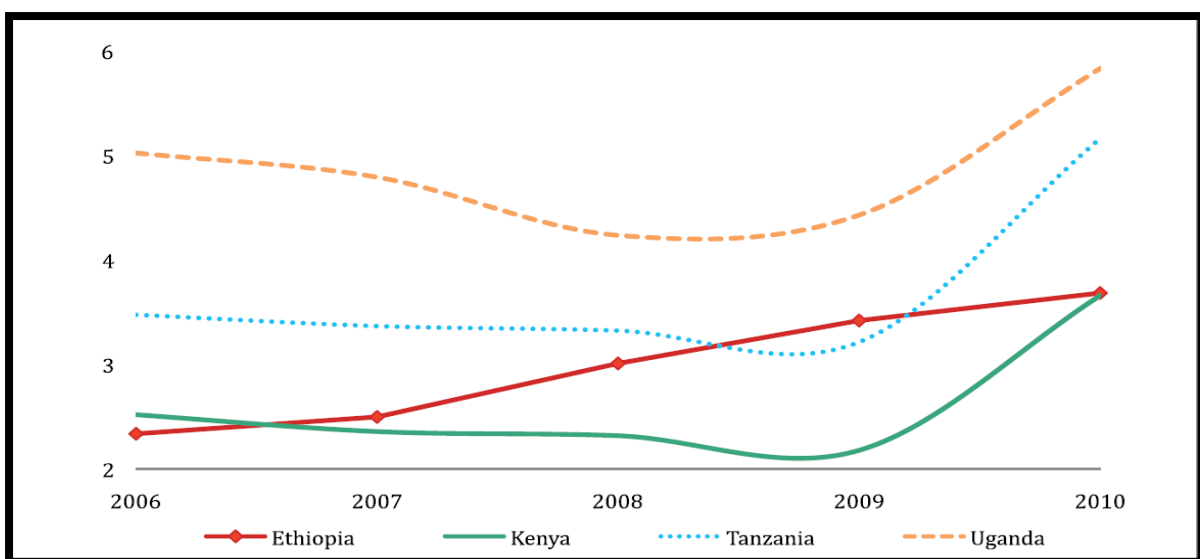
Source: Simpasa *et al.* (2011: 11)

The notable increase in the velocity of money in Uganda could be attributed to the growth of the informal sector which is largely based on cash transactions.

5.3   UNEMPLOYMENT DYNAMICS

The economy of the country has been growing at a rate of 6.5% on average for the last two decades. However, the capacity of the economy to generate sufficient employment for the labourforce has been constrained by, among others, the high population growth rate of 3.2% per annum and an inadequate level of investment (MGLSD, 2011). Uganda is facing an increasing challenge to productively employ its fast growing and mainly young, literate and increasingly urban population (World Bank, 2013). MoFPED (2014) estimates, around 700,000 individuals currently enter the

labour market each year in Uganda.The biggest structural challenge in Uganda is harmonizing the labour force's shift from largely agriculture participation with loproductivity to the transition to the higher productive manufacturing and service sectors by policy authorities. Joughin and Kjoer (2010) indicate that the structural transformation "in terms of a genuine change from predominantly subsistence agriculture to an economy with a commercial agricultural sector and increasing manufacture" has hence not materialised in Uganda.

The vast majority of African countries depend on employment for their primary source of income. Therefore, success in terms of improving employment opportunities can lead to success in reducing poverty, raising living standards and ultimately meeting human development goals. Therefore, reducing poverty requires a joint emphasis on the quality and quantity of employment (Heintz & Pollin, 2008). While the literature on structural transformation suggests that quality jobs are usually created mainly in the manufacturing sector, employment progress in Uganda has happened in a context of limited growth in manufacturing (Muhwezi *et al.*, 2015).

Unemployment has spiraled steeply that it has presently taken the limelight in policy sphere globally specifically in SSA countries. According to the Uganda Bureau of Statistics (UBOS) unemployment is the share of the labour force (16-64) that is without work but available for or actively seeking employment. The unemployment crisis in Uganda is very sensitive debate taking into account the complexity of the Ugandan economy, the structure of the labour force as well as the disposition of the unemployment magnitude facing the country.(Muhwezi, *et al* 2015) observed that given the current demographic pressures from a rapidly growing, mainly young, educated and increasingly urban population, achieving broader economic development with more and better employment will require Uganda to sustain and build on its recent progress. Importantly, the structural composition of the unemployment situation inevitably impacts the non-youth unemployed labour force with insufficient skills required in the labour market resulting from persistent unemployment.

Khan (2001) maintains that research suggests that the greater the employment focus, the more effective economic growth becomes in fighting poverty whilst (Heintz & Pollin, 2008) opine that the issue of the quality of employment is critically important. Ideally,

economic policies should aim at increasing the amount of formal, non-agricultural employment available to the labour force and ensuring that all working individuals, men and women alike, have access to these opportunities ...therefore, policies should also raise the returns to labour in other forms of employment.

Intensive empirical and theoretical literature undertaken further demonstrates the implications uncertainty with regards to policy makers' policy formulation and implementation. Critics have maintained that monetary policy can have an effect on the natural rate of unemployment especially considering the hysteresis effect implying that monetary policy induced interest rates have a significant consequence on the actual natural rate of unemployment in the long-term. Adjustments in short-term unemployment rates can potentially and inevitably spread to the long-run unemployment in addition to consequential direct demand effects hence monetary policy actions influence unemployment especially structural unemployment. The successful conduct of monetary policy requires policy makers not only to specify a set of objectives for the performance of the economy but also to understand the effects of policies designed to attain these goals (Altavilla & Ciccarelli, 2009). Thus, it's noted that the effect of monetary policy shocks on the unemployment Gap may result into recession.

Figure 5.4: Unemployment in Uganda 1991-2013

Source: Own compilation based on data obtained from the World Bank

Figure 3.6 clearly demonstrates that unemployment is chronic. Unemployment rates up surged from 2.2% in 1996 to 4.2% in 2009 to 2012. Hence unemployment eclipsed to its prime the period 2009-2012. Although youth unemployment in Uganda is low in absolute terms, it is systematically higher than the national average rate for all adults (Muhwezi *et al.,* 2015). Though the overall unemployment rate in Uganda is changing, the reality of the problem on the ground reveals a more severe situation than what is reflected in the figures (MGLSD, 2011). In its broader observation the labour force comprises of 14-64 year old individuals previously employed in paid employment, self-employed as well as unpaid family individuals or alternatively unemployed individuals but available to work at the current labour situation whilst broadly interpreted by UBOS (2012) shows that unemployment rose the period 2009 and 2010 to 13% whilst urban unemployment was recorded at 11% although its noted that majority of the statistics show urban unemployment exceeding the national unemployment.

The gender discernment also seems notably apparent in the urban areas revealing female unemployment rates to ultimately increase more than double the male counterparts implying that females are more likely to experience joblessness than males. Youth unemployment (defined as persons 18-30) were previously low in absolute terms albeit the rates has always exceeded the country-wide average taking into account adults, although the enhanced labour productivity has subsequently improved Uganda's employment outlook, the broader access to employment remains inadequate in addition the welfare value related to wage employment advancements and real wages have also been stagnant. Between 1992 and 2013, employment perspectives in Uganda considerably rose by an average of 2.96% annually although it was less than the growth in population of 3% as well as expansion in the labour force by 3.1% during the period under consideration however, the expansion of the labour force as well as employment rates have moved in tandem but in 2003-2005 labour force rates declined more than the employment rates implying a considerable improvement in unemployment rates during the same period.

During the 1990's unemployment rates remained consistent at 2.8% compared to the 2000's when the unemployment significantly oscillated moreover, the period 1991-1999 witnessed solidity in the proportion of employment opportunities to population. 2005 recorded one of Uganda's economical unemployment levels of 2% yet they later

eclipsed to 4.2% in 2009 and the majority of 2013 as compiled by the World Bank development Indicators (2014).consequently, considering the broader interpretation of unemployment by the (2012/2013) Uganda National Household Survey which defines it as complete in access to work yet the report noted that Uganda's low unemployment rates do not reflect the inadequate unemployment insurance benefits, other social incentives provisions hence people's skepticism to constantly remain jobless. Owing to this observation the unemployment rate climbed to 9.4% in 2012.

As Muhwezi *et al* (2015) points out that whilst low unemployment and some job creation would be good indicators of progress in employment, these figures show that progress in employment creation particularly with respect to quantity has been relatively limited when more traditionally defined, even when compared to the region, where World Bank data shows Tanzania and Rwanda as having higher total employment rates. According to the estimated statistics by the Ministry of Labour, Gender and Social Development (MLGSD, 2011), informal employment constitutes 67 percent of the total employment outside agriculture. Uganda's complex economic history for the past decades presents a compelling insight into the source of the unemployment adjustments. These drivers of unemployment in Uganda appear significantly to emanate from structural elements in nature a draft by the Young Leaders Think Tank (2011) interpreted as changes in market conditions often which often turn many people's skills obsolete.

According to World Bank (2013) the following observations were outlined; (a) Uganda's labour market has been and will continue to be driven by the rapid expansion of the labour force, which is growing as a result Uganda's rapidly expanding working population and other demographic changes, an increasing rate of urbanization and by a changing structure of production, especially in urban areas in addition, the biggest challenge for policy makers relates to creating an enabling environment for farms and firms to thrive, grow and create productive jobs. Whilst the job outcome has been driven by the transformation of the economy, demographic changes, and the process of urbanization. These factors will continue to operate into the future. In the short and medium term, the agricultural sector will remain a large employer, principally in rural areas. However, a more diversified labour landscape is emerging in urban areas, where more jobs will be created in services and in light manufacturing both in the

informal and formal sectors. Importantly, the structural components have ultimately constituted vital components of the economy thus obscuring Uganda's economic prospects.

Therefore, the underlying objective of economic policy should focus on unemployment at the natural rate as well as enhancement of individuals' welfare standards and low inflation rates although several policy analysts ascertain that improvement in welfare standards is heavily dependent on low inflationary pressures. However, monetarists heavily question government market interference attributed to the assumption of neutrality of money in the long-run implying of the presence of automatic economic forces to correct market distortions emanating from external shocks or short-term distortions such as distress of oil prices. The rational hypothesis maintains that the presence of wage and price flexibility ultimately eliminates short-term variations as a result the conduct of macroeconomic policy becomes in effective since economic agents behave rationally in the economy. Therefore, in this regard, the World Bank (2013) acknowledged that in order to achieve sustained recovery, prudent monetary and fiscal management will remain essential. The country's economic potential was obscured by the economic slump between 2009 and 2013, inadequate implementation of government investment projects, dwindling fiscal proceeds as well as Aid pegging, thus heed monetary policy can promote the private sector led growth through credit advancements and the fiscal problem of either excessive public spending to confront infrastructure inadequacies or diminishing revenue receipts. Therefore, the World Bank proposed five pillars which policy makers should subscribe to in their job policy approach, which include;

- To improve farming jobs by raising productivity in agriculture

- To support productivity growth in informal or household based enterprises

- To support the growth and to improve the productivity of firms, especially small and medium sized enterprises and export oriented firms.

- To provide the labour force with essential skills

- To promote a more efficient urbanization process that can support firm growth.

To achieve this, economic policies can base their actions on pegging the structural elements that inhibit employment growth. These structural characteristics are balance

of payments, inflation coupled with high interest rates, insufficient external and foreign investment, substandard export growth and value and fiscal liability exasperated by massive domestic debt. The expanding youthful and educated booming urban population can be prudent policy actions to transform the labour force from largely subsistent agriculture to dynamic higher employment whilst economic growth can be advanced by creating an enabling economic scene that provides conditions for export growth for a healthy business situation in addition to balance of payments so as to improve the trade prospects hence employment creation. Uganda's export value remains shallow whilst the imports continuously expand. Ultimately, over the past the country's economic capacity was obscured by colossal imports, external debt and insubstantial foreign exchange value. Unless these impediments are tackled, it remains cumbersome to fully realize the benefits from trade and acceleration of GDP.

Figure 5.5: Uganda and East African Country Trends in Total Unemployment (1991-2012
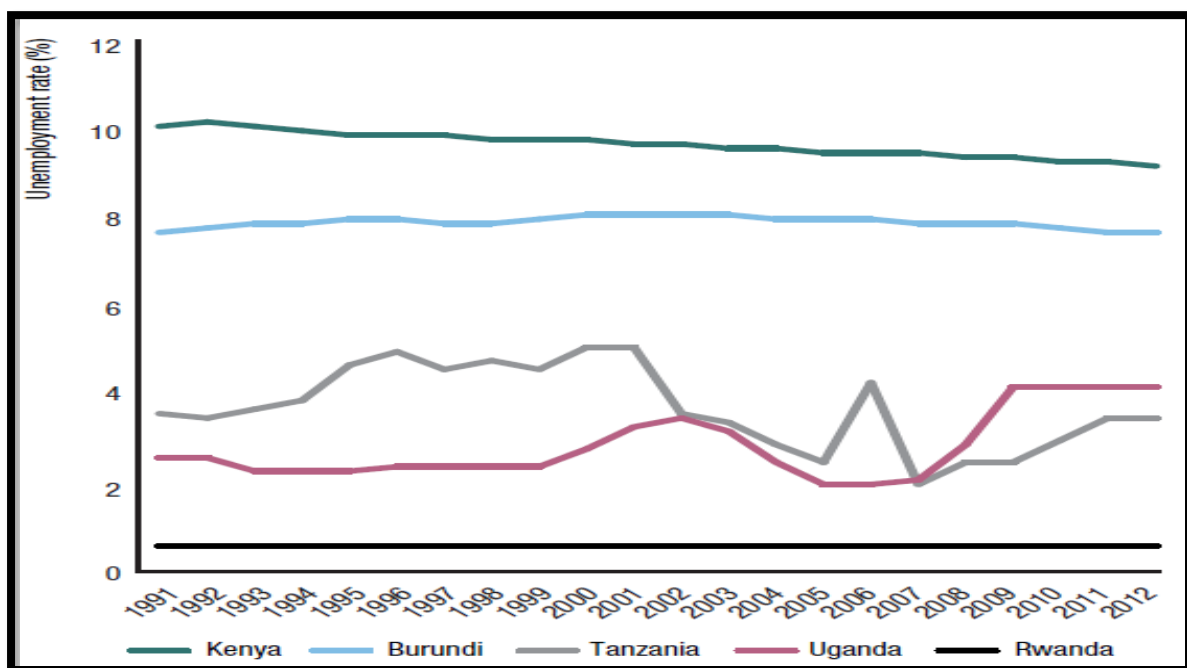
Source: World Bank, WDI (2013) and Muhwezi *et al.* (2015:22)

UBOS (2013) points out that the biggest challenge to low unemployment rate in Uganda is that it does not adequately illustrate the true well-being of the population. Besides, In Uganda, there is no unemployment insurance or other social protection schemes therefore, most people cannot afford to be totally unemployed for a long

period of time. In such situations, most people take on any job that is available, or create their own employment, mainly in the informal sector (UBOS, 2013). Moreover, Van Waeyenberge and Bargawi (2011) observe that many Ugandans are employed in low-productivity economic activities, as a result labour productivity in Uganda remains low. The figure above shows trends of unemployment in Uganda compared to other East African countries. Since the early 2000s, Uganda experienced fluctuations in unemployment. However, the 2013, Uganda National Household survey (UNHS, 2012/2013) indicated a significant rise in unemployment at 9.4%. The rate of unemployment under the newly revised definition is 9.4%, and is particularly high among those with higher levels of education (MoFPED, 2014). Since 2006 the labourforce growth continues to grow higher than the total population growth rate which is largely attributed to rising growth in youth labourforce. according to (UBOS, 2010), labourforce growth further increased to 4.7% whilst the UNHS (2012/2013) survey estimated 80% of the working population as self-employed and 53% of the proportion estimated to be in paid employment. The working age population was estimated at 16.4 million persons of whom 82 percent were working. The size of the working population was 13.9 million, but the size of the employed population was 7.9 million (UBOS, 2013).

The very high proportion of self-employed persons in the economy is an indication of low growth in the formal economy and a high rate of job creation in the informal economy van Waeyenberge and Bargawi (2011). The implication of a large proportion of self- employed people suggests inadequate economic development as well as insufficient job creation and large rural employment. The unemployment situation in Uganda is further compounded by the slow growth of the manufacturing sector and a slump in the growth of the service sector during 2009 to 213.

The share of the labourforce employed in manufacturing and services has declined from 6.8% and 26.8% to 4.2% and 20.7% respectively despite the rise in the GDP shares (MLGSD, 2011). As such, despite the reasonable growth performance of the Ugandan economy, employment remains dominated by low-productivity activities, mainly as self-employed or unpaid family workers in the agricultural sector (Waeyenberge & Bargawi, 2011). Consequently, policy makers in Uganda face a big challenge to foster enhaced employment operations, improve the labour productivity

in order to affect the informal sector growth and create sustatinable employment growth across the economy.

5.4   REVIEW OF EMPLOYMENT INTERVENTIONS IN UGANDA

The extent to which growth reduces poverty depends on a variety of factors characterising the pattern of growth Islam (2004). The key characteristic of the growth strategy in developing countries like Uganda ought to feature a degree of employment expansion. The high growth rates experienced in Uganda have been inadequate in effectively absorbing the rapid growth in the labourforce into productive opportunities. Considering that agricultural growth, the largest employer in Uganda remains weak the government of Uganda implemented as well as realizing the fundamental impact of a productive youthful labourforce, government established various programmes aimed at enhacing employment growth especially through creation of an enabling environment to improve and diversify production in both the formal and informal sectors as well as facilitation of the labourforce with the most appropriate skills.

Human capital quality is essential for employability, higher incomes and sustainable economic growth. Likewise, a well-nurtured, skilled and productive labourforce contributes towards a dynamic economy and cohesive society and better quality of life (MLGSD, 2011). Hence the government formulated the National Employment Policy (NEP) for Uganda in 2011. According to (MLGSD, 2011) the policy is based on an integrated framework for a macroeconomic environment that provides linkages of employment creation to labour absorbing economic sectors. According to MoFPED (2014) the NEP indicated six key policy objectives to spread across various government sectors.

- To promote macroeconomic policies and investment strategies for employment creation.

- To increase productivity, competitiveness and employability of the labour force, especially the youth and other most vulnerable members of the labour force.

- To promote in-employment skills development, training and apprenticeships and/or internships, especially for the youth.

- To promote purposeful and functional vocational and technical skills training.

- To ensure availability of reliable and timely labour market information, especially for those sectors of the labour market employing the poor and vulnerable women.

- To promote and protect the rights and interests of workers in accordance with existing labour laws and fundamental labour standards.

In the NEP, government implimented various labour market interventions aimed at explicitly advacing the employment issues in Uganda. As pointed out by (MoFPED, 2014) to help map Government's approach and the allocation of public resources vis-à-vis employment issues, these labour market interventions can be classified into five main categories:

- Support for smallholder agriculture. Projects and programmes such as the National Agricultural Advisory Services (NAADS) that aim to reduce underemployment and increase the productivity and commercialisation (and therefore earnings) of smallholder farmers.

- Interventions to enhance household livelihoods. Projects taking a more integrated approach to improve household incomes, including efforts to improve the prevalence, profitability and sustainability of off-farm income-generating activities.

- Private sector development. Interventions to improve Uganda's business environment and increase the competitiveness of formal enterprises so that new firms enter and incumbent firms expand their employment.

- Skills development. Direct public provision or support for private providers of business, technical and vocational training.

- Social protection. Public works programmes, personal care services and the promotion of equity and decent working conditions, particularly for vulnerable households.

5.4.1 Support for Smallholder Agriculture

Considering that agriculture remains key in the labourforce market, yet amlarge percentage of the informal sector is in agriculture, government is keen to facilitate

small scale farmers in order to improve household incomes, enhance commercial smallholder agriculture and improve productive capacity. This is done through the following:

5.4.1.1 Extension and Advisory Services

The National Agricultural Advisory Services (NAADS) is the largest Government intervention in the agricultural sector, spending UGX 42 billion in FY2012/13 (MoFPED, 2014). NAADS offers advisory services related with advanced agriculture and technology as well as supply of agricultural inputs.

5.4.1.2 Agricultural Development

In the period 2012/2013 government of Uganda intitiated the Commodity Approach programme to tackle food security, household incomes and improve the volume of exports. This has in turn generated improved agricultural production particularly enhanced basic inputs for farmers. Additionally, the Agricultural Credit Facility (ACF) introduced in FY2009/10 mainly to finance long-term agriculture investments. This credit provision targets long-term agricultural investments in equipment for value added as well as agro-processing at a10% fixed interest rate.

5.4.1.3 Contract Farming

To further augment and diversify the agro-business operations in Uganda, government lauched the Vegetable Oil Development Project (VODP). In 2002 Government signed an agreement with Oil Palm Uganda Limited (OPUL) to undertake an integrated palm oil project in Kalangala District (MoFPED, 2014). This has greatly expanded the vegetable oil industry. The MoFPED statistics estimates that BIDCO Uganda Limited has engaged over 1,300 farmers who have 2,100 hactres under palm trees; which is expected to produce at full maturity 42,000 tonnes of palm oil fruit and generate UGX 21 billion in incomes for the farmers annually.

5.4.1.4 Irrigation

In the recent past domestic agriculture production was hindered by seasonal drought and uncertainity. This generated the establishment of irrigation schemes by government in order to improve water supply for rural agricultural activity. MoFPED

(2014) notes thatLarge-scale irrigation schemes to address the challenges of rain-fed agriculture are included in the NDP's national flagship projects.

5.4.2   Enhancement of Household Livelihoods

One of the key aspect of reducing poverty among the youth and semi-lliterate individuals has been minimizing the scope of underemployment and unemployment among the youth. To increase household incomes the government embarked on projects aimed to supplement farming activities through provision of public resources specifically intended to develop skills or support livelihood business ventures.

5.4.2.1   *Special Programmes with a Regional Priority*

Through the Office of the Prime Minister and additional donor assistance, various projects have been established aimed at improving household welfare specifically in relatively underdeveloped areas to support enterprenuership, self-reliance through skills development and community-based public ventures. MoFPED (2014) indicates the programmes: The Northern Uganda Social Action Fund (NUSAF) and the Karamoja Livelihood Programmes. The Youth Opportunities Programme (YOP) under NUSAF that provide funds to youth for technical, vocational training.

5.4.2.2   *Trade and Market Infrastructure*

After agriculture, retail trade is second most prevailing economic activity. Hence embarked on facilitating this economic venture through expansion of numerous market points across various urban locations in the country. A planned UGX 170 billion will be spent over 5 years under the Markets and Agriculture Trade Improvement project, overseen by the Ministry of Local Government. The construction of 19 new markets is expected to benefit 900,000 households (MoFPED, 2014).

5.4.2.3   *Microfinance Support*

The microfinance support centre established in 2001 to avail affordable and convenient credit services to emerging business has over the years expanded to rural communities through Savings and Credit Cooperatinves (SACCOs). The MoFPED estimates over 2,800 SACCOs established across Uganda with over one million members accessing the services.

5.4.2.4   Support Enterprise Development

Considering that the Ugandan economy is private sector- based due to the extensive privatization operations initiated in the 1990s as well as the fundamental impact of youth employment, government embarked on the various skill development projects targeted at the youth. The youth in Uganda constitute the largest proportion of the labourforce. Realizing the fundamental impact of SMMEs in employment generation especially through self-employment, government thus lauched the enterprise development schemes. Since 2011/12, three venture capital funds: the (YVCF) in 2011/12, Graduate Venture Fund, and the (YLP) have been introduced to target youth who wish to venture into business (Ahaibwe & Mbowa, 2014). Accordingly, enterprise development scheme was broadly based on four elements such as the youth venture fund, entreprenuership training, business development services like incubation and workspace/ infrastructure development.

According to MoFPED, Uganda's business landscape is increasingly dominated by a large number of very small firms. The Youth Livelihood Programme (YLP) was initiated during the FY2013/2014Q$_2$ by government to enhance skill development among the youth in Uganda. the YVCF was undertaken by the government in coordination with various private sector banks (DFCU bank, Stanbic and Centenary banks) as a fund to finance feasible youth (between 18 and 35 years) enterprenurial projects. The MoFPED explains that The Youth Livelihood Programme (YLP), overseen by the Ministry of Gender, Labour and Social Development, is Government's most recent project to provide youth with marketable vocational skills, financial support (interest-free loans for implementation of approved youth projects), and relevant knowledge and information to increase self employment opportunities and income levels. It is estimated that Uganda Shillings 265 million was allocated over the next five-year period.

5.4.3   Private Sector Development

While private investment rose from 12.2 per cent in 2000/1 to 20.6 per cent in 2006/7, this has mainly consisted of increases in private construction (residential buildings) van waeyenberge & Bargawi, 2011). Prior the 1990s, the public sector was the largest employer in Uganda however, following the civil service reform initiated in the 1992 the proportion of public service employers largely declined as the private sector was

considered to be the funadamental driver towards meaningful growth and employment generation.

The pace of public investments ought to move in line with private investment. However private investment continues to hinder sustainable growth in Uganda. A large percentage of government labour market interventions were directed towards bolstering private sector led-growth and job creation. The MoFPED notes that almost a quarter of labour market interventions over the last decade explicitly aimed to improve the performance of SMMEs, creating new formal enterprises and jobs, increasing firm productivity and access to finance from commercial banks. These interventions include:

5.4.3.1　Private Sector Foundation Uganda (PSFU)

The government has coordinated together with various business associations and corporate groups on enhacing the private sector in order to drive growth and employment creation. For example, through the Business Uganda Development Scheme (BUDS) that seeks to finance enterprising businesses, improve value addition and job creation in less developed regions of Uganda such as the northern, eastern and north-western parts of the country. Additionally, the launch of the Enterprise Skills and Linkages Programmes also endevours to offer hands-on training through apprenticeships.

5.4.3.2　Uganda Industrial Research Institute (UIRI)

The UIRI is managed under the Ministry of Trade, Industry and Cooperatives (MTIC) to strengthen industrial growth in Uganda. In order to foster industrial development, UIRI seeks to promote technological improvemen as well as conduct and disperse notable industrial advancements to effective competition. UIRI has spearheaded business incubation to enhance the chances of success and growth of Uganda's SMEs (MoFPED, 2014). Although the institute's objectives are not specifically employment based, nevertheless, a smooth snd ambitious industrial sector promotes job creation in the economy.

5.4.3.3   Uganda Investment Authority (UIA)

UIA is the semi-autonomous Government agency responsible for promoting and facilitating private sector investment (MoFPED). In an effort to stimulate investment in the country particularly private sector investment which in turn would generate private sector-led growth as well as promote expansion of SMMEs, the UIA was established in 1991 by an act of parliament. Ahaibwe and Mbowa (2014) explain that Efforts to promote FDI have focused on generating new investments with foreign and domestic private sector actors. Although the UIA has created some jobs particularly in telecommunication and banking, the number is inadequate compared to the huge number of annual labor market entrants, Moreover, according to the Uganda Employment Policy estimates, employment attributed to UIA projects absorbs less than 10 percent of the labour market entrants annually.

5.4.3.4   Developing Skills and Equipping Labour with Appropriate Technical Knowledge

One of the key obstacles to employment generation in Uganda is the skills mismatch between the acquired skills in the labour market and required skills in the labour demand market. As result the labour supply predominantly outgrows labour demanmd. Consequently, realizing the fundamental role of the skilling a growing percentage of the youth and increasing their employability, government established the Business, Technical, Vocational Education and Training (BTVET). Ahaibwe and Mbowa (2014) note that, entrepreneurship was further introduced as a subject in both lower levels of education and university levels with a view of imparting practical knowledge and skills to enable youth to become job creators. In addition, the Ugandan government put an emphasis on science by paying higher wages to science teachers, building science labs and allocating more government-sponsored slots (75 percent) for science students at public universities. Over the years, government reformed the BTVET programme to reinenforce its applicability, relevance and quality. According to MoFPED (2014) these reforms include;

- The Uganda Vocational Qualifications Framework (UVQF) develops occupational standards and quality assures the assessment and certification of BTVET candidates. The framework was designed to refocus training on the

practical skills demanded in the labour market, emphasising competence-based education and training (CBET). The UVQF uses Assessment and Training Packages (ATPs) to increase the flexibility of formal and non-formal training.

- The 10-year BTVET strategic plan, launched in October 2012 and titled 'Skilling Uganda', emphasises a more comprehensive system of skills development to raise the quality and economic relevance of BTVET. The plan prioritises the rehabilitation and construction of public BTVET institutions before establishing incentives to expand the private provider network (such as matching grants).

Additionally, the government of Uganda partnered with various tertiary institutions to enhance vocational and management training options targeted for post-secondary students.

- The Skills for Production, Employment and Development (SPEDA) project, housed at the Makerere University Faculty of Veterinary Medicine, was introduced in 2010 to increase the supply of skilled human capital in the animal industry. The programme is delivered through short modular courses, emphasising hands-on skills development through partnerships with private firms. Government has committed UGX 7.5 billion for a four-year period.

The Uganda Management Institute (UMI) aimed at boostering managerial skills and professional management expertise provides a wide range of various workshops and consultancy services intended for management and administrative professions. Despite these programmes, the unemployment and underemployment notably prevail.

MoFPED points out that in April 2014, Government launched a new Student Loan Scheme to increase the number of tertiary students studying science-related subjects. Government currently offers bursaries to highly qualifying students at higher institutions. However, the introduction of Universal Primary Education (UPE) and Universal Secondary Education (USE) has recently prompted escalation in qualified student numbers thus inadequate to meet increased demand due to insufficient resources. Despite all efforts by the government to stimulate employment creation, unemployment and under employment still prevail in Uganda. van Waeyenberge and Bargawi (2011) observes that these features indicate the failure to develop new

productive capacities in the country and highlight the poor state of the existing productive base of the economy. On the other, they point towards a persistently lop-sided integration into the global circuits of production and trade.

5.5   INFLATION AND UNEMPLOYMENT IN UGANDA

The apparent link associated between inflation and unemployment is one of the most intense debates around in economic circles. Generally, there has always been the notion that there exists a trade-off between these economic variables and therefore the assertion that unemployment cannot be abated with perpetual rise in inflation rates. Policy authorities have long been faced with the dilemma between different objectives as a result monetary policy has to counteract the conflict between various objectives during shocks which ultimately spirals into swelling inflation rates, escalated unemployment or the composition of both. Consequently, the implementation becomes complex and essentially the effectiveness of in built stabilizers will become inadequate. The Phillips curve established that the growth in aggregate demand generates improved employment capabilities stimulates the flow of wages and consequently inflationary pressures. Academic reviews to have empirically evaluated the validity of the Phillips curve in SSA particularly Uganda are notably limited however, Kinda, (2011) and Durevall, Loening and Birru (2013) concur that the complexity of the labour markets in these economies and the pervasiveness of subsistence production then the Phillips curve may not provide the appropriate theoretical framework for modelling inflation dynamics for developing countries. Moreover, Mawejje and Lwanga (2015) maintain that the Phillips curve hypothesis is not appropriate in the evaluation of inflation dynamics in Uganda.

Owing to the country's structural composition, the compact nature of the economy and virtually nearly thorough demonetization during the latter half of the 1980's, the late 1970's- 1980 witnessed instability both politically as well as economically moreover the period 1981-1989 was the transitional and reform period in which various macroeconomic actions were applied to recover the economy consequently the data estimations for unemployment rates for the period under consideration appeared insufficient.

Figure 5.6: Inflation and Unemployment 1980-2013
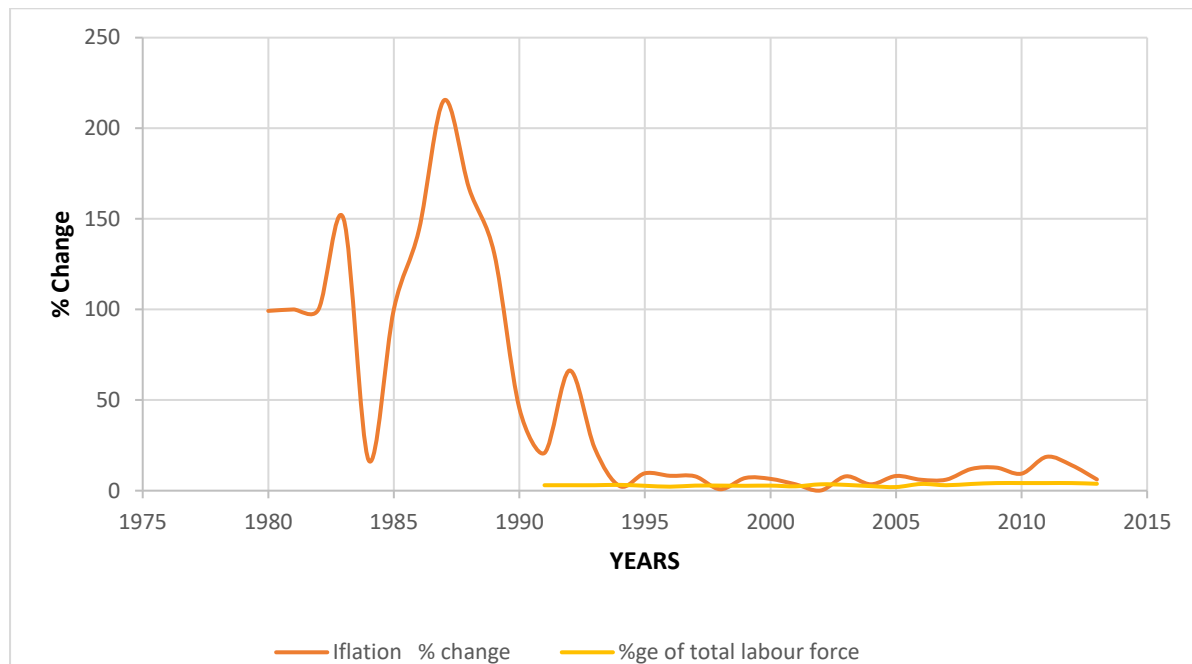
Source: Own calculations based on data obtained from the World Bank

The 1980's was the period of economic crisis in Uganda reflected by hyper-inflation averaging in excess of 100% annually the period 1981 to 1989 reaching its peak in 1986/19876 at 215.4%. From until 1990's inflation averaged under 10% thus since 1996 when core inflation notably decelerated, core inflation generally has displayed a downward trend averaging 4.4% annually between 1996 to 2008 essentially although headline inflation displayed severe variability nonetheless it averaged 5.1% for the same period under consideration. However, beyond 2008 CPI rapidly soared to a five year record from 5% previously to peaking to 15.9% in 2008 and later to 12% in later part of the same year notwithstanding the period 2008 to 2011 inflation surged upwards in which it spiraled in October 2010 to 15.8% and reaching its highest of 30.5% again in October 2011 since the 1980's however, following BOU's pursuit of tightening the monetary aggregates in the country as reflected by BOU's establishment of inflation targeting monetary regime through ITL in July 2011, inflation rates decelerated. On the other hand, unemployment rates up surged from 1.9% in 2005/06 year-on-year to 3.6% in 2010 moreover it peaked to 5.1% in 2012 as noted by International Labour Organization (ILO). Thus, in the past, both have been increasing although it's noted that inflation has significantly declined compared to the

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1980's nevertheless youth unemployment has rather elevated among the unemployed in Uganda.

In the figure 5.6, from 1980 to 1990 Uganda experienced hyper-inflation whilst unemployment rather declined from 1990's however, it's noted that from mid-1990 inflation and unemployment were declining thus this period displayed a positive relationship between inflation and unemployment. However, in 1998 and 2002 inflation decreased more than unemployment whilst from 2005 to 2013 both inflation and unemployment were rising although these two variables exhibit consistence in their fluctuations, recently appears to increase faster than inflation although they both follow an upward trajectory. Hence this revelation about Uganda's macroeconomic environment deviates from the traditional observations in other SSA economies more importantly with in the East African region.

The present monetary policy approach of ITL has substantiated its effectiveness recently, however several analysts and economic observers have displayed their skepticism over a longer period given Uganda's small economy as well as its shallow financial structure. Its relevance is being eased-off by the apparent fact that the monetary policy operating instrument shifted from the base money to the interest rates also known as the CBR and thus the inability of policy authorities to perpetuate inflation rates inside the targeted circle in the long-term. This summarizes into the perceived inadequacies of inflation targeting approach considering that interest rates as the operating instrument and Uganda's substandard financial market hence shows uncertainty of its flexibility therefore increasing pressure for other alternative economic components that might impact the policy targets for unemployment.

5.6   EMPLOYMENT TARGETING

The monetary policy approach undertakes the practice of integrating the benefits of inflation targeting; strengthening transparency as well as responsibility of the central bank besides employing a monetary policy approach which targets feasible goals and key developmental macroeconomic issues in the economy such as job creation alongside stabilization efforts towards inflation. The real variables to be targeted is heavily dependent on the dynamics of a country. Employment targeting is appropriate for countries with high unemployment and under employment of which Uganda is one

of them. With employment targeting, central banks would choose, or be given by the democratic authorities, an employment, employment growth or unemployment rate target (Epstein, 2008). The targets would be pursued by the pre-determined instruments set by the central bank in accordance with the country's composition.

It's important that the intended employment targeting approach considers employment growth alongside inflation in view of the fact that excessive rates of inflation generate negative ripple-effect thus the central banks will likely have to pursue two targets of inflation and employment. This is line with Tinbergen's argument that *policy makers need as many independent instruments as they have independent targets.* Many countries have recently liberalized their financial sector and stamped out restrictions on capital which has led to the prominent use of short-term interest rates as the dominant monetary policy tool by central banks. The pursuit of the both employment and inflation requires the application of multiple monetary tools. The BOU should undertake to enhance employment and real growth by emphasizing policy implementations towards fundamental issues in the country. Hence the smooth success of the employment targeting framework will ultimately depend on its implementation and commitment of the central bank, its therefore imperative that monetary policy makers determine suitable interest rates that prompt the attainment of overall real growth in line with the program that critically considers employment target as a key element.

The central bank should also intend to maintain an inflation constraint that is mutually determined as constitute to the general program. Central banks in developing countries are skeptic about their role in job creation considering that there were majorly tasked on maintaining inflation and/or exchanger rates. As a result, central banks and associated economics researchers the world over, have devoted millions of dollars and countless hours on economic analysis and modelling to figure out the relationship between monetary policy and inflation, whilst spending virtually nothing on discovering the relationship between monetary policy and employment generation (Epstein,2008). The employment targeting will ultimately involve extensive research by the central banks with regards to the application of monetary tools to enhance job creation. Job creation in the developing countries will require credit advancements, the smooth operation of development banks and enhanced developmental lending to achieve

employment expansion. Importantly, in the long-term, institutional arrangement will play a key role towards the achievement of employment targeting hence the monetary authorities' coordination with other financial intermediaries will be paramount in the development of appropriate instruments and programs which will subsequently promote the employment through coordinated administering credit.

5.7   CONCLUSION

The chapter presented an analysis on the dynamics of unemployment and inflation in Uganda. Inflation dynamics and trends over time in relation to money growth were also examined. Furthermore, the scope and patterns of unemployment in Uganda are also presented highlighting the unemployment trends in Uganda in relation to the other East African countries across the region. The chapter further provides various government progammes introduced to address the unemployment issue in Uganda. From the analysis, the underlying issue with regards to employment generation in Uganda suggests lack of productive employment inhibits investment growth which in turn restrains the productive capacity of the economy.

The next chapter examines fiscal policy in Uganda and the relevant policies pursued to strengthen Uganda's landscape.

CHAPTER SIX

FISCAL POLICY IN UGANDA

6.1   INTRODUCTION

This chapter highlights the various taxation trends and expenditure patterns of the government in Uganda as well as Uganda's unemployment trends. The initial section presents various taxation trends and government spending habits in Uganda. Realizing the need to reinforce Uganda's institutional elements, Uganda implemented various fiscal reforms across the economy. This resulted in improved public expenditures and efficient budget process. Recently, there have been apparent changes in Uganda's strategic direction such as expansion of government spending, development of skills development schemes. These are emblematic in the strong rhetoric on a revitalization of the role of the government in the Ugandan economy, mainly through an emphasis on infrastructure provisioning (in particular transport, power and irrigation) Van Waeyenberge and Bargawi (2011).

Overtime, Uganda has embarked on fiscal policy in an effort to enhance employment. As viewed by the World Bank (2013), at the beginning of the FY13, Ugandan policy makers resolved to use fiscal policy to stimulate the economy. The government had already embarked on the fiscal reforms particularly with regards to the public-sector performance. There were reforms in the public service as government signified the fundamental aspect of its role in stimulating the economy in terms of playing the role of 'a partner and facilitator, rather than a bureaucratic hindrance' (Uganda, 1999). The government is motivated to boost job creation through public expenditures and taxes as well as facilitation of private sector growth.

6.2   FISCAL POLICY IN UGANDA

The government recognizes that fiscal policy is the key to success and much effort has in the past decade, gone towards fiscal reforms and the improvement of institutional capacities (Kayizzi-Mugerwa, 2002). Fiscal policy is the use of government spending and taxation to influence the economy. Governments typically use fiscal policy to promote strong and sustainable growth and reduce poverty (Horton & El-

Ganainy, 2012)[9]. Due to the sky-high inflation rates that hovered around 100% in Uganda prior the reform period of the 1990's, Ugandan policy authorities emphasized the implementation of both tight monetary and fiscal policies to curtail the soaring inflation rates. Thus, the pursuit of fiscal policy has ultimately been constrained over the years, which was also aggravated by the high deficit. According to van Waeyenberge and Bargawi (2011), broadly, like monetary policy, fiscal policy in Uganda remained largely conservative during the last decade, with no expressed policy to increase the size of the fiscal deficit. However, in 1990's owing to the shallow government revenue, there was a revamp in terms of tax reforms and attempts to grow the tax base.

The tax reforms embodied four motivations: enhancements of the tax base, boost the tax collection capacity and boost the private sector outlook as well as equitable tax system. According to Kayizzi-Mugerwa (2002), in policy terms, the targets of public expenditure have been declared to be the following: the first one is, increasing the income of the poor via provision of roads to improve access to markets and modernization of agriculture to enhance rural incomes, secondly, improving the quality of life of the poor via adequate provision of health, education, water and sanitation services, thirdly, to ensure that expenditure practices are subject to high levels of transparency and accountability.

Fiscal policy can be used as a stabilization tool of economic activity either through the work of built in automatic stabilizers, through discretionary tax or expenditure measures or through both (Swanepoel & Schoeman, 2003). Government spending is categorized into twofold; government investment consumption and government consumption expenditure. The magnitude of economic volatility and volume of the public budget are both mutually related in terms of policy aspects moreover, there is a strong premise that government participation in economic pursuit is paramount for growth aspects in the economy. This is especially validated by the use of government expenditure by various countries to enhance economic performance. Keynes (1930's), argued that public expenditures ought to be accelerated in view of the insufficient

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9 Mark. Horton and Asmaa. El-Ganainy are both Division Chiefs in the IMF's Middle East and Central Asia Department and Economist in the IMF's Fiscal Affairs Department representatives respectively. IMF (2012), [Online], Available:*www.imf.org/external/pubs/ft/fandd/basics/fiscpol.htm*

private sector consumption and investment. The provision of public goods, merit goods and boost of the supply-side elements in form of education, minimization of externalities and achieving effective resource allocation in the economy particularly low-income countries with structural inadequacies is of prime importance.

6.2.1 Taxation Trends in Uganda 1980-2013

Taxes are essential to finance public services and the functioning of state administrations. High-income countries have a tax-to-GDP ratio upward of 30% compared to about 20% on average in Sub-Saharan Africa (Almunia *et al,* 2015). Due to the fact that the tax authorities during the period 1980's and early 1990's originally emphasized the importance of curtailing down Uganda's over-reliance on international trade taxes which had grew in the 1970's, thus it was manifested through the country's tax revenue capacity. Although most low-income countries had significantly relied on international trade taxes for their revenue prospects over time, Uganda's position was greatly aggravated by the inherited colonial export taxes hence export taxes considerably accounted for the country's revenue receipts.

Since the reform period of 1990, the Ugandan government has had to generate its revenue through the exploitation of the tax rates. In an attempt to boost public revenue, the government also emphasized on the importance of the need for boosting the performance of the private sector investment whilst not aggravating increase in the government expenditures. Since the Africans that had taken over the Asian businesses had resisted taxation, the tax base was seriously eroded (Jamal, 1976). Thus, Uganda's tax base was narrow exasperated by the fact the massive budget deficit which was mainly funded through government banks. Coffee which provided Uganda's largest source of tax receipts (50% of government revenue), experienced deteriorating performance due to the ineffective operations by the Coffee Marketing Board (CMB) during 1980.Hence the period 1980- and early 1990's, government revenue receipts remained persistently minimal which prompted government tax reforms to increase its revenue. In 1991, the government through, the Act 152 (i) of parliament instituted the Uganda Revenue Authority (URA) a semi-independent entity to administer the smooth functioning of the tax system which fostered government revenue receipts. The share of tax revenue to GDP increased from 7% in 1991 to 11.5% by 1998 and 12.4% in mid-June 2004. The effects of trade reform on revenue

collection show that almost all the tax revenue improvement has been in two areas: indirect domestic taxes and direct domestic taxes. The indirect taxes show that sales tax and CTL (commercial transaction levy) increased from 1.8 % of GDP in 1992 to 3.4% in 1996 (Gaalya, 2015). Although VAT succeeded sales tax and the Commercial Transaction Levy (CTL) in 1997, prompting an elevation of 4.4 % VAT expansion in proportion to GDP in 2013 from 1.09% in 1997. However, Uganda's average VAT efficiency ratio of 0.21 for the period 1998/99 to 2011/12 is still well below the average of 0.27 for SSA (Ebrill, Stotsky & Gropp, 1999). Direct taxes through income taxes greatly improved in 2012 to 4.1% from a paltry 0.9% in 1992. According to (Gaalya, 2015), Most of the increase came from individual income tax, which increased steadily from 0.12% to 2.1% of GDP the period 1991/1992 and 2011/2012.

The elevation in tax revenues was a consequence of the prudent fiscal reforms that enhanced the Ugandan economic performance especially in the services and industrial sectors as well as the improved investment outlook that prompted the government tax base. Government tax revenue boosted from 6.8% of GDP in 1991/92 to 12.7% in 2006/07 (Cawley & Zake 2010). The original emphasis of Uganda's tax system since the government reforms of 1987-early 1990's demonstrated the issue of the country's previous reliance on foreign trade taxes which was reflected in the tax revenue operation. The expansion of the service sector especially telecommunications and banking elevated the government's tax revenue to GDP from the year 2002 which further escalated to 13.18% and even constantly averaged 13.4% between 2002-2012, the early momentum in tax revenue performance improvements has not been sustained.

Over the last decade tax revenues have not been responsive to overall GDP growth with the result being that tax revenue performance measured as the tax-to-GDP ratio has stagnated at about 12-13% (Mawejje & Munyambonera, 2016).For much of the 1970's, Uganda depended on export taxes that were a key feature in the colonial times but accounted for large revenue receipts with coffee exports also accounting for large volumes of domestic government revenue which also on the one hand compromised the growth of export sector further stagnating economic growth.

In an effort to foster international trade in Uganda and cut back on the massive pressure subjected to the export sector, government made amendments to the tax

system which constituted discarding-off the export taxes in the 1990's yet on the other hand import tariffs were also trimmed. Import taxes contributed large volumes to the tax revenue in the 1990's although by 1998, several tax and import barriers had been slashed. Cawley and Zake (2010) argue that equally, as a member, Uganda was party to COMESA's and EAC's programmes to gradually move towards zero tariffs on trade with other member countries. The 1980's featured meagre production which resulted from the distortionary tax composition thus in order to enhance domestic taxes, the government instituted a flexible and broader tax based on international standards.

The increase in domestic tax revenue also intensified both direct and indirect tax receipts via the establishment of VAT in 1996, income tax reforms in 1997, Tax Appeals Tribunal (TAT) under the tax appeals tribunal Act in 1997, and automated tax administration aimed at egalitarian taxes towards tax payers. The impact of trade liberalization on tax collection was reflected in the performance of domestic direct and indirect tax revenues for the government. Owing to the towering inflation rates in between 1970's -1990's, government sought to slash the budget deficit, whilst Uganda's fiscal sustainability deteriorated due to the massive debt to GDP proportion resulting into meagre tax revenues recently.

Uganda's previous economic volatility motivated implementation of IMF stimulus packages specifically trade liberalization although it coincided with the shrinking tax revenue GDP ratio hence hindering government efforts to improve the fiscal outlook. Uganda's recent modest tax revenue to GDP proportion has significantly hampered government fiscal attempts resulting into encapsulated levels of public spending for development projects thereby stagnating productivity. Trade liberalization can stifle domestic productivity especially in countries with huge BOP problems like Uganda that exhibit high import demand in relation to domestic products. The elevation in import levels can potentially stifle domestic production thereby negatively impacting domestic tax revenue. Growth in domestic revenue has been more modest, rising from 10.5% in 1996 to more than 12% in 2005, still well below the average of 18% in Sub-Saharan region (World Bank, 2007). The government tax revenue buoyancy emanated from the political stability which induced foreign investors, foreign grants, development expenditures, and trade openness, manufacturing sector boost and fiscal reforms across the country.

According to Gaalya (2015), in Uganda, tax revenue has increased as a percentage of GDP, but the government's expenditure as a percentage of GDP has been far higher than that of the tax revenue collections. This implies that tax revenue inturn remains inadequate to finance government budget. The direct taxes show that income taxes increased steadily from the exceptionally low level of 0.9 % to 4.1% of GDP between 1991/92 and 2011/12. Most of the increase came from individual income taxes, which increased steadily from 0.12% to 2.1% of GDP between 1991/92 and 2011/12.this was underlined by improvements in tax administration and tax compliance (Gaalya, 2015).

The new VAT law: was generally easier to understand and interpret, and therefore huge strides were made to help compliance and improve transparency; and removed the Minister of Finance's power to grant exemptions on a discretionary basis (IMF, 1999). The tax structure in Uganda is basically residence-based, comprising a 30% benchmark for corporate taxes whilst capital gains are grossed in relation to corporate yields and ultimately taxed at the benchmark corporate income tax rate. Resident companies are taxable on their worldwide income and gains whereas non-residents are taxed on income sourced in Uganda. Uganda-sourced income is clearly defined for purposes of the Income Tax Act (PKF, 2013). Government has emphasized that the central aim of the tax policy was to increase the ratio of revenue to GDP, simplify the tax system, lower rates and equity considerations[10].Tax policy actions in Uganda are intended to conform to Poverty Eradication Plan (PEAP) objectives, foster human development moreover promote welfare of the low-income groups in society.

Uganda's tax system is comparable to global benchmarks. In that income and corporate tax rates in Uganda are 30%; VAT tax rate is 18%, and import duty rate is 25% of the import value (Mawejje & Munyambonera, 2016). As in most African economies, Uganda implemented Structural Adjustment Programmes (SAPs) in the late 1980's and early 1990's. The programmes and policy measures sought to reduce external balance, the SAP policies attempted to influence imports demand and tax performance (Gaalya, 2015). Tanzi (2003) is of the view that, more specifically the low-income countries tend to replace trade taxes with domestically based taxes. Thus,

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10 Review Report by Uganda Debt Network (2008), Uganda's Taxation Policy; Implications for poverty reduction and Economic growth. Accessed [Online 05-08-2016] http://s3.amazonaws.com/zanran_storage/www.udn.or.ug/ContentPages/2468623957.pdf

the change has manifested in several low-income countries including Uganda. The period 1980's exhibited large volumes of revenue in terms of trade taxes which accounted for 73% although it has deteriorated in recent past to 39.9%. On the other hand, Tanzi (2003) further asserts that while the replacement of trade taxes with domestic taxes would occur as a natural process accompanying growth, trade liberalization which results from specific policy decisions would accelerate the process by forcing some countries to reform their tax system more quickly in order to protect the level of their tax revenue. However, the different structural components in different countries, complexity with regards to administering taxes as well as absence of institutional independence in other countries would hamper the transformation in tax systems as a result the switch from trade taxes to other taxes could negatively affect revenues.

The basic rate of corporate income tax in Uganda is 30%[11]. According to (AfDB, 2010), corporate tax contributions constituted 12% and 20% of inland revenues in 1996/97 and 2007/08 respectively, and grew at an average annual rate of 30% partly as a result of the expression of the telecommunications and banking sectors. Following the tax reforms undertaken by fiscal authorities in the 1990's which incorporated establishment of VAT tax as well as income tax, the share of domestic revenue in proportion to GDP expanded even reaching as high as 11.9% in the period 1998/99.in addition no-tax revenues have also contributed significantly to Uganda's revenues particularly; passport fees, corporate regulation fees, migration fees and mining fees and loyalties.

Moreover (AfDB, 2010) observed that the period 2002/03 to 2007/08 recorded significant contributions in form of migration fees which peaked at a growth rate of 33.5%. Owing to the insufficient domestic revenues, URA's fiscal revenues remains heavily dependent on import and excise duties particularly imports on petroleum products. Whilst the proportion of customs and excise revenue as a percentage of total domestic resources fell from 53% in 1996/97 to 36% in 2007/08, it remains the largest

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11Report on Uganda tax system in a nutshell by Celia Becker, written for Bloomberg BNA, Tax Planning International, European Tax Service, and Vol 16.7-07-2014. [accessed Online] 06-08-2016.https://www.ensafrica.com/news/Uganda-tax-system-in-a-nutshell?Id=1521&STitle=tax%20ENSight%20#

revenue source. Nonetheless it is significant that since its introduction in 1996/97 to 2007/08, VAT revenue (the second largest revenue source) grew at an average annual rate of 16.3% (AfDB, 2010). The significant amount of revenues from VAT originally was a result of large foreign telecommunications and supply chain stores into the Ugandan market. Cawley and Zake (2010) ascertained it to "Large payers with more transactions and some administrative improvements". However, Cawley and Zake (2010) maintained that there was scope for the VAT tax base to expand even more if government had not further expanded the tax exemptions provision for items. Likewise, by 2007/08, Inland Revenue (PAYE), corporate income and local excise taxes), the second largest revenue source, comprised almost 30% of total revenues collected by the URA, a marked increase from its contribution in 1996/97 of 17% (AfDB, 2010).

According to (AfDB, 2010), throughout the period PAYE was the largest contributor to Inland Revenue (accounting for almost 50% in 2007/08), and grew at an average annual rate of 29% between 1996/97 and 2007/08 despite the reduction in tax rates. The rise in PAYE is attributed to the improvement of the economy particularly manufacturing and service sectors as well as the expansion in formal employment. Cawley and Zake (2010), further note the fact that all government employees began to make PAYE contributions from 1998/99 and improvements in tax administration and compliance.in nominal terms, revenue collection has more than doubled. Net URA collections increased from Uganda shillings 797.43 billion (US $ 670 million) in 1997/98 to Uganda shillings 3,159.0 billion (US $ 4 billion) in 2007/08 (SEATINI-UGANDA, 2013). Since 1997/98, there has been magnified contributions from the leading revenue sources. The highest growth in nominal revenue of 810 percent was in PAYE. This was followed by corporate income tax with an increase of 689 percent and the least amount of change was observed in excise tax (159 percent) SEATINI-UGANDA (2013).

Other income taxes mainly withholding tax, presumptive tax, tax on bank interest, and rental tax have assumed steadily increasing importance over the period 2000/02, reaching 2.1% of GDP in 2011/12 long run (Cawley & Zake, 2010).Government relies on a few Multi-National Corporations(MNCs) to realize corporate income tax, with the top five companies accounting for 40% of the tax, and this tax head contributes about

only 6-8% of the total national revenue, as compared to 24% for South Africa and 16% for Rwanda. PAYE tax is greater than corporation tax in the ratio of 2:1 (SEATINI-UGANDA, 2013). The government has maintained the same tax rate structure since 1993/94 with an annual (tax free) threshold of UGX. 1,560,000 (US$ 624) which has been increased in the 2012/13 budget to UGX. 2,820,000(US$1,128).at the time the threshold was introduced in the financial year 1993/94, the annual threshold was equivalent to US$ 1,415. Given that this is at the first taxable level of 10%, the maximum monthly tax benefit to an employee who had to start paying tax at UGX 130,000 (US$ 52) which has been raised to UGX. 235,000 (US$ 94) is UGX. 10,500 (US$ 4.2) SEATINI-UGANDA (2013). The government through URA, reinforced to promote export production which constituted the endorsement of fundamental export subsectors that would potentially enhance export yields, boost job creation as well rebuild the general economy.

The government policy actions reflected with regards to priority sectors being provisioned for public spending or/and tax exemptions/ incentives thus tax authorities switched the target of tax collection from export taxes to income and consumption taxes. Consequently, some of the major export revenue contributions particularly agricultural products of coffee, cotton, cereals and tea were all narrowed or discarded. According to Isachenko and Schlichte (2007), in order to encourage production and investment, the government of Uganda chose primarily tax income and consumption rather than production or trade. Kasumba and Stephen (1996) further note that, the share of domestic direct taxes or income taxes was as low as 10% of the total revenue about 15-20% years agoin the early 1990's, the contribution of income taxes in Uganda was below the Sub-Saharan African average share of taxes of about 20% GDP. Which was regarded as unacceptable by IMF that incidentally required prudent intervention. The country has accordingly moved on with income taxes currently contributing about 32% of total revenue (SEATINI-UGANDA, 2013). A 2011 URA report notes, income tax is charged on every person who has chargeable income for each year of income. Chargeable income is derived from three main types of income; business, employment and property.

Income tax is administered under the Income Tax Act (1997) Cap 340 (URA, 2011). The tax rate charged to individuals is standard regardless of gender or marital status.

Personal income taxes in Uganda are imposed on the basis of income, irrespective of gender (Bategeka, Guloba & Kiiza, 2009). Indirect taxes especially taxes on consumption of goods and services have increased significantly as much as income taxes consequently, there has been a shift from international taxes to direct and indirect tax revenue with regards to the predominant contributions in revenue. The trend over the past five or so years shows progressive increase both in quantum and proportion of domestic taxes against international taxes, moving from a contribution of 60% by taxes on international trade in 1990/91 to the current position of 45% for the year 2011/12 (SEATINI-UGANDA,2013).

Table 6.1: Income Tax Table for the Year 2015

Resident Individual annual chargeable income (Uganda shillings)	Income Tax rates
0 –2 820 000	0%
2 820 001 – 4 020 000	10% of the income amount above Ushs 2 820 000
4 020 001 – 4 920 000	Ushs 120 000 + 20% of the amount above 4 020 000
Over 4 920 001	300 000 + 30% of the amount above 4 920 000; and Where the chargeable amount of income is above Ushs 120 000 000 + additional 10% is charged on the amount above 120 000 000

Source: Uganda Revenue Authority (URA) (2008/09)

The 2015 individual income tax may potentially describe Uganda's progressive income tax approach. Accordingly, the income tax table is represented in the form of a table in table 6.1 which displays the first column the various taxable income brackets. In Uganda, an individual earning an employment salary of Ushs 235 000 per month earns an annual income of Ushs 2 820 000 which would be tax free. An individual who earns a salary of Ushs 300 000 per month earns taxable income of Ushs 3 600 000 per annum which incidentally is categorized in the second tax bracket (between Ushs 2 820 000 and 4 020 000). The second column exhibits the numerous rates of tax as prescribed by the URA. An individual who earns Ushs 3 600 000 per annum is liable

to URA for tax rate of 10% whilst an individual earning Ushs 5 000 000 annually is liable to URA for a tax amount of Ushs 120 000 + 20% of the amount exceeding Ushs 4 020 000.Uganda achieved considerably improved levels of domestic revenue in the first seven years following the establishment of URA, with tax and non-tax revenue collections rising by 5.1% to 11.9% of GDP in 1998/99 (AfDB, 2010). The tax various reforms undertaken by URA were motivated by the desire to condense Uganda's considerable dependence on donor funds. The reforms comprised of; adjustments in the currency system, revising the tax and fiscal frameworks in an effort to stimulate revenue collection as well as curtail down public spending and more importantly dedication towards steady growth and recovery. Tax on income is growing at faster rate than the tax on goods and services (SEATINI-UGANDA, 2013). It is estimated that the top 35 tax payers in the country (which are mostly Multinational Companies) account for about 50% of the total tax revenue (Matovu, 2010). AfDB (2010), noted that in 2008, large tax payers constituted only 1% of the entire tax payer base but contributed 72% to tax revenues. The contribution of income tax to total tax revenues rose from approximately 27% in 2007/08 to 33% in 2011/12(Kangave & Katusiimeh, 2015).

This may be a consequence of the fact that taxes on goods and services have slumped in spite of the considerable contribution from VAT. Accordingly, Sennoga et al (2009) noted that the bulk of income taxes on individuals are paid by households residing in Kampala (the capital city) largely due to the fact most formal jobs are located in Kampala. The individual income tax threshold is Ushs 235 000(US$ 90.8, taking into consideration the exchange rate that was applied by the authors; 1 US$ to Ushs 2586) per month as instituted by the Income Tax Act, Cap 340, meaning that majority of the population "employed" largely in subsistence agriculture and the informal sector are not subjected to Income tax.

Table 6.2: Non-Resident Individuals Tax Rate in Uganda for the year 2015

Annual Chargeable income (Ushs)	Income Tax Rates
Not above 4 020 000	10%
Above 4 020 000	Ushs 120 000 + 20% of the income amount above 4 020 000
Above 4 920 000	Ushs 582 000 + 30% of the income amount above Ushs 4 920 000 Where the chargeable amount is above Ushs 120 000 000 an extra 10% is charged on the amount by which chargeable amount is above Ushs 120 000 000

Source: URA (2008/09)

Following the various tax amendments in Uganda's tax system, there was also establishment of the new Income Tax Act of Uganda in 1997 that was substituted for the 1974 Income tax Decree, nonetheless the 1993/94 PAYE threshold was adjusted upwards in 2012/13 taking into consideration the volatile inflation dynamics across the economy as well as Uganda's fluctuating currency particularly against the US dollar. According to Bategeka, Guloba and Kiiza (2009), the majority of the Ugandan population is employed in agricultural activities and most noticeably in self-employment. This pattern of employment has negative implications for the ability of the government to raise a substantial amount of tax revenues from personal income taxes.

In Uganda, PAYE accounts for a considerable proportion of income taxes with corporate and withholding taxes being the other sources of revenue respectively. The government has always been reluctant to review the PAYE tax rates since 1997 indicating that the performance of PAYE contribution to GDP is largely dependent on growth of the economy since there would be improvement in employment during periods of economic recovery. Importantly, URA revenue collection has been held back by the insufficient performance of the informal sector which is hard to tax. In the period 2002/03 to 2006/07, net government revenue grew by 119.55% (URA, 2008). The contribution of domestic taxes to total revenue grew from 49.36% in 2002/03 to 50.09% in 2006/07 to total tax revenue. Growth in direct domestic taxes was by far the most impressive at 125.98% in the same period (Bategeka, Guloba & Kiiza, 2009).

Table 5.2 displays the different income tax rates applied to non-residents in Uganda. The first column shows the various taxable incomes represented by the taxable income brackets for non-residents. The tax for a non-resident person is only charged on income derived from sources within Uganda (URA, 2011). a foreign individual who earns an income salary of Ushs 335 000 monthly earns taxable income of Ushs 4 020 000 annually and hence will be liable to tax rate of 10% which is the minimum income bracket. The second column displays the different rates of taxes as subjected to the non-residents. A non-resident person who earns above Ushs 4 020 000 annually is liable tom a tax of Ushs 120 000 + 20 % of the amount that exceeds Ushs 4 020 000. Uganda's collective tax revenues over the period 1980-2013 is displayed by figure 5.3.the figure shows the trend of tax revenue over the period 1980-2013 which grew at an insufficient level. Initially, Uganda's tax-to GDP ratio was slow even when compared with its regional counterparts of Kenya, Tanzania and Rwanda.

The period 1971-1979 was characterized with political instability, attributed to the military rule under President Idi Amin hence as a result the economy was severely battered. This is reflected by the low tax rates between 1980's and 1990's in 1980-85, there was also civil strife and political instability that led to negative GDP growth rates (National Development Plan, 2010). General Idi Amin, expelled citizens of Asian origin whose number is estimated to have been between 50,000-70,000 and expropriated their private property (Isachenko & Schlichte, 2007). This greatly affected the economy as a whole on account of the fact that Asian commercial businesses, manufacturing as well as large agricultural developments formed the cornerstone of the private sector.

Figure 6.1: Government Tax Revenue (1980-2013)
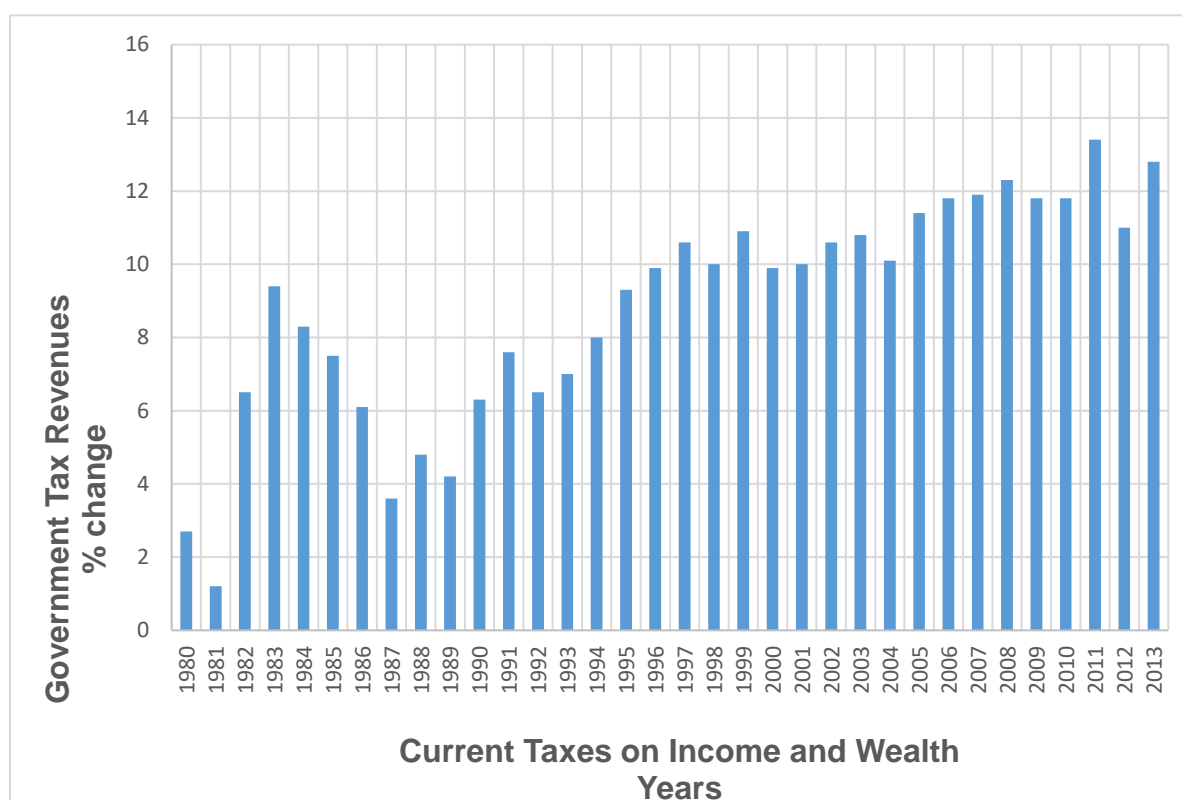
Source: Own calculations based on data obtained from, Mansour (2014)

This led to tax revenue, the national budget and the economy to plummet to their lowest point in the stay of Uganda as a country (Jaimovich & Kamuganga, 2010). Isachenko and Schlichte (2007) noted that tax revenue to GDP ratio declined from about 13% in 1970 to 6% in 1979. The new government sought to improve the economic outlook through numerous economic and tax reforms so as to mobilise resources to fund large infrastructure developments. The major tax reforms implemented by the government included; establishment of semi-autonomous revenue agency in 1991 called the Uganda Revenue Authority (URA), introduction of VAT in 1996, enactment of a new Income Tax Act in 1997 and a range of other reforms spread over the years since 1992 that have entailed carrying out tariff reforms and abolishing export taxes and the modernisation of URA process. Uganda's tax system is influenced by the national socio-economic status of the country (SEATINI-UGANDA, 2013). After a sharp increase in the 1990's, Uganda's ratio has stagnated around 10-11% for almost two decades, increasing only by 0.2%points per year on average in the past ten years. In 2013/14, tax collections financed 71.5% of the government's

budget, an improvement compared to 2004/05's 58% (URA, 2014). In Uganda, personal income taxes are collected from employees via the progressive Pay as You Earn scheme (PAYE) which was instituted in 1991.PAYE is withdrawn from the employees' salary earnings directly from the source by the employers then to URA. The share of individual income taxes was sufficiently low in relation to the Sub-Saharan Africa during the initial period of 1990's. In 2005/06, PAYE collections amounted to Ushs 266 billion, of which public employees contributed Ushs 121.9 billion. The workers in the highest income bracket paid 77.6% of PAYE (Bategeka, Guloba & Kiiza, 2009).

According to Gaalya (2015), in the early 1980's, Uganda collected as much as 73% of its total revenue from trade taxes. Today it collects almost 39.9%. Between 1986/87 and 1993/94, income tax rates were gradually lowered from 60% to 30%; a 2% withholding tax was introduced on certain items; and the individual income tax threshold gradually increased from Shs. 50 000 (US$ 19.3) to Shs. 840 000 (US$ 324.8) per annum (Bakibinga, 2002) the period prior to the 1970's exhibited considerable performance in Uganda reflected by the average annual growth rate of GDP of 5% combined with the steady flow of tax revenue as a proportion of GDP in 1970, inflation rates were effectively controlled whilst the government fiscal deficit was also kept in check. Subsequently, the early 1980's recorded low tax revenues which was prior to the establishment of URA. Between 1984 and 1986, triggered by the political instability during this period, the ratio of tax revenue to GDP remained to 6-7% thus the taxation trends were considerably insufficient specifically in real terms.

The period 1989 to 1999, tax revenues increased at an increasing rate which may have been driven by the different tax reforms that Uganda implemented during the 1990's. The SAPs that Uganda embarked on in the late 1980's and 1990's had various tax components; a strategy to widen the tax base, gradual lowering of tax rates, simplifying tax bands, an introduction of VAT, a reduction and subsequent abolishing of export tariffs, reducing import duties, reducing the number of goods subjected to excise duty and making adjustments in tax administration (Fjeldstad & Rakner, 2003; Bakibinga, 2002). The motivation behind URA's establishment was to boost revenue receipts in proportion to GDP ratios annually over time exhibited positive results in the initial period as the tax-to- GDP proportion expanded from 1991 to 1997. Although the

share of international taxes to total taxes has considerably diminished over time, Uganda's largest fiscal yields have constantly been driven by international taxes, income taxes and VAT respectively. Income taxes have greatly improved over the years but the share of domestic direct taxes to total revenue remains sufficiently low. The informal sector in Uganda is large and is one of the major hindrances to improvements in tax revenue performance (Mawejje & Munyambonera, 2016). Agriculture accounts for 23% of GDP, but only 0.8% of tax revenue. These structural features are an obstacle to the enlargement of the Ugandan tax base, as in other developing countries (Almunia *et al*, 2015). The capacity of GDP is paramount to the success of the economy as the implementation of tax rates is highly dependent on GDP yet the effectiveness of the tax framework and revenue is determined by the volume of GDP, hence the proportions of these two variables ultimately determines the economic status of a country. According to AfDB (2010), whereas the revenue realised by URA is persistently increasing, the tax to GDP ratio is, within the range of 12-13%, making Uganda one of the countries with the lowest ratio in the EAC and SSA. Generated revenue between 2006/07 and 2011/12 considerably increased further substantiating the observation that revenue collections have been steadily growing although the tax revenue-to-GDP ratio has persistently lagged behind.

Tax revenue also increased during the early 2000's. This may be as a consequence of Uganda shifting from over dependence on export taxes as the prime sources of revenue especially following the liberalisation of the coffee market. The composition of the domestic tax revenues is characterised by a gradual shift away from international trade taxes towards domestic indirect taxes. For example, the share of international trade taxes has declined to 46% in 2012 from 59% in 1999 while the importance of domestic taxes has increased from 37% to 50% during the same time (Mawejje & Munyambonera, 2016).

AfDB (2010) presented the following major income tax policy changes implemented in Uganda during the period 2000-2008 which ultimately was based on improving the tax system as well as restoring the government image.

- In 2001/02, on the one hand to widen the tax base, interest payable on Treasury bills became taxable. On the other hand, to promote the development of a stock

exchange, expenses relating to initial public offerings became an allowable tax expense.

- In 2003/04, to promote exports, the government indicated it would provide firms operating in export processing zones with various incentives such as s ten-year corporation tax holiday, duty exemption on raw materials, plant and machinery and other inputs

- In 2005/06 to expand access to finance, interest earned by financial institutions on loans granted to persons engaged in the agriculture sector was exempted from income tax.

- The tax amnesty of 2007/08 also covered income tax. Also, to promote exports and thereby stimulate economic growth in 2007/08 the government offered various incentives including a 10-year tax holiday to companies engaged in value added exports, which is limited to export of finished consumer and capital goods.

According to AfDB (2010) URA's performance effectiveness is comparatively low in terms of both tax effort and tax gap. At 60.3%, in 2005, Uganda's tax effort was well below the level of Kenya (90.5%). But better than those of Rwanda (57%) and Tanzania (54.4%). However, Uganda's tax effort increased by 6% points between 2001 and 2005. During the same period, Uganda also managed to reduce its tax gap by 1 % point to 7.8% of GDP. Still, there is considerable scope to further reduce the tax gap.

6.2.2   An Overview of Government Revenue (1980-2013)

In many developing countries high deficits, rising debt and rapid inflation in the 1980s and 1990s led fiscal policy to focus largely on stabilization (World Bank, 2007). In many developing countries, however, tax revenue from citizens is not the main revenue source of governments. Instead, revenue from either mineral resource wealth or international donors dominates the revenue base and hence affects the way the political elite prioritizes policies (Moore, 2008; Ulriksen, 2013). Following the political and economic volatility in the 1970s, Uganda under the new leadership endeavoured to boost public resources, through mobilization of foreign Aid which was used to further

restore the economy, maintain growth prospects and narrow down poverty levels. Since the late 1980s Uganda has exploited the significance of foreign aid especially with regards to the development budget as well as curtailing poverty rates. Aid in Uganda has been linked to prudent policies, institutional reforms and bolstered long-term growth. Importantly, in Uganda government revenue is categorized into tax and non-tax revenue. Developed countries use fiscal policy as a short-term policy instrument mainly to minimize output and employment variability in the short-run hence fiscal policy is considered an essential short-term instrument in advanced economies. In a developing country context where basic public goods provision is inadequate, market failure is more common and coordination gaps abound, fiscal policy has a stronger role to play in longer-term growth and poverty reduction (World Bank,2007). Over the previous decade, some low-income countries have however applied fiscal policy as a short-term stability mechanism specially to slow down public spending which has hampered the long-term growth prospects.

Fiscal reforms have helped the government to streamline its budget, improve revenue collections and prioritise expenditures (Kayizzi-Mugerwa, 2002). Over the 10 years to 2005, the rise in revenues from 15 to 20% of GDP has been driven by an increase in foreign grants. Foreign grants have risen from 4% of GDP in the mid-1990s to around 8% of GDP in 2005 (World Bank, 2007). During the recent past, Uganda has incorporated large amounts of international aid to its revenue receipts ascribed to the insufficient domestic tax revenues. Thus, foreign aid has contributed significantly to Uganda's GDP. On average, between 1990 and 2006 Uganda received foreign aid worth 11% of its GDP. This long-term interaction of aid with government spending, tax revenues and public borrowing appears to have led to a situation where development assistance has become incorporated into the country's fiscal calculations on par with those other variables (Bwire, Morrissey & Lloyd, 2013). International aid has demonstrated a positive impact towards tax revenue, government expenditure and borrowing.

In some low-income countries aid boosts capital through recurrent expenditure and /or it tends to limits fiscal deficits. Over the last thirty years, the Ugandan government seems to have incorporated aid into its fiscal planning; ostensibly planning to fund its expenditure via tax revenue, aid and domestic borrowing in that order (Bwire,

Morrissey & Lloyd, 2013). Uganda's fiscal policy as outlined in chapter 8 of the Poverty Eradication Action Plan (PEAP) puts stability before growth (World Bank, 2007). The PEAP emphasizes moderate government spending in line with modest inflation rates yet taking into consideration the importance of managing the public deficit in the attempt to enhance credit to the private sector. The PEAP also endevours to narrow down heavy reliance on international aid and minimization of external debt sacrifice. Uganda's pursuit of fiscal goals has revolved around the contribution from donor aid. Uganda's fiscal sustainability has been hampered by the narrow tax base, tight budget and large government spending which has greatly impeded the recovery process. The fiscal sustainability depends on the current level of debt (domestic and foreign), and the government's willingness to tax and impose aggressive measures as necessary in order to service debt (Rena & Kefela, 2011). The untenable fiscal situation may ultimately precipitate declining investments to fund government ventures which may increase borrowing costs.

From the late 1980s, Uganda entered its current trajectory of macro-economic and fiscal stability and poverty reduction (AfDB, 2010). Following the 1979 political turmoil and economic maladministration in Uganda, various economic reforms were implemented in an effort to rebuild the shattered economy. The regime embraced Structural Adjustment Programmes (SAPs), under SAPs, the government of Uganda liberalized prices and trade in the domestic market, foreign exchange and payments. These measures enabled Uganda to diversify its exports. Furthermore, under SAPs, government restructured and divested its holdings in private enterprises (AfDB, 2010). The subsequent economic reforms that entailed the institution of URA generated positive outcomes for the economy. Tax and non-tax revenue collections rose by 5.1% to 11.9% of GDP in 1998/99.in addition, since 1991/92, non-tax revenues have contributed an average of 7% of total domestic revenue collected each year (AfDB, 2010). Uganda's fiscal deficit rose in the early years (e.g. to 11.5% in 2003/04 from 6.5% in 1997/98) due to the absolute expansion in the size of the government budget which was financed largely by borrowing externally (Ayoki, 2008).

Bwire, Morrissey and Lloyd (2013), noted the following essential observations about Uganda's fiscal conduct; one, foreign aid is a significant element of Uganda's long-run fiscal system. Two, aid is associated with increased tax collection effort and public

spending in Uganda.as Uganda's tax structure is not expected to change significantly in the medium term, the country must continue to rely on donor resources to meet its expenditure requirements. Grants are estimated at Ushs 991.4 billion for 2004/05, Ushs 963.7 billion for 2005/06 and Ushs 1 000 billion for 2006/07 (World Bank, 2004). Although total revenue has been increasing, the share of domestic revenue collection remains insubstantial and its ratio to total GDP which greatly hampers the conduct of fiscal policy in Uganda. The Ugandan total government revenue between 1997 and 2013 is graphically illustrated in the figure below 5.4.

Figure 5.4 illustrates that total government revenue has been increasing since 1997. The revenue collection peaked in 2005. The positive revenue levels may be attributed to the SAPs that Uganda implemented in the 1990's. According to (AfDB, 2010), by the mid-1990's, Uganda entered into a trajectory of macro-economic and fiscal stability. Tumushabe (2009), acknowledges that the National Resistance Movement (NRM) and president Museveni provided the leadership and governance discipline that helped turn around the fortunes of the country. However, revenue contraction was observed since 2008. According to Kayizzi-Mugerwa (2002), fiscal reforms have helped the government to streamline its budget, improve revenue collections and prioritise expenditures. However, fiscal reforms have not been easy in a country with a past of political and economic chaos.

The few aspects to have impeded effective application of fiscal improvements is the issue of government's commitment to donor provisions whilst at the same time maintenance of unconditional promotion of domestic sectors. Improving the contribution of the agricultural sector to tax revenues, therefore, will require support geared towards improving productivity, growth, formalization and commercialisation in the sector. (Mawejje & Munyambonera, 2016). Di John and Putzel (2005) argue that the case against rapid tariff reduction as a means for maintaining and increasing fiscal resources, a key element in state consolidation and state-building, is one of the main lessons in the political economy of the Ugandan post-war reconstruction because; first, the replacement of export taxes was important in improving incentives for exports. Second, the substitution of export taxes with import taxes (however much dispersion) was essential for maintaining resource mobilization which was central to state-

building. Thirdly, a dispersion of imports taxes allows the state to provide selective rents (and therefore incentives) for the development of particular sectors.

Figure 6.2: Total Government Revenue (1997-2013)
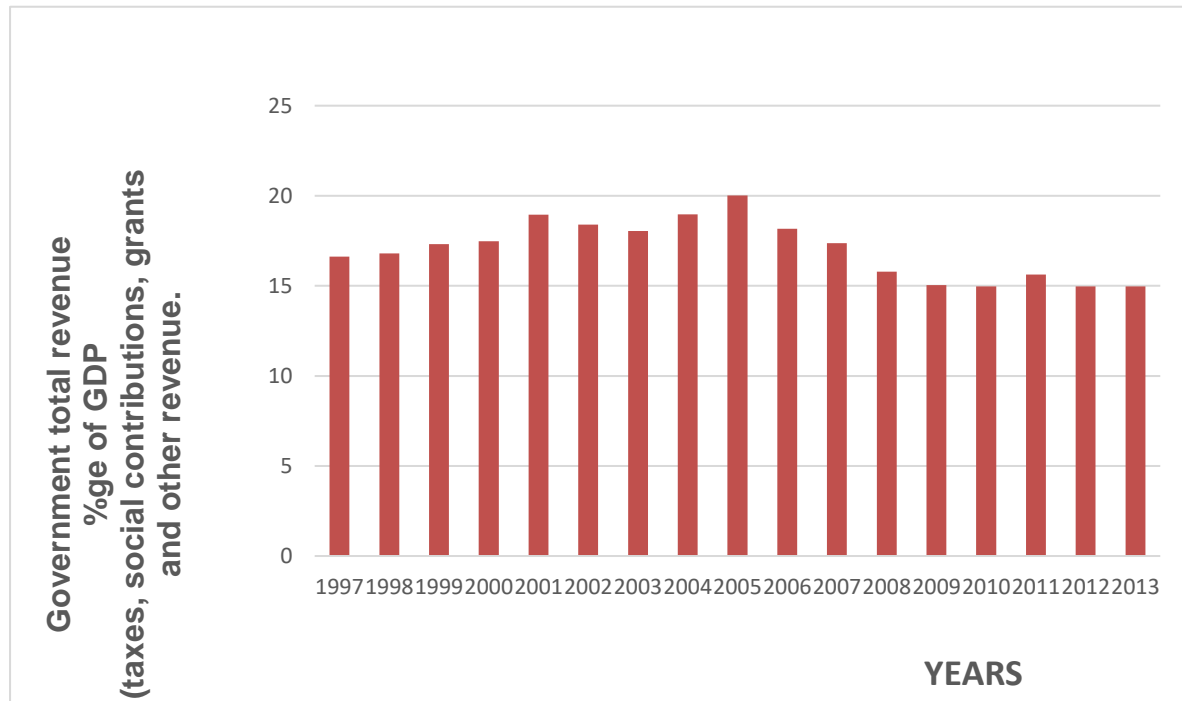
Source: Own graph based on data obtained from IMF, World Economic Outlook (WEO) [Accessed Online] http://www.econstats.com/weo/CUGA.htm.

6.2.3 Government Expenditure (1980-2013)

Public investment affects rural poverty through many channels. It directly increases farmer incomes by increasing agricultural productivity, and increased productivity, in turn reduces rural poverty (Fan, Zhang & Rao, 2004).

Over the recent past, since 1986, the government has endevoured to accumulate billions of shillings towards provision of improved standards of living for countless Ugandans. The National Development Plan (NDP) covers the fiscal period 2010/11 to 2014/15. It stipulates the country's medium term strategic direction, development priorities and implementation strategies (NDP, 2010). By 1962, when Uganda attained its independence, the economy was vibrant with growth and savings increasing steadily. The country was running a trade surplus, primarily through agricultural, textile and copper exports (Fan, Zhang & Rao, 2004). The agriculture sector had greatly blossomed domestically and internationally whilst domestic demand for raw materials

was catered to by the small-scale industrial unit. However, attributed to the delicate economic and political situation that prevailed between 1979 and 1980's, the agriculture and industrial sector declined significantly whilst the Asian exodus resulted into massive decline of human capital. The economy slipped into disorganization. The early 1990s witnessed considerable economic recovery in terms of GDP growth rates as well as reduction in poverty levels. As a result, the share of the population below the poverty line fell from 56% in 1992 to 35% in 1999 (Fan, Zhang & Rao, 2004). Government's desire to accelerate growth and narrow down the distribution of income in Uganda has been motivated by the need to alleviate poverty levels. Over the recent past the government has reversed its preferences with regards to the national development programme particularly the need to accelerate public expenditure so as to achieve desired goals.

According to (Fan, Zhang & Rao, 2004), Economic theory provides rationales for government expenditure; correcting market failures and improving equity are the two primary ones. When a market economy fails to allocate resources efficiently, market failure occurs. Through the application of public regulations, taxation and/or subsidy and public allocation, negative externalities like pollution can be controlled. The argument of the relevance of government provision of resources becomes more apparent especially in low income countries since the private sector seems reluctant to provide these public goods, due to their complementarity and no-rivalry features attached to them. The dynamics of the market-oriented economy generate social disparities which ultimately widen the income gap, as a result government intervention is imperative to limit escalation in social disparities hence purposely transferring basic resources to the vulnerable individuals.

Basic services of housing, health care and food have been established as fundamental anti-poverty drivers for government programmes. Owing to the fact that welfare transfer approaches have not effectively minimized poverty levels across various countries, governments have further pursued this objective through extensive spending on public investment in a bid to also enhance growth- accelerating prospects. Importantly, government expenditure also significantly promotes the growth of the private sector. It is noted that government priorities tend to be manifested in the nature and magnitude of public expenditure patterns. The relative spending priorities

in Uganda have not changed much since the late 1980s. In fact, the top three expenditures for Uganda in both the 1980s and 1990s were defense, general public administration and education whilst lowest percentages of expenditures were for agriculture, roads, health and social security (Fan, Zhang & Rao, 2004). From 1986, when the NRM government assumed power expenditure focused on economic recovery, political stability and social standards enhancements across the country. Uganda's government expenditures in constant 1997 prices increased from Ushs 264 billion since 1982 to Ushs 1 043 billion in 1999, a growth rate of more than 8.4% per annum (Fan, Zhang & Rao, 2004)[12]. The key determinants of Uganda's growth through the 1990s have been identified as improved security, the restoration of macroeconomic stability after years of chaos and the removal of economic distortions (World Bank, 2004).

The current study categorises government expenditure into two broad categories; government investment expenditure and government consumption expenditure. Government investment expenditure (also commonly known as capital expenditure) ultimately absorbs a large proportion of total government revenues. The expenditure comprises of summed government spending on development of infrastructural requirements across the country. The observation as recognized by (World Bank, 2010) is that in recent years the Government of Uganda has shifted the priorities in its national development strategy as there was accumulating evidence that infrastructure deficiencies had become a binding constraint to economic growth and poverty reduction. Prioritization of infrastructure spending has been shown to lead to higher growth outcomes due to the increased household productivity from the positive externality effects associated with good infrastructure (Matovu, 2000). In the last 15 years, the Government of Uganda (GOU) has made substantial investments in rehabilitation and maintenance of Districts, Urban and Community Access Roads (DUNCAR) is estimated at Ushs 740 billion (US$ 400 million). the impact of the investment in the last 15 years has been substantial since the proportion of district roads from fair to good condition has increased from 15% in 1990 to 65% in 2007 (World Bank, 2010). Between 1970 and mid- 1980s, Uganda experienced economic

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[12] The Authors presented all the government expenditures into 1997 constant prices having converted them and employed the GDP deflator.

slippage and political instability which shattered the country's physical infrastructure and manufacturing units. By the 1990's when NRM assumed power, there was economic volatility as inflation had skyrocketed whilst the tax base was significantly inadequate. As a result, government devoted its policy actions on recuperating the damaged economy. This led to the implementation of various macroeconomic reforms so as to improve the volume of public expenditure as well as tax revenue. As a percentage of GDP, Uganda consistently increased its spending during the 1980s from 9% in 1980 to 16% (Fan & Rao, 2003). Uganda's total government revenue was 10-11% of GDP, 4-9% percentage points smaller than the expenditure share (Fan & Rao, 2003). As a result, over the past period, Uganda's fiscal deficit swelled greatly. The World Bank (2003) argues that this is a result of a weakening tax administration, noncompliance with tax regulations, difficulties of taxing a large informal sector, granting of VAT exemptions and reduction in import duties as part of a series of trade reforms.

The huge fiscal deficit has expanded greatly making it tough for the government to balance its budget thus persistently intensifying Uganda's over reliance on donor aid. Uganda increased its infrastructure expenditure (road and other transport services) in absolute terms from 9.9 billion shillings in 1982 to 73.2 billion shillings in 1999 (Fan, Zhang & Rao, 2004). It's been argued in economic circles that the provision of government investment expenditure such as infrastructure significantly has a positive impact on a country's growth prospects. Even after the significant recovery Uganda achieved after two decades of prudent macroeconomic reforms, the government further intensified the pursuit of fiscal programmes through enhanced public financial coordination which mainly emphasized on effective budget management. However, in spite of the remarkable recovery of the Ugandan economy, improvement in structural transformation remained inadequate especially; high population growth, insufficient infrastructure, regional disproportions as well as inconsistent public provisions. To respond to these challenges, the Government of Uganda (GOU) has adopted a National Development Plan (NDP), an integrated and strategically crafted plan, to transform and diversify its economy (World Bank, 2010). Infrastructure spending as a share of total government expenditures increased from 3.73% in 1982 to 7.01% in 1999 (Fan, Zhang & Rao, 2004). According to Fan, Zhang and Rao (2004), Uganda accelerated the expenditure on education as a proportion of government expenditure

to 35.5% in 1999.since the late 1980s, the proportion of per capita spending on education more than doubled. However, government expenditure patterns on education have been considerably inflexible with regards to regional areas as the aggregate share of government expenditure across the different regions in the country has been inconsistent. Government spending in the backwards regions of the country is significantly low. The government's policy on education in the late 1990s focused on increasing access to primary education and economic opportunities for the poor people. Furthermore, improving the quality of education was also considered crucial. Since 1991/92, public expenditure on education has shifted toward primary education relative to secondary or tertiary education (Fan, Zhang & Rao, 2004). The percentage of government spending on education to the total government expenditure in Uganda was 18.85% in 2008 and 15.04 in 2009 (UBOS, 2010).

The expansion in government provision of education during the reform period escalated the demand for education beyond anticipated levels, as a result government sought to curtail the high operating costs. In recent years, roads and energy sectors have emerged as priority sectors in the government budget. With the exception of the current FY2010/11 where the allocation to roads and energy sectors as a percentage of total budget declined, since FY 2005/06 shares to both roads and energy sectors have been on a rising trend and are now rivaling shares of social sectors e.g. education and health (World Bank, 2010). Capital budget as a proportion of total public expenditures is on a rising trend at the expense of recurrent expenditure. Development expenditure as a share of the budget has risen from 39.4% in FY 2006/07 to about 49% in FY2009/10 (World Bank, 2010). The trend in expenditures demonstrates government's intensive pursuit to accelerate the fiscal framework especially with regards to infrastructure development and growth prospects. Sennoga and Matovu (2013) also assert that Productive expenditures, such as education, research and development, job training and physical infrastructure positively affect the efficiency of private sector production and consequently lead to higher per capita growth. The share of development expenditures in Uganda's budget has steadily increased from an

average of 4.3% of GDP during the FY2002/03 to 2007/08, to 7.6% of GDP in the fiscal year 2008/09 to 2014/15 (Calvo, 2016)[13.]

Figure 6.3: Sector Share of Total Government Expenditure for Selected Fiscal Years FY 2001/02 to FY2010/11. (Percentage of total expenditures)
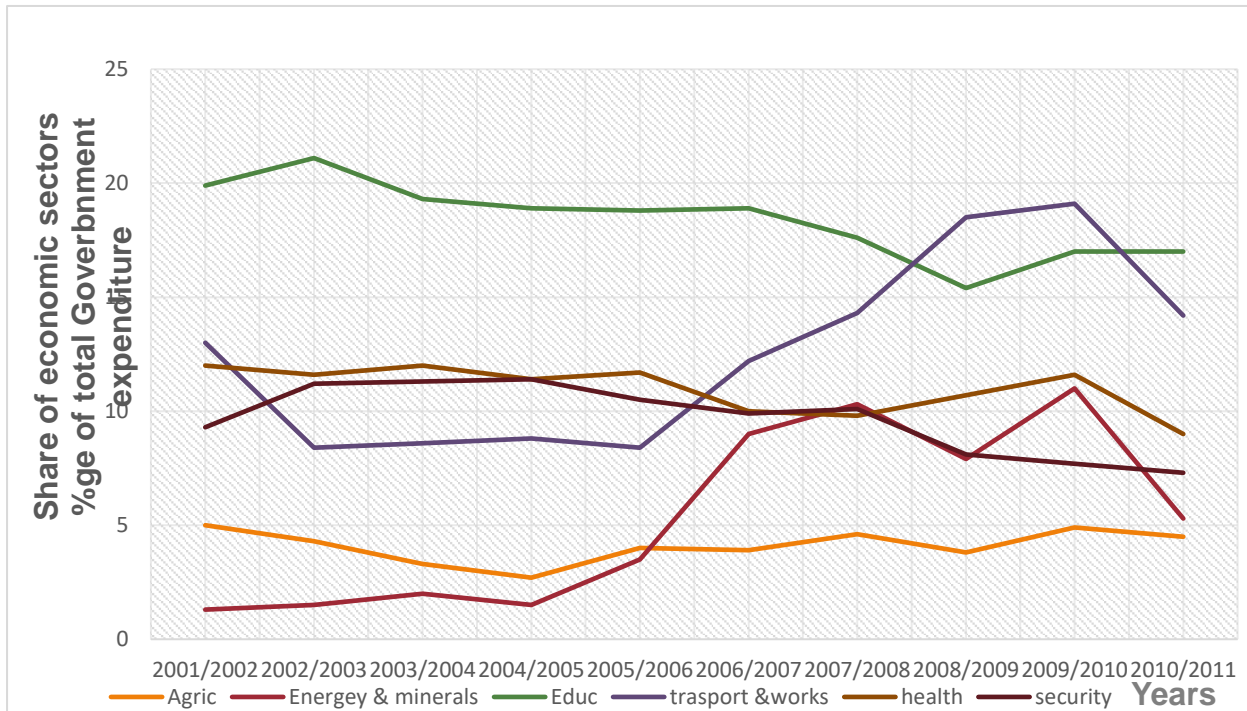
Source: Own compilation based on data obtained from the World Bank (2010) and MoFPED

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13 Report on; How Uganda can get higher returns on its public investment. By Malmberg Calvo. Country Manager the World Bank in Uganda. Published in; The East African Newspaper, june-o6-2016. Accessed [Online] 22-08-2016 http://www.theeastafrican.co.ke/OpEd/comment/How-Uganda-can-get-higher-returns-on-its-public-investments/434750-3235274-14kx0l7/index.html.

Table 6.3: Government Expenditure as Percentage across Selected Economic Sectors in Uganda. (Recurrent and Development Expenditure for Central and Local Outlays)

Year	General public administration	Defense affairs and services	Public order and Safety affairs	Education Affairs And services	Health Affairs And services	Social Affairs And welfare	Agriculture Veterinary And forestry	Road and Other Transport affairs
1982	24.49	15.93	20.30	20.07	7.25	0.87	7.36	3.73
1983	19.83	32.70	7.96	22.52	5.09	0.82	5.24	5.85
1984	21.16	29.79	6.85	22.73	6.19	0.70	6.53	6.04
1985	17.47	36.48	5.74	19.40	3.24	0.49	6.32	7.44
1986	18.56	36.82	9.68	15.42	3.00	0.44	7.86	8.22
1987	14.64	39.00	7.97	22.24	2.90	0.21	5.37	7.68
1988	18.19	42.42	6.91	17.13	4.38	0.48	5.54	4.95
1989	20.21	41.55	9.26	13.84	3.85	0.23	3.02	8.03
1990	30.89	30.04	6.99	12.01	5.35	1.31	3.91	9.50
1991	48.68	19.07	6.71	13.26	4.17	0.68	2.80	4.63
1992	59.15	15.85	5.30	10.92	3.80	0.43	2.27	2.28
1993	33.30	25.87	12.22	13.87	5.30	1.33	2.44	5.67
1994	25.74	23.42	10.56	23.58	7.81	0.65	3.05	5.19
1995	30.07	21.98	11.38	21.93	7.51	0.32	1.73	5.08
1996	26.50	21.05	9.97	25.07	7.50	0.55	1.60	7.76
1997	28.50	19.26	9.49	26.92	7.69	0.20	1.49	6.44
1998[*]	19.68	23.24	8.08	34.43	6.46	0.18	1.54	6.37
1999[*]	22.82	18.71	7.89	35.45	6.77	0.20	1.15	7.01

Source: Fan, Zhang and Rao (2004) and MoFPED (2000)

Over the past period, the share of government expenditure intended for social security allocations was inadequate. Between 1979 and early 1980s, Uganda endured political turmoil in terms of wars and economic mismanagement. This is further reflected in the above illustration in the table 5.3. In 1982 social security was allocated the least portion of government spending which further substantially deteriorated over the following years whilst health, agriculture and physical infrastructure also were allocated insufficient funds from the government. Over the seventeen-year period, sectors like health, social welfare, agriculture and infrastructure remained the lowest funded sectors by the government. This is in spite of the fact that agriculture has always been the spine of the Ugandan economy. The meagre government allocations to the social sector can have a negative effect on living standards as well as poverty levels. Figure 5.3 shows that the percentage of social sector further declined from 1982 to 1999. In

absolute terms, social security and welfare expenditure decreased from Ushs 2.30 in 1982 to Ushs 2.04 billion in 1999 (Fan, Zhang & Rao, 2004). The period between 1982 and 1999 government expenditure was majorly allocated to defence and general public administration. Fan, Zhang and Rao (2004) argue that, Uganda although a predominantly agricultural economy, routinely spends more on defence than on any productive or social sectors such as education, health, social security and infrastructure. Uganda increased its infrastructure expenditure (road and other transport services) in absolute terms from 9.9 billion shillings in 1982 to 73.2 billion shillings in 1999 (Fan, Zhang & Rao, 2004). However, the share of infrastructure expenditure in total government expenditure has been intensified over the years. Government realized the fundamental impact of infrastructure development on the economy both directly and indirectly. Between 1982 and 1999, key sectors were insufficiently financed in Uganda with regards to government's share of expenditure nonetheless, the share of the education sector was increased the period 1994 to 1999.

The figure 5.5 displays the share of various economic sectors from total government expenditure between FY2001/02 to FY2010/11. The fundamental sectors include; agriculture, education, security, energy and minerals, transport and works and health. Although the share of education increased initially in the early 2000s, its share over the years has been curtailed whilst the share of transport and works that was previously low has been increasing over time. Between 2005/06 and 2009/10, the government spending on physical infrastructure significantly expanded. The share of government spending on agriculture in Uganda remains considerably inadequate. However, it's noted that since 2011 the government expenditure on various sectors has generally deteriorated. Uganda has been largely inhibited by the uncertain fiscal approach. Agénor and Blanca (2006) argue that whilst the emphasis on infrastructure in Uganda over the recent past is a welcome development, a more prudent approach to achieving efficient expenditure allocations would require systematic analysis of the implications of such allocations on long-term productivity, growth and poverty reduction. The flexibility of the government spending has contributed to challenges of effective allocation of public expenditure across productive and growth-inducing programmes. The insufficient volume of capital expenditure from the budget also aggravates the fiscal difficulty. According to World Bank (2010), Uganda's low level of capital expenditure is bad news, because the condition of rural infrastructure strongly

affects agricultural trade, farm diversification and ultimately poverty. Owing to the large fiscal deficit that accumulated over the recent past, government has sought to condense the share of public spending in some sectors. This has been in line with the various fiscal reforms implemented in effort to improve the fiscal position. The fiscal consolidation has been attained at the expense of contracting public expenditures which as a share of GDP have tightened from a peak 23.5% in FY2001/02 to a low of 17.2% in FY2008/09.however, due to the need to address infrastructure deficits, public expenditures have risen to 18.4% in FY2009/10 and are projected to remain above 18 % over the medium term (World Bank, 2010).The government is of the view that the fiscal deficit should be reduced through cutting government spending, which would assist in reducing the issuance of treasury bills and thereby drive interest rates down (World Bank, 2003).

According to the World Bank (2010), well over one third of public expenditures are now allocated to Public Investment Programs (PIP). As a percentage of GDP, the PIP stood at 6% of GDP for FY2006/07 and 2008/09. Ultimately, although aggregate government expenditures were curtailed, the proportion of budget allocations towards the realization of the PIP objectives rather escalated. Given the mentioned increases that are foreseen in the NDP, the PIP expenditures can be expected to further increase as a percentage of GDP and as a percentage of total public expenditures (World Bank, 2010).

On the other hand, government consumption expenditure which constitutes of general spending patterns by the government with no instant monetary returns to government. Although, governments focus largely on the provision of education and health in most developing countries, various development elements such as rural development, job creation and poverty reduction also take up considerable shares of total government expenditure. Because the government expenditure framework is based on priorities that are steered by the medium-term framework, hence substantial proportions of public resources are earmarked to the key functions of education and health.

Figure 6.4: Government Final Consumption Expenditure as Percentage of GDP
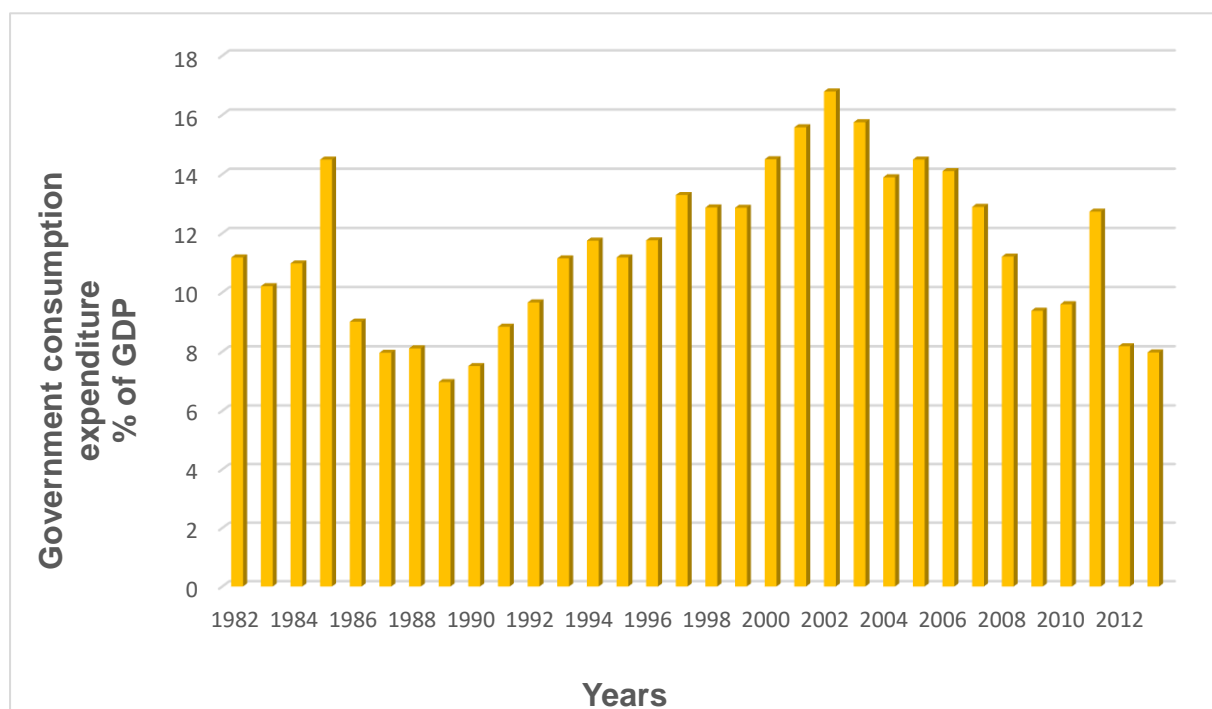
Source: Own compilation based on data obtained from the World Bank and The
Global Economy.com

However, in view of the past macroeconomic performance and binding constraints identified for Uganda, the NDP will mainly focus on reorienting resources towards the more productive sectors which will sustain the recent growth spurt, increase employment opportunities and reduce poverty (Sennoga & Matovu, 2010). As a percentage of GDP, Uganda consistently increased its spending during the 1980s from 9% in 1980 to 16% in 1990 (Fan & Rao, 2003). According to World Bank, government final consumption expenditure encompasses all government current expenditures for purchases of goods and services plus compensation of employees. It further constitutes the bulk of expenditures on national defence and security but factors out public military expenditures that pertain to government capital formation. Government final consumption expenditure declined further by 0.6% in 2012/13 compared to a decline of 15.4% registered in 2011/12. The decline in the final consumption expenditure was mainly due to constrained domestic demand (UBOS, 2013). Over the recent past, public spending in Uganda has accelerated in proportion to the government revenue. This has gradually swelled the budget deficit over time. Essentially, this is generated from enhanced external debt financing that was

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influenced by the exchange rate depreciation, escalated public spending beyond the available domestic resources and the scale of domestic inflation. The primary objective of the Medium-Term-Expenditure Framework (MTEF) is to plan government spending such that the objectives of real sector are met, consistent with the macroeconomic framework (World Bank, 2007).

The Medium-Term expenditure framework (MTEF) was meant to guide government in its pursuit of macroeconomic solidity so as to curb inflationary pressures as well as the exchange rate volatility. According to the World Bank (2007), developed in line with the five pillars of the revised Poverty Eradication Action Plan (PEAP), the 2004/05-2006/07 MTEF is consistent with both inflation and economic growth targets. Government's change of stance in growth strategies emanated from the persistent insubstantial growth in Uganda despite previously large volumes of public expenditure which generated moderate economic growth thus prompting a shift in the fiscal discipline. Uganda has long grappled with budget deficits which ultimately impacts on the fiscal position especially government's capacity to increase spending, prudent management of inflation levels and government revenue.

According to BOU (2011), the developments in inflation and public expenditure in Uganda are largely driven by production challenges such as long droughts, inherent increase in international prices of crude oil coupled with hiked excise duty on petrol and diesel and increase in electricity tariffs for both domestic and industrial consumers, infrastructure developments, poor infrastructure, defence and wage spirals. Between 2003/04 and 2006/07, the budget comprised of large shares of transfers, civil service-employee related costs and recurrent expenditures. Excluding debt and arrears payments, the true share of employee costs in the budget was between 42% and 43% for 2006/07. The share of staff costs in the budget in 2006/07 was actually double that of public capital investments (World Bank, 2009). Through government consumption patterns, the government has over the years undertaken fundamental welfare programes to reduce welfare inequality and escalating poverty levels. Ultimately, poverty levels have substantially decreased across numerous households. Monetary poverty fell from 56% of the population in 1992/93 to 35% in 1999/2000 (Okidi & Mckay, 2003). Current public expenditures comprise a large share of total expenditures, averaging 60% of total expenditures (World Bank, 2009). The recurrent

budget increased by Ushs 603 billion in the four-year period (2003/04 to 2006/07), absorbing almost two-thirds (64%) of the additional budget through that period with domestic development capturing 27% and the statutory budget 12%. most of the rise in the domestic development budget occurred in 2007/07, with a large share of this increase coming as emergency assistance for the energy crisis (World Bank, 2009).

The World Bank (2009), however observes that the contribution of the budget between the period 2003/04 and 2006/07 towards enhancement of service provision in Uganda gradually slumped. All of the increases in district budgets between 2003/04 and 2006/07 were in recurrent spending. Government spending in education and health greatly improved in the decade of the 2000s as access to these public provisions also improved. The World Bank notes that according to statistics from the Uganda National Household survey and Uganda's demographics, access to these services increased markedly; in public health, the increase in the period from 2002/03 to 2005/06 suggests the numbers of people attending public health clinics probably increased by around 50%. In nominal terms, the public provisions in the wage to non-wage proportions under the health and education sectors significantly slumped. Although grants to autonomous institutions have increased between 2003/04 and 2006/07 and became a large share of the budget. The total grants and transfers over the period mostly from ministry budgets at 177% greatly exceeded the total subsidies for hospitals and district health (World Bank, 2009).

Uganda's budgets were not until very recently, consistent with the government's policies as stated in the PEAP. Until the 2008/09 budget scaled up road expenditures, infrastructure was being neglected (World Bank, 2009). Government's spending contribution towards the provision of health services for the prevention of malaria and HIV and AIDS as well as access towards health centers has significantly advanced over the years. According to World Bank (2009), approximately 99% of health facilities report offering malaria treatment. About 30% of the health facilities, mostly hospitals and health centers reported having HIV and AIDS testing facilities. In 2006, although the government's share of health spending was sufficiently low in proportion to the average share in SSA, on the other hand the government's allocation of health in proportion to GDP greatly escalated as compared to regional partners. Uganda's total health expenditure per capita was about US$ 25 in 2006. In 2006, health spending

was financed from three main sources; external funding (29%), government (30%) and out-of-pocket (38%).this total was slightly higher than the average for sub-Saharan Africa, but slightly lower than that for all low-income countries (World Bank, 2009).

Although the budget allocation towards health improved between the years 1997/98 to 2001/02 which ultimately constituted percentage of foreign grants out of the total public budget, however, government per capita health allocations ratios subsequently declined during the period 2000 to 2006 particularly in real terms. Uganda's government health spending per capita rose in nominal terms from over Ushs 10 000 in 2000 to over Ushs 17 000 in 2005, and then declined back down to about Ushs 12 000 in 2006 (World Bank, 2009). World Health Organization (WHO) (2005) observations noted 10% government spending allocations to the health sector which was approximated as a proportion of the total budget during that year. Although Uganda has for long attained tremendous growth, the growth has not fully materialized across the countryas a result therefore to prevent further restrain of growth and decline of poverty levels, government accelerated budget share specifically meant for roads in the country. In light of this the government started a shift of budget resources towards infrastructure up until FY2006/07. Government of Uganda spends on average 2.3% of GDP or approximately 12% of total expenditure on managing its roads sector. In FY2008/09, this number increased significantly to 3.6% of GDP for that year, equivalent to 18.8% of total expenditures (World Bank, 2010).

The 2008/09 budget acceleration of roads was consequently integrated into a misery budget based on the fact that portion of aggregate expenditures depreciated slightly to GDP. The initial surge in expenditures on roads was accommodated for a large part by a reduction of expenditures on security, justice and governance, whose allocation declined by 0.8% of GDP between FY2007/08 and FY2008/09 (World Bank, 2010). However, the trimming of government allocations in nominal terms was not taken into consideration. Hence in nominal terms the government allocations of overall expenditures were rather comprehensively coordinated. For example, of the total increase in expenditures, for FY2009/10, 18.9% of additional nominal expenditures were allocated to agriculture, 37.3% to energy, transport and economic competiveness, 37.5% to human development and 6.3% to security, justice and governance (World Bank, 2010). In contrast to the conventional process across

several sub-Saharan countries, the government of Uganda (GOU) basically emphasized the importance of massive public expenditures to the development of roads and particular focus was earmarked to establishment of rural road network. Currently, the GOU guides the development of the entire road network in Uganda in line with the Road Sector Development Program (RSDP), which has two components: namely , the RSDP is a 15-year National Transport Master Plan (NMTP, issued in November,2008) to be implemented by Uganda National Roads Authority (UNRA), and , the ten-year district, urban and Community Access Roads Investment Plan(DUCARIP), to be implemented by local governments both rural(district) and urban authorities (World Bank ,2010).

The World Bank (2010) observes that, Uganda has however, one of the highest overall road density in SSA and the highest secondary road density. In the last 15 years, the GOU has made substantial investments in rehabilitation and maintenance of District, Urban and Community Access Roads (DUCAR), estimated at 740 billion Uganda shillings (US$ 400 million). This investment significantly enhanced the rural road network. GOU has committed itself to invest a total of 1 594 billion Shillings (US$ 862 million), of which 953 billion shillings for district roads for ten years from fiscal year 2008/09 to fiscal year 2017/18 (World Bank,2010). The large public investments in the road network which integrates the rural roads sector is anticipated to lead to agriculture-led growth since agriculture is rural dominated sector hence the state of rural infrastructure subsequently determines the magnitude of agricultural dynamics and consequently poverty. Through the National Development Plan (NDP), government has undertaken significant infrastructure development plans over the years which has skyrocketed the volumes of government spending. The NDP is based on the desire to guide sustainable growth whilst also depreciating poverty levels, essentially, prudent comprehensive development plans designed for key ventures have been sought and have been deliberated over the year 2011 to 2015. Funding of new projects alone are estimated to escalate from US$ 142 million (0.9% of GDP) in year one to US$ 769 million (3.7% of GDP) in year three to US$ 1 016 million (4.2% in GDP) in year five (NDP, 2010). The growth of the economy has been supported by prudent fiscal discipline, as GOU over the last five years has embarked on fiscal consolidation (World Bank, 2010). The World Bank also noted that Uganda's extraordinary fiscal deficit has been largely financially capitalized from government

external borrowing. In Uganda, the extent of aggregate government expenditure on health is significantly linked to GDP particularly with regards to the contribution of external donor aid. The estimated elasticity of government health spending to GDP for Uganda depends on whether donor funds are included. Estimates from 2000 to 2006 suggest that the elasticity of government health expenditure with respect to GDP, when donor funds are included is about 1.44 in Uganda, implying that a growth of 1% in GDP is associated with a rise in government health spending of about 1.44% on average. This compares favorably with the global average (World Bank, 2010). Conversely, when domestic government spending on health is considered barring international donations, the elasticity of government expenditure in turn dwindles. Fiscal space for health derived from economic growth projections in Uganda would depend on global funding rising with Uganda's GDP (which seems unlikely) or on the extent to which Uganda's domestic resources can rise even faster to substitute for global funds and keep the health budget rising with GDP (World Bank,2010).

Government spending towards agricultural development is majorly comprised of non-wage recurrent expenditures in form of capitalized materials and other goods. In terms of comparison purposes, Uganda's expenditure on agriculture pegs level terms with other sub-Saharan countries although the proportion is much lower when compared when middle income and high-income countries. However, if the government expenditure on agriculture is gauged in terms of the share of budget towards agriculture in proportion to GDP, then the government spending is far less compared to other countries. According to World Bank (2010), Uganda has successfully addressed a key requisite for efficient public spending by largely eliminating agricultural price distortions. Uganda's agricultural policies provide a convenient environment in which even scarce public resources can make a difference. Significantly government has altered its policies on agriculture thereby relaxing-off taxes on agriculture in favour of agricultural inducement packages. World Bank (2010) observes that government's major expenditure proportion to agriculture is undertaken with particular focus on poverty reduction aspects hence a big percentage of agriculture spending is prioritized into agricultural advisory provisions (National Agricultural Research Organization/NARO) and agricultural research elements (National Agricultural Advisory Services/ NAADS).The share of public expenditure on agriculture emanates from various national and local organizations in Uganda.at the

national level, Ministry of Agriculture Animal Industry and Fisheries (MAAIF) is the lead ministry responsible for agriculture along with four autonomous organizations: **one**, National Agricultural Research Organization (NARO), **two**, National Agricultural Advisory Services (NAADS) secretariat, **three**, the Uganda Cotton Development Organization (UCDO), **four**, the Uganda Coffee Development Agency (UCDA) (World Bank, 2010).

The approved budget for Uganda's agricultural sector grew by 46% from 2001/02 to 2008/09, driven by a threefold rise in spending for NAADS through the districts. Cumulative spending over the same period was Ushs 1 346 billion (World Bank, 2010). However, the mandated parliamentary allocations from the budget to agriculture slightly languished more than anticipated between 2001/02 and 2008/09, which was attributed to huge deterioration of total public spending across all sectors especially during the early 2000s although the budget allocations later rose subsequently. Between 2004/05 and 2008/09, however the budget grew by 38% in real terms (World Bank, 2010). Over the years, budget allocations for the agriculture sector have been majorly dispensed across the MAAIF, NARO and NAADS Secretariat which also implies that they have received the lion's share of the budget allotments. However, since the year 2001/02 the proportion of public allocations to MAAIF, NARO and NAADS have subsequently dwindled which was culminated by the change in the stance by policy authorities to decentralize government finances to local levels.

As a result, the budget share was decentralized. The share of the sector budget going to NAADS at the district level rose from only 2% in 2001/02 to 36% in 2008/09 (World Bank,2010). The government of Uganda has emphasized the importance of changing its fiscal strategies and plans in an effort to implement effective resource allocation that is growth oriented. Consequently, the emphasis towards provisions in the roads network, education and health sectors intensified further diminishing the allocations to agriculture. The motivation behind the shift in strategy emanates from the fact that development of roads, health and education has far reaching positive effects in turn for agriculture development and sustenance especially with respect to advancement of human resource as well as the processing of industrial units. In 2008/09, agriculture's share in the national budget and GDP is estimated at 3.8% and 1.6% respectively, lower than in 2001/02.the released sector budget has declined as well

leaving agriculture with only 1.2% of GDP and 4.8% (World Bank, 2010). According to estimates from the MoFPED and MTEF (2008) the period 2007/08 to 2012/13 recorded meagre budget allocations in the agriculture sector when compared with other economic sectors. However external non-government organizations (NGOs) have played an integral part in the agriculture sector in Uganda mainly; the United States Agency for International Development (USAID), Swedish International Development Agency (SIDA) Japan International Cooperation Agency (JICA), Food and Agriculture Organization (FAO) and United Nations Development Program (UNDP) which have all supplemented the public expenditure with additional agricultural finance focusing especially in the northern part of Uganda.

6.2.4 Government Revenue versus Government Expenditure (Deficit/Surplus: 1980-2013)

Fiscal deficits which emanate largely from discomposure on the part of the fiscal policy authorities along with inadequate fiscal space have greatly dominated intense debate relating to importance of fiscal and macroeconomic structural changes in both the developed and developing countries. Fiscal deficits were at the forefront of macroeconomic adjustment policies in the 1980s and 1990s, in both developing and industrial countries (Jacobs, Schoeman & Heerden, 2000). The extensive transformations that unraveled in the developed world especially the Euro zone since 2007 further evoked extensive analysis by policy authorities concerning the consequence of public debt management in the macro economy. The economic adversity that emerged in Spain, Portugal, Greece and Ireland in Europe were instrumental in propelling policy makers to comprehensively resolve the debt crisis. Fiscal deficits may sometimes necessitate distressful mechanisms to mitigate the rapid growth of debt. On the other hand, several African countries have grappled with structural difficulties that over time culminated into massive fiscal deficits that proved nonfeasible. The fiscal imbalances were prompted by inadequacies in economic administration which stimulated unsustainable public deficits combined with escalated macroeconomic hindrances. During the 1990s, lack of fiscal adjustment was blamed for an assortment of economic ills namely; poor economic growth, high inflation, low investment and unsustainable debt in most developing countries (Easterly & Schmidt-Hebbel, 1994). Since the 1990s, budget deficits have engrossed a large space in

Uganda's macroeconomic sphere, although in the recent past the budget deficits have been the subject of numerous fiscal reforms. In the last five years, the ratio of the budget deficit to GDP has risen from about 4.6% in 2007 to over 9.5% in 2011 (Lwanga & Mawejje, 2014). The government debt accelerated in the recent years driven largely by massive fiscal deficits. Excluding grants, Uganda's government has been running deficit in the magnitude of 6-12% of GDP for more than two decades (IMF, 2007).

Uganda's total government revenue was 10-11% of GDP, 4-9% percentage points smaller than the expenditure share (Fan & Rao, 2003). Owing to the systematic and coherent fiscal management and the desire to bring down poverty levels in the country, the mid 1990s witnessed escalation in public spending. Fiscal planning was significantly improved when the government introduced the Medium-Term Expenditure Framework (MTEF) in 1997/98 marking a significant shift from the ad hoc budget planning of the early 1990s (IMF, 2007). According to (Lwanga & Mawejje, 2014), available data shows that for the past two decades government expenditure has continuously exceeded government revenue. Uganda like several low- income countries has grappled with massive budget inadequacies mainly attributed to insufficient revenue collection which is also aggravated by the narrow tax base. Consequently, it necessitates the government to mobilize extra finances to provide capital for lvarious public expenditures.

The ratio of government expenditure to GDP has risen from about 18% of GDP in 1992/93 to about 23% of GDP in 2010/11, whilst the ratio of government revenue to GDP has increased from about 8% to 13% during this period (Lwanga & Mawejje, 2014). Ultimately, it implies as cited by Lwanga and Mawejje (2014) a financing gap of about 10% of GDP in 2010/11 had to be filled by other sources like borrowing and foreign aid. The trends in government revenue and expenditure are illustrated by figure 5.7. The depiction in the figure displays that government expenditure surpassed government revenue (budget deficit) throughout the entire period between 1992/93 to 2010/11.Historically, Uganda's revenue receipts have for long mismatched government expenditure. This implies that the government always run a budget deficit since revenue fell short of the required expenditures during the period under consideration. Public debt quickly expanded in the past decades as a result of persistently large fiscal deficits. Excluding grants, Uganda's government has been

running deficit in the magnitude of 6-12% of GDP for more than two decades (IMF, 2007). During the period 1999/2000, revenue shares excessively fell below government spending patterns whilst expenditure on the other hand almost more than doubled the levels of revenue.

Over the period 1998/99 to 2003/04 government expenditure exceeded revenue, this in turn reflects the magnitude of the expansion of Uganda's fiscal gap. The introduction of the MTEF coincided with an increased focus on poverty reducing spending.as a result, donor grant inflows increased substantially and allowed expenditure to increase from around 17% of GDP in 1997/98 to almost 26% at the peak in 2001/02 (IMF, 2007). Since the year 2002/03 government expenditures have slightly decelerated whilst revenues increased as compared to the expenditures. The gradual rise in government is attributed to the increase in recurrent expenditure in the form of non-wage expenditures. Using an economic classification, the increase in expenditure from 1998/99 to 2000/01 was shared between development and recurrent spending. However, following the peak, expenditure settled at a lower level by reducing development expenditure whilst recurrent expenditure remained roughly constant at the peak's high level (IMF, 2007).

The continuously widening current account deficit, high interest rates and inflation are believed to be partly due to government's budget deficit spending (Mugume & Obwona, 1998). The rapid swelling in recurrent expenditures as a proportion of government spending is largely steered by escalating employee disbursements in public service operations. As evidently cited by the IMF (2007), this includes allowances, pensions and transfers to agencies which in turn use the funds to pay salaries. As much as Ushs 520 billion out of the Ushs 1.4 trillion (37%) classified as non-wage recurrent expenditure was used to remunerate employees in 2005/06.From an economic perspective, the biggest risk to the budget stems from wage bill pressures (IMF, 2007). In the late 1980s and early 1990s, Uganda implemented substantial fiscal reforms which played a pivotal role in streamlining the budgeting process in the country, which established provisions for key sector expenditures and boosted revenues. Due to the country's economic and political turbulence, the accomplishments from the fiscal reforms have been constrained sporadically and thus realization of the intended fiscal goals has been sluggish. The different expenditure

categories in Uganda were explained by Lwanga and Mawejje (2014) who identified four public expenditure classifications; **one**, recurrent expenditures which include wages and salaries, interest payments, transfers to URA, **two**, development expenditures both external and domestic, **three**, lending and investment and **four**, other expenditures which include; pensions, defence, other recurrent ministries and district recurrent expenditures. According to Kayizzi-Mugerwa (2002), Government expenditure has exceeded revenue since the mid-1980s, with the gap financed mainly by donor aid.

Over the recent period, Uganda's fiscal landscape was characterized with inadequate revenue receipt in contrast to the aggravating spending requirements. According to the 2011/12 budget review (background) government revenue rose to 17.2% of GDP in 2012 whilst the public spending budget surged to 20.6% of GDP. Until recently, following a drastic reduction in external grants; a consequence of the global financial crisis, this budget deficit has mainly been financed by externally mobilized funds (Bwire & Nampewo, 2014). Mobilizing sufficient financing to meet government's requirements is a fundamental goal of debt management (Langford & Namanya, 2014). Uganda's fiscal position has further been aggravated by the shallow private sector as result it becomes increasingly vital for the critical provision and dispensation of public resources to realise the best mechanism for public resource management as well as development prospects. Government has to strive to the achievement of desired goals related to public expenditure distribution, moreover the budget process should fundamentally reflect the expenditure distribution of resources with specific emphasis on important priorities as a means to maximize economic welfare.

In Uganda, the National Development Plan establishes and exhibits the various prime public expenditures as set out in the government development plan. In the 1990s in Uganda, budget processes were restructured to enable budgets to reflect more closely the strategic priorities of the government. The strategic priorities were set out in the Poverty Eradication Action Plan (PEAP), which was essentially a development plan (Mutebile, 2011). The PEAP approved fundamental expenditure requirements needed to be in line with the medium-term expenditure framework of the budget. In Uganda, the merger of the Ministries of Finance and of Planning and Economic Development in 1992 was crucial in enabling the budget to be unified, because prior to this merger

the Ministry of Finance has responsibility for the current budget and the Ministry of Planning and Economic Development has responsibility for the capital budget (Mutebile, 2011).A Glaring mismatch between government revenue and expenditure in a country's fiscal balances provokes fiscal unsustainability which may require financing the budget deficit externally.

The periods 2000/2001 and 2002/03 displayed significant rise in the deficit which may be attributed to the various fiscal reforms that the Ugandan government embarked on during the initial years of the 1990s. The reforms focused essentially on poverty reduction, lower inflation rates and increase in government revenue. For example, the government declared universal primary education in 1997, which saw primary school enrolments rise by 160% to over 6 million (Kayizzi-Mugerwa, 2002). Whilst there were also administrative reforms in Uganda towards the late 1990s constituted shifting the revenue responsibilities from the Ministry of Finance to an independent albeit (semi-autonomous) revenue organization to manage revenue operations in the country.

Rena and Kefela (2011) postulate that fiscal sustainability depends on the current level of debt (domestic and foreign) and the government's willingness to tax and impose aggressive measures as necessary in order to service the debt. Although the public sector was considerably larger than the private sector during 1990-2004, its contribution to the tax base was insufficient yet the private sector seemed inefficient triggered by a dormant agriculture system that was largely subsistent and large informal business sector. By 1989 the ratio of tax revenue to GDP was a miserable 4%. Also, the composition of tax revenue was predominantly importing dependent (Rena & Kefela, 2011). The restoration of political stability in Uganda in 1986, propelled the World Bank/IMF led economic structural adjustment programmes (ESAP) in order to drive macroeconomic recovery and stimulate investment prospects. As a result, in 1997/98 government embarked on abating poverty levels through the PEAP and the Poverty Action Fund (PAF) that constituted government strategies to mitigate poverty. The programmes entailed escalation in public expenditure. Therefore between 1992/93 and 1999/2000, government expenditure significantly surged rapidly as this was the reform period following economic mismanagement, inefficient public enterprises as well as political unrest that heavily constrained the economy's growth potential. The period 1992/93 recorded inconsistent revenue and expenditure ratios

as government expenditure soared more than revenue almost double hence an even higher deficit. Uganda's deficit is inclusive of foreign grants since the country obtained large proportions of foreign aid from donors following remarkable economic and political recovery. Berg, Shekhar, Mumtaz, Roache, Mirzoev and Mahone (2007) observe from the 2009 data estimates of Development Assistance Committee of the Organization for Economic Co-operation and Development (OECD-DAC) that the Official Development Assistance (ODA) inflows in absolute terms increased from Ushs 12 489.26 billion or (US$ 869.92 million) in 1996/97 to Ushs 15 990.39 (US$ 1 377.12 million) in 2008/09, much of which took the form of budget support rather than project aid.

The period 2001/02 to 2004/05 displayed the second most acceleration of the deficit indicated at virtually 10% of GDP annually. However, the period 2005/06 to 2008/09 exhibited slump in the budget deficit. Importantly the year 2007/08 recorded Uganda's ever lowest fiscal deficit for the period under consideration of less than 5%. According to Matovu (2000), factors responsible for the significant decline in the deficit are due mainly to the various debt forgiveness initiatives and the commitment of the government to finance most of the budget by domestic revenues. The government also desired to devote efforts towards strengthening the fiscal approach. The proportion of government spending to GDP was kept constant whilst aggregate revenue exclusive of donations slightly boosted altogether too, ultimately to minimize the size of the fiscal deficit minus foreign aid. AfDB (2010) further notes that Uganda's fiscal deficit rose in the initial years largely due to the massive growth of the capacity of the government budget which heavily funded through external loans to the government. Bwire and Nampewo (2014) emphatically postulate that both the Keynesian and Monetarists schools of thought highlight the inflationary effect of budget deficits. This is because, in the former fiscal deficits stimulate aggregate demand whilst in the later, when monetization takes place it will lead to an increase in money supply and *ceteris paribus*, increase the rate of inflation in the long-run (Gupta, 1992). In order to carefully execute macro-fiscal policy strategies MofPED strived to regulate fiscal aggregates especially government spending. In many countries, weak fiscal policy which jeopardizes macroeconomic stability is the result of poorly designed institutional arrangements which allow line ministries and other spending agencies to circumvent the Ministry of Finance to obtain budgetary resources, either from

government accounts in the central bank or by contracting loans from domestic or external lenders (Mutebile, 2011). Over the years although still low compared to regional counterparts, revenue aggregates in Uganda have remarkably improved. World Bank (2002), notes that, one sign of improvements in tax administration is that revenue performance in 2002/03 achieved 99% of the approved budget estimates. The PEAP was to include a medium-term strategy for fiscal consolidation and debt sustainability (Fagernäs & Roberts, 2004).

The rapid escalation in government expenditure in the early years which was moreover, financed by large inflow of grants assisting government to shrink expenditure programmes which would in turn shrink the deficit. The increase which appears to have induced an exchange rate appreciation, due to the rising demand for non-tradable goods (Fagernäs & Roberts, 2004). In 2002 the World Bank, concurred with MofPED's concern over the large budget deficit which was believed to constrain macroeconomic stability. The recurrent budget has risen and fallen in real terms with the flow of domestic revenues, supplemented by limited volumes of domestic financing. Even limited domestic financing has proved highly inflationary (Fagernäs & Roberts, 2004).

6.3 CONCLUSION

The above chapter highlighted an overview of the fiscal policy composition and different policy approaches in Uganda over the period 1980-2013. The introductory section of the chapter explored taxation trends and government spending. The study established that the period 1980 and 1981, government tax revenue grew at an inferior rate of less than 5% although subsequently intensified before it fluctuated again in the late 1980s. Upon securing political stability and instituting structural reforms in the 1990s, government tax revenue constantly accumulated in Uganda. Government tax receipts buoyancy emanated from solid political stability and policy reforms which in turn fostered foreign investment, external aid and productivity boost owing to liberalization. Over the reform period, government expenditure and investment surged notably whilst public expenditures across various sectors greatly escalated during the post-reform period. Improved government spending in the post-reform Ugandan market economy derived from the influence by government to stimulate the economy and inclusive private enterprise.

The subsequent segment of the chapter highlighted policy tools pursued by government to abate rising unemployment levels as well as engineer balance of the macro economy. Since the 1990s the NRM- led government pursued several policy tools which in turn initiated appropriate distribution of wealth and resources across regions and above all depress poverty rates in Uganda. On several particular levels, the scope of fiscal policy in Uganda continues to be shaped by external facets which ultimately influence unemployment levels in Uganda. Hence it is progressively unmerited and objectively thoughtless to deduce fiscal policy efforts over unemployment in the modern Ugandan market economy a complete flop. Evidently, it lies with the virtuous attempts of policy makers to execute fiscal policy plans in guiding fiscal aspects in Uganda.

CHAPTER SEVEN

RESEARCH METHODOLOGY

7.1   INTRODUCTION

 Having reviewed the relevant literature on the link between monetary and fiscal policy dynamics and the various determinants, hence this chapter is underpinned by the literature in the foregoing chapterts. Therefore, the chapter presents a detailed analytical framework for this study. Essentially the chapter explorers the methodology applied to answer the several research questions in relation to the study analysis. This research study adopts a quantitative approach involving time series data reviewed and analysed in order to make conclusions and inferences on the study. The chapter is divided into five sections. The first section provides a theoretical framework that underpins the methodology and specifies a model that links monetary and fiscal policy to unemployment and inflation and other relevant explanatory variables. This section additionally includes definition of the various variables used in the study. The data sources and expected signs of the coefficients used in the study are presented in the next section. The third section discusses econometric techniques for the estimation of the study analysis. The next section discusses various diagnostic tests to be applied in the empirical anlysis.

7.2   THEORETICAL FRAMEWORK

The theoretical framework is engraved from the Keynesian (1936) economics. The post-Keynesian theory indicates the adoption of both monetary and fiscal policy aggregates as stabilization tools in the economy. Keynesian economics cites that economic variables; (interest rates, money supply, government expenditure and taxation.) can be coordinated to effect changes in economic growth in the economy. Ultimately, it implies that these economic variables are a function of the changes in monetary and fiscal policies. Thus, the equation can be expressed as;

$y_i = f(x_1, x_2, x_3, x_4 \ldots\ldots x_n)$ …………………………………………………………… (7.1)

Where:

M_i = change in monetary supply

$X_1… n$= economic variables.

According to Keynes (1936), both monetary and fiscal policies can be applied as stabilization mechanisms. Efficient interaction of monetary and fiscal policies has the potential to impact the macroeconomy. This implies that a change in a policy instrument (ΔX) generates a change in a particular economic indicator (Δy) thus, effecting economic change. Monetary and fiscal policies can be applied in complementary roles in the quest for complementary targets. Fiscal policy pursues the target of enhacing capacity utilization whilst monetary policy is concerned with inflation dynamics. Ultimately, this implies that the change in a monetary or fiscal policy instruments is vital to generate change in output and inflationt. If a change in monetary or fiscal policy instrument sparks a notable change in a variable particularly employment, then the policy instrument can be regarded adequate with respect to steering economic activity. When desired methodological policy mechanisms are undertaken to engineer economic activity and intended objectives, the pursuit of policy observation is fulfilled.

7.3   MODEL SPECIFICATION AND DEFINITION OF VARIABLES

The theoretical analysis presented in the previous chapters indicated the relevant explanatory variables of monetary policy as well as various fiscal variables. The monetary variables include: money supply, interest rate and real effective exchange rate. The fiscal variables include; government expenditure, government revenue, tax revenue and trade openness. The model to be used tests for the effects of monetary and fiscal policies on unemployment and inflation in Uganda. Therefore, both unemployment and inflation are modelled as functions to the monetary policy and fiscal policy variables. Thus, implying two models will be adopted in order to empirically indentify the degree of influence of monetary and fiscal policy on both unemployment and inflation. In the first model, Unemployment is modelled as a function of monetary and fiscal policy variables. Hence the equation is expressed as follows:

In **UNEMPLOYMENT** = β_0 + β_1 **In** GOVTEXP +β_2 **In** GOVTREV +β_3 **In** TAXREV +β_4 **In** TO +β_5 **In** MS + β_6 **In** INT +β_7 **In** REER + SB + μ…………………………………… (7.2)

In the second model inflation is modelled as a function of monetary and fiscal policy variables as follows in the equation;

 In INFLATION = β_0 + β_1 **In** GOVTEXP + β_2 **In** GOVTREV + β_3 **In** TAXREV + β_4 **In**TO + β_5 **In** MS + β_6 **In** INT + β_7 **In** REER +SB + μ…………………………………………… (7.3)

Where In = natural logarithm

In UNEMPLOYMENT = natural log of unemployment

In INFLATION = natural log of inflation rate

In GOVTEXP = natural log of aggregate government expenditure

In GOVTREV = natural log of aggregate government revenue

In TAXREV = natural log of total tax revenue

In TO = natural log of trade openness

In MS = natural log of total money supply

In INT = natural log of interest rate

In REER = natural log of real effective exchange rate

μ = error term

Dm_{sb}= Dummy variable representing structural adjustments in the Ugandan economy

β_1, β_2, β_3, β_4, β_5, β_6 and β_7 are coefficients of the parameters employed to test the hypotheses in this study.

In UNEMPLOYMENT and In INFLATION = the logarithm of unemployment and inflation in Uganda. This study uses a narrow definition of unemployment. The (MLGSD, 2011) defines unemployment as a situation where by persons aged 14-64 years, who during a reference period are without work but are available for paid employment or self-employment. The logarithm of inflation is a measure of price changes for a group of items in a determined and fixed consumption basket of goods and services.

In GOVETEXP: this is the logarithm of total government consumption expenditure. In low income countries like Uganda, fiscal spending by the government plays a fundamental role in the growth prospects mainly because theses public expenditure patterns offer channels to stimulate growth across the economy. Numerous studies

have established the evidence of a posirtive link between government expenditure and growth in production and reduction in poverty levels.

In GOVTREV: the logarithm of total government revenue. Non-tax revenue accrued to the government is used to account for total government revenue. This revenue is generated from other sources such as grants, fees and fines but excluding tax revenue.

In TAXREV: this is the logarithm of total tax revenue. This represents all the revenue in form of taxes accrued to the government. Taxes represent the scope and execution of government taxation trends imposed on various economic agents across the economy. Tax rates reflect the direction and extent of pursuit of government economic plans and programmes, especially with respect to fostering an egalitarian economy. The trend of total government tax revenue will be analysed. Following the structural reforms adopted inn Uganda in the 1990s that included the trade and financial liberalization of the Ugandan economy as well as the establishment of the Uganda revenue authority to streamline the revenue system, it is imperative to examine the impact of the trade reforms on the Ugandan economy.

In TO: this variable reflects the degree of economic openness in Uganda. Trade openness reflects the scope and direction of fiscal policy in the country. Openness in trade is described as the ratio of total imports and exports of goods and services in relation to GDP (see, David, 2007). Although, numerous study reviews have explored the scope of economic openness using the proportion of tariff revenues in relation to imports, or proportion of tariffs in relation to GDP as proxies for openness, Uganda's trade openness policy comprised of reduction and harmonisation of trade tariffs, devaluation of the external value of the shilling and relaxation of quantitative trade barriers as well as regional integration (see, Hisali)[14]. Hisali further maintains that if markets are sufficiently flexible, opening up to international trade would induce short-term shifts of labour from previously protected sectors to those in which a country has

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[14]Hisali, E. (n. d.). Trade, Employment and Gender: The Case of Uganda. OECD. http://www.oecd.org/site/tadicite/48722379.pdf

a comparative advantage. Trade openness shows the impact of trade liberalization in Uganda on the macroeconomy.

In MS: this is the logarithm of total broad money supply in the economy.it denotes a measure of the effect of monetary policy actions using various monetary policy variables to regulate the growth of money supply and hence inflationary tendencies. Monetary policy approach is designated to be responsive so as to incorporate flexibility in order for changes in money supply, the monetary base or interest rates subsequent to adjustments in the inflation and unemployment rates. Broad money (MS) consists of M2 plus long-term time deposits accrued in banks (Trading Economics). Broad money in Uganda is dependent on the growth of the economy (GDP) which implies that growth in income levels in turn strengthens economic transactions thereby prompting demand for money to facilitate economic activity. The Monetarists' contention that inflation is purely a monetary phenomenon will be examined besides the growth rate of money supply in the model.

Monetarists maintain that expansion in money supply provokes demand which in turn intensifies inflation particularly suppose money supply expands exponentially than growth of real output since extreme demand precipitates rise in prices by producers. Keynesians and monetarists both propose varying views related to monetary transmission mechanisms, however, Keynes echoes the standpoint that rise in money supply ignites inflationary pressures especially via the interest rate effect. Growth in money supply generates plummeting rates of interest, which in turn elevates the rate of investment funds further aggravating aggregate demand. This additionally amplifies price levels at any given output level, inflation emanates from the inability to contain rise in aggregate demand on account of supply rigidities. Hence, the study anticipates a positive link between money supply and inflation.

In INT: this denotes interest rates in Uganda, the rate at which banks in Uganda lend money albeit with inflation taken into account by virtue of measurement of GDP deflator. Interest rates reflect the composition of monetary policy actions by the policy makers especially with regards to inflation targeting. The available interest rate in the market significantly determines the scope of investment especially private investment in the economy. Ultimately, interest rates are employed for monetary policy purposes in Uganda. The money growth rule established by monetarists facilitates flexibility of

interest rates thereby harmornising inflation expectations and changes in real interest rates. The classical economists additionally regard interest rate as a key determining aspect in saving and investment. Keynes postulates that the employment level is determined by the rate of interest thereby influencing money supply as well as investment level in the economy.

In REER: the logarithm of real exchange rates of the shilling in Uganda in relation to other currencies will be explored on the basis of the conventional definition of real exchange rates. The pursuit of the exchange rate policy is through nominal and real exchange rates that in turn used for monetary and trade policy indicators. Atingi-Ego and Sebudde (2004) define real exchange rate as the ratio of the nominal effective exchange rate index multiplied by the weighted average consumer price index CPI of the major trading partners to Uganda's CPI. Friedman (1953) postulates that large-scale variability in the floating exchange rate regime is uncommon since the stabilising behaviour of speculators always ensured a stable flexible exchange rate regime. Van Marrewijk (2005) maintains that exchange rates are a monetary phenomenon therefore the financial market becomes a vital element in exchange rate policy analysis. The monetary approach to the balance of payments postulates that the value of the exchange rate is determined by the price of two monies implying that variability between money demand and supply of money under monetary policy provokes disequilibrium. If prices are flexible under the monetary policy system this in turn suggests a flexible exchange rate regime. This results into notable adjustmnent in the exchange rates thereby leading into equilibrium of demand for and supply of money. Accordingly, this implies that acceleration in money supply can depreciate the domestic currency whilst its appreciation is induced by acceleration of levels of income. Therefore, money supply growth rate generates a change in real effective exchange rate.

7.4   DATA SOURCES

The study employs annual time series data over the period 1980-2013.data for the numerous variables examined is to be obtained from the electronic database of the Ministry of Finance, Planning and Economic Development(MoFPED), additionally, various publications of Bank of Uganda (BOU), International Financial Agencies Statistics (World Bank and IMF) will additionally compliment the data.Thus, the model

in this study is modified to test the impact of both monetary and fiscal policy instruments on inflation and unemployment in Uganda. Hence, following the use of two dependent variables i.e unemployment and inflation, in order to empirically estimate the impact of fiscal and monetary policy aggregates on unemployment and inflation the study uses two models. Therefore, unemployment is regressed against monetary and fiscal variables namely: total government expenditure, total government revenue, total tax revenue, money supply, real effective exchange rates and interest rates.

Additionally, the second model constitutes inflation as regressed against monetary and fiscal variables.

7.5 EXPECTED SIGNS OF COEFFICIENTS

In view of a thorough explanation of equation 6.3, hence this study denotes a precise summary of all the respective explanatory variables. Considering numerous monetary policy variables, based on Fisher's quantity theory of money and the fact that inflation is prompted by the extent of people's desire to hold cash, thus a positive link is anticipated for any inflation approximation. The study analyses the extent of impact on the dependent variables (UNEMPLOYMENT and INFLATION) with relation to monetary and fiscal policy.

Real effective exchange rates denoted by (REER). Bahmani-Oskooee and Gelan, (2008) contend that a decrease in the exchange rate reflects a depreciation of the domestic currency or otherwise appreciation of the foreign currency. Currency depreciation increases the domestic-currency value of foreign-currency liabilities and the debt service burden, whilst firm revenues are denominated in domestic currency (Melander, 2009). Besides, a domestic-currency depreciation ought to inflate the value of foreign assets possessed by residents especially if the foreign assets are valued in the domestic currency. Thus, the real effective exchange rate variable should exhibit a positive or negative link between unemployment and inflation.

According to the conventional theory of demand for money, there exists a negative relationship between the demand for money and the necessary returns on financial investments particularly interest rates. Since the on-going market domestic rate of interest reflects the opportunity cost of holding cash balances, Farazmand and Moradi

(2015) establish that improvements on expected equity or bond yields devalues money demand compared to the demand for stocks or bonds. The stability of money demand is a prerequisite for any policy-driven change in monetary variables to have predictable effect on output, interest rates and ultimately prices through the transmission of monetary policy (Farazmand & Moradi, 2015). Many developing countries have underdeveloped, undiversified financial markets that lack financial sector instruments and payment technologies such that most transactions involve the use of narrow money (Kumar & Fargher, 2013). Hence, the interest rate coefficient is expected to exhibit a negative sign with inflation but a positive sign with unemployment.

Government expenditure (GOVTEXP) is expected to have a negative link with unemployment. Escalation in public expenditure further intensifies aggregate demand (AD) which in turn facilitates job creation in otherwise contraction in unemployment levels. Hence, a negative link between total government consumption expenditure and unemployment is expected. This exposition is based on the Keynesian theory of aggregate demand, which postulates that employment creation derives from total aggregate demand. Hence, the coefficient of total government consumption spending will exhibit a negative sign.

On the other hand, the impact of government tax revenue (GOVTREV) in form of increased tax rates on economic agents is expected to exhibit a positive sign towards unemployment but a negative sign with inflation. High tax rates constrain growth of employment as private investment stagnates whilst low tax rates stimulate employment creation in the economy. Moreover, elevated tax rates augment cost of production for producers' further constraining entrepreneurs' efforts to expand production. However, increased tax rates diminish the rate of inflation through reduced disponsable income.

The coefficient of Trade openness (TO) can potentially display either a negative or a positive sign. As trade liberalisation intensifies, both unemployment and inflation could increase or decrease (Appleyard & Field, 2005). Trade liberalisation and export orientation is seen to have a positive effect on productivity and investment. The perception is that exposure to international markets favours technology acquisition and market discipline, allowing firms to achieve economies of scale (Reinikka & Collier, 2001). Trade openness in the economy indicates the measure of fiscal policy thus is

correlated against various fiscal variables. Since the coefficient of trade openness may exhibit a positive or negative sign, prudent empirical estimation will be essential to correlate trade openness against various fiscal variables.

The influence of structural reforms (SB) is expected to have a negative impact on both unemployment and inflation.the implementation of structural reforms effects changes in the macroeconomy. Monetary and fiscal structural reforms results into changes in the economic landscape since it entails adoption of new reforms and programmes as well a notable economic transformation across various sectors of the country.

Table 7.1: Summary of a Priori Expectations

The expected signs of the coefficients of the exogenous variables used in this model are as follows:

Variables	Expected signs	Rationale
Interest rates (INT)	Minus (-)	Interest rates increase reduce inflation and also boost domestic investments thus reducing unemployment in the economy (Mohr & Fourie, 2008)
Real effective exchange rates (REER)	Positive/Minus (+/-)	As real exchange rates, increase could either reduce or increase both unemployment and inflation (Appleyard& Field, 2005).
Money supply (Ms)	Positive/Minus (+/-)	As money supply increases inflation is likely to rise but unemployment is likely to reduce due to low interest rates and increased domestic investments (Mohr & Fourie, 2005)

Variables	Expected signs	Rationale
Trade openness (TO)	Positive/Minus (+/-)	As trade liberalization intensifies, both unemployment and inflation could increase or decrease (Appleyard& Field, 2005)
Government expenditure (GOVTEXP)	Positive/Minus (+/-)	As government increases expenditure unemployment decrease but inflation is likely to increase (Dornbusch *et al.*,2011)
Government revenue (GOVTREV)	Positive/Minus (+/-)	Through tax revenues, spending patterns by the government reduces unemployment through income redistribution programmes (Raynor, 2013)
Tax revenue (TAXREV)	Positive/Minus (+/-)	An increase in taxation reduces the returns to both physical and human capital investment. However, taxation provides the means to finance public expenditures and indirectly can contribute to increase in the growth rate. (Myles, 2007)
Dummy variable representing structural changes in the economy of Uganda (dm_{sb})	Minus (-)	Uganda established a stable government since 1986. It is expected that the policies of the new stable government should reduce both unemployment and inflation.

Time series data is often non-stationary and using non-stationary data results in a spurious regression (Gujarati, 2005). The data will be subjected to the following tests:

7.6   RESEARCH TECHNIQUES

To develop an econometric model on the impact of monetary and fiscal policy on unemployment and inflation on the Ugandan economy, the study employed the FMOLS developed by (Phillips & Hansen, 1990) and DOLS developed by (Stock & Watson, 1994) estimation approaches as well as the pesaran *et al*. (2001) ARDL approach. The FMOLS and DOLS approaches are applied to test for long-run dynamics in the monetary and fiscal policy estimation analysis against unemployment in the study. The ARDL approach is used to test for short run and long run dynamics in the estimation analysis on monetary and fiscal policy against inflation in the second model estimation. Considering the use of the FMOLS and DOLS as well as ARDL approaches which are different estimation techniques, hence the study used both the Johansen cointegration approach as well as the ARDLbounds testing approach with respect to their respective models.

Regressions with non-stationary series may have no meaning and therefore called 'spurious' (Asteriou and Hall, 2007). However, in view of the fact that majority of economic series are non-stationary, any regression estimations applied to this method are subject to spurious outcomes. Consequently, as a result, it becomes imperative to differentiate the regressed variables in an effort to facilitate stationarity of the variables. The following section presents a review of the various techniques applicable to stationarity and cointegration analysis, followed by residual diagnostic checks.

7.6.1   Testing for Unit root with Structural Breaks

7.6.1.1   Structural Breaks

Macroeconomics time series encounters several breaks due to experiences of economic transformation attributed largely to domestic policy changes or the change in the external macroeconomic landscape. Perron (1989) argues that structural breaks occur at an unknown time. Omission of the structural breaks in the estimation analysis generates spurious results and leads to misrepresented inferences. In examining structural breaks, Perron (1989) analysed one structural break classified as exogenous which he represented with a dummy variable. However, Perron's approach was criticised on grounds that domestic economic change can be caused by both external and internal events. In this context, not only it facilitates to find more than one

structural breaks, but also breaks can be treated as endogenous (Lumsdaine and Pappell 1997; Ben-David *et al.* 2003).

Considering the large economic and political transformations experienced in the Ugandan economy over the years, it generated notable structural changes in the economy. The major structural shifts in Uganda occurred from the period 1970s to the early 2000s. Prior the establishement of BOU, Uganda adopted the East African Currency Board (EACB) that was undertaken with Kenya and Tanzania. The 1970s experienced massive political changes in terms of presidental leaderships in Uganda. There were various regime changes in Uganda that generated massive mis-management and economic disintergration which in turn lead to the experience of hyper-inflation with average inflation rates of over 100%. Barungi (1997) indicates that the budget deficit was increasing at an annual rate of 23% and was financed by simply printing money. Similiraly, the 1990s witnessed extensive adoption of large structural adjustment programmes (SAPs) in the country which were part of the national economic recovery programme. These SAPs included trade and financial liberalisation, large donor aid inflow as well as extensive monetary policy changes by the policy authorities. This policy package included price liberalization, devaluation, trade policy reforms, and public enterprise and fiscal reform, including reduced subsidies and rationalization of public spending (Barungi, 1997). Consequently, the changes can possibly alter the macroeconomic environment in Uganda. Hence this study re-tested the unit root tests of the variables in the sample period 1980 to 2013 taking into consideration the transformations experienced during the period under review. Thus, it explains the degree to which the structural changes impacted change in monetary and fiscal policy variables.

Lumsdane and Pappel (1997) pioneered analysis of unit root tests with two structural breaks. Unlike the Zivot and Andrews (1992) study, Lumsdane and Pappel results indicated existence of unit roots. This was further confirmed by studies by Ben- David (1998) and Ben-David *et al.* (2003). Following this literature, this study advances the unit root testing with inclusion of two structural breaks for the Ugandan data. The Chow break results are presented in the first section of chapter eight.

7.6.1.2 *Unit Root Tests*

A series is referred to as (weakly or covariance) stationary if its mean and variance are constant over time and "the value of the covariance between the two-time periods depends only on the distance or lag between the two-time periods, not on the time at which the covariance is calculated" (Gujarati, 2003). A key concept of time series analysis is that of stationarity (Asteriou & Hall, 2007). Additionally, Asteriou and Hall (2007), argue that stationarity testing is imperative because if the series is non-stationary than all the typical results of the classical regression analysis are not valid.

This is ascribed to the assumption of classical regression analysis that postulate stationarity of both the dependent and independent variables moreover, errors exhibit a zero mean and fixed variance. According to Brooks (2002), a stationary series exhibits a constant mean, constant variance and constant auto covariance for a particular individual specified lag. A non-stationary time series data ought to be initially differenced "d" times prior to transformation into stationary series, and then establishes effective integration level denoted as *I (d)* such that *d* represents the order of integration. The order of integration illustrates the scale of unit roots available in the series or the measure of differencing significance required to determine the stationarity of a variable. If a difference operator is implemented twice greater than *d* times to an I (*d*) operation, the result will induce stationarity of the series albeit with moving average error element.

An I (0) displays a stationary series, whilst an I (1) series embodies one-unit root. An I (2) series comprises of two-unit roots hence would essentially necessitate differencing twice to generate a stationary series. An I (1) and I (2) series may deviate considerably from their mean values and may surpass this mean value albeit sporadically, whilst I (0) series seems to cross the mean value as often as possible. Brooks (2002) argues that, the level of stationarity ranges from strict, weak stationarity or white noise. A series will display stationarity if its distribution remains constant over varying time, thus, the probability of Y coefficient implicitly falling with in a specific interval remains constant at different time periods. A white noise process has a constant mean, constant variance and constant auto-covariance except at lag zero (Brooks, 2002). The use of non- stationary time series data in econometric modelling generates weak standard inference with regards to asymptotic analysis. Moreover,

non-stationary data will risk running meaningless or "spurious" regression. A spurious regression is one with two variables trending together overtime and could have a high $R2$ and t-statistics values even if the two variables are totally unrelated (Simawu, 2011). The impact and extent of a shock disturbance in a particular time t varies significantly against stationary and non-stationary data.

Enders (2008) indicated four cases of significant spurious regression as observed below; Case I: the classical regression becomes appropriate if both variables exhibit stationarity. Case II: regression equations that incorporate the application of integrated variables of a variety of sequences will display meaningless results. Case III: non-stationary sequence variables of the same integration order particularly if the sequence contains a stochastic trend will lead to spurious regression hence generates erroneous results that persist on a constant basis. Consequently, it is appropriate to estimate the regression equation in first difference. Case IV: if variables in non-stationary sequence are integrated of the same order and the residual sequence is stationary yet the variables are cointegrated.

Confirming the order of integration is a pre-requisite for almost all-time series analysis. Unit root tests include null of non-stationarity (Augmented Dickey Fuller test (ADF); Phillips Perron test (PP); Schmidt and Phillips test (SP); Elliot, Rothenberg and Stock point optimal test (ERS); among others), and the null of stationarity (Kwiatkowski, Phillips, Schmidt and Shin test (KPSS); Leybourne and McCabe test (LC); among others). In this study, the Augmented Dickey-Fuller (ADF), Phillips-Perron (PP) and Kwiatkowski, Phillips, Schmidt and Shin test (KPSS) unit root tests are applied to determine the order of integration for each series. Since the ADF test is low power in small sample (Cheung and Lai, 1995), the PP and KPSS unit root tests are applied to check the robustness of the estimation results.

7.6.2   The Augmented Dickey-Fuller Test

Over the past period, unit root tests have become largely prominent about testing for stationarity. Dickey (1979) and Fuller (1976) pioneered unit root tests in time series analysis. The Dickey-Fuller (DF) and the Augmented Dickey-Fuller (ADF) are widely featured in numerous economic literature and most prominently used unit root tests. The ADF test is more preferred to the DF test since the latter has critical values that

are bigger in absolute terms and may sometimes lead to a rejection of a correct null hypothesis (Brooks, 2004). An error term (μ_t) that is not independent in the equation can generate biased results when applied the DF test. The limitation of the DF test involves inadequate consideration of likely autocorrelation in the error term. Therefore, the application of the ADF test improves to circumvent the apparent limitation. Consequently, the simple DF test is valid only when the time series is an AR (1) stochastic process, however, majority of economic series possesses severe complicated dynamic than is captured by an AR (1) stochastic process. If the series indicates correlation at higher order lags, the assumption of white noise error terms can be disturbed and the simple DF test consequently becomes invalid. The fundamental objective of the DF test is to observe the hypothesis in the DF equation test. Thus, the hypothesis seeks to examine:

H_0: if the time series exhibits a unit root

H_1: if the series is stationary.

Dickey and Fuller (1979) observed three different equations that can be estimated for each variable using the DF test to test the existence of a unit root. Essentially, the regression equations vary as a consequence of deterministic components α_t and $\beta_t t$ that constitute the following:

$$\Delta X_t = \rho X_{t-1} + \mu t \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots 7.1$$

$$\Delta X_t = \alpha_t + \rho X_{t-1} + \mu t \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots 7.2$$

$$\Delta X_t = \alpha_t + \beta_t t + \rho X_{t-1} + \mu t \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots 7.3$$

Where X_t is the appropriate time series, Δ is the initial difference operator, t is the time trend and μt is the true white noise error term which ought to fulfil the following assumptions that include: normality, constant variance and independent error terms. In practice, the equations that constitute the null (H_0) and alternative (H_1) hypotheses in three categories, that is, an equation with no constant and no trend; an equation which displays a constant without a trend; and an equation that possesses both constant and trend. The test incorporates the application of OLS in estimating equations to derive the deterministic value of ρ and the corresponding standard error

whilst also comparing the outcome t-statistic with the suitable value displayed in the DF results. The test is executed on ρ under the hypothesis that ρ=0, it implies there is a unit root. If the calculated statistical value is below the critical value in absolute terms in the DF test, then the null hypothesis of the unit root is declined in consideration to the alternative hypothesis consequently culminating into stationary time series. If the error terms in the DF test are not independent, then consequently results tend to be biased. The DF method has been criticised for the near observation equivalence (Simawu, Mlambo & Murwirapachena, 2014). This is attributed if the statistical tests indicate shallow statistical capability in view of their inability to differentiate between pure unit-root approaches (ρ = 0) and virtual unit-root activities (ρ is close to non-stationary threshold).

Additionally, The Dickey-Fuller test alters to be plausible only if μ_t is perceived to not be auto correlated; however, the test would show non-correlation under the circumstances of auto correlation in the dependent variable of the regression (ΔX_t). Otherwise, the actual scope of the test would exceed the traditional normal size used, thus the test would seem 'outsized'. As the error term is unlikely to be white noise, Dickey and Fuller extended their test procedure suggesting an augmented version of the test that includes extra lagged terms of the dependent variable in order to eliminate autocorrelation (Asteriou & Hall, 2007). Limitations of the DF test can be eradicated with the application of the meticulous method of Augmented Dickey Fuller (ADF) test alongside the Phillips Perron (PP) test. The ADF test broadens the estimation with the incorporation of lags to the dependent variable. The ADF test is more preferred to the DF test since the latter has critical values that are bigger in absolute terms and may sometimes lead to a rejection of a correct null hypothesis (Brooks, 2004). The ADF test is implemented by augmenting lagged estimates that exist in the dependent variable ΔX_t to invalidate autocorrelation and therefore estimates the regression equation as follows;

$$x_t = \alpha_t + \beta_t t + \rho x_{t-1} + \sum \delta \, \Delta x_{t-1} + \mu_t \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots 7.4$$

Equation (6.4) exhibits an intercept and a time trend. Importantly, the ADF test constructs a parametric correction for higher-order correlation by assuming that the series follows an AR (ρ) and thus further expanding the lagged difference terms of the dependent variable. Accordingly, each variable is regressed on a constant, a linear

deterministic trend, a lagged dependent variable and q lags of its first difference in the unit root test. Equation 6.4 is simplified as follows; where, x_t is the level of the variable under consideration, $_t$ denotes time trend and μ_t is normally distributed random error term with zero mean and constant variance. The ADF test for unit root tests the null hypothesis $H_0: \rho = 0$ against the one-sided alternative $H_1 : \rho < 0$ in equation (6.4) above. The optimal lag length for conducting ADF tests is usually picked with the help of various information criteria, for example, Schwartz Information Criteria (SIC). Simawu, Mlambo and Murwirapachena (2014) argue that, the number of augmenting lags is determined by minimizing the Schwartz information criterion (SIC) or minimising the Akaike information criterion (AIC) or lags is dropped until the last lag is statistically significant. The estimation test is approximated on ρ with the embodiment of the critical terms in the DF tables. If the test statistic is undersized in relation to the critical value with a significant aspect, then the null hypothesis of the unit root will be dismissed in pursuit of the stationary alternative hypothesis. Rejecting the null hypothesis does not always mean that the time series is non-stationary (Perman & Byrne, 2006).

7.6.3 Phillips-Perron (PP) Test

Phillips and Perron have developed a more comprehensive theory of unit root non-stationarity (Brooks, 2008). The PP test proposes an alternative (nonparametric) method of correcting for serial correlation and heteroscedasticity (HAC) in unit root testing. The PP tests are parallel to the ADF tests although, they use the standard DF or ADF test, but modifies the t-ratio so that the serial correlation does not affect the asymptotic distribution of the test statistic. The PP test differs from the ADF due to the description and characteristics of the application of serial correlation and heteroscedasticity of estimation errors. Time series values that exhibit serial correlation, time dependent heteroscedasticity and structural breaks display strong and solid estimation results by the PP test compared to the ADF test. the different descriptive elements between the PP and ADF tests is observed in regression analysis, in particular, the PP test ignores any serial correlation in the test regression where the ADF tests use a parametric autoregression to approximate the (Autoregressive Moving Average) ARMA structure of the errors in the test regression. The PP test implements the Phillips-Perron (1988) and hence assumes a variable to have a unit root. In the PP test, the null hypothesis observes a variable that

incorporates a unit root whilst the alternative hypothesis estimates a variable initiated by stationarity. The Phillips-Perron encompasses fitting the regression;

$$Y_t = Z_1 + \lambda y_{t-1} + Z_2 (t-T/2) + \sum_{i=0}^{n} \delta i \, \Delta y_{t-1} + \mu_{2t} \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots7.5$$

Where, Y_t denotes the first difference operator, T denotes the estimated sample size and μ_{2t} represents the covariance stationary disturbance error term. n denotes the number of Newey-West (1987) lags to be used in the estimation test. The PP allows testing the null hypothesis of a variable that is non-stationary employing the t-statistic with the help of estimated Mackinnon (1996) critical values. Perron (1989) noted that the elimination of a possible structural break in the ADF test inspires bias hence undermines the ability to abandon a false unit root null hypothesis. Glynn *et al* (2007) observes that a structural break may be the change in the time series as a result of some unique economic events. Nevertheless, since a large number of macroeconomic time series variables exhibit a unit root (non-stationary), it implies that a structural break can have a permanent effect on the pattern of the time series (Perman & Byrne, 2006). In view of the biasness of the ADF test towards none detection of a null hypothesis especially with the presence of a structural break as assumed by Perron, Perron therefore modified the standard ADF test to a procedure that includes dummy variables to account for a single exogenous (known) break (Nilsson, 2009). This test allows for a break under both the null and the alternative hypothesis (Glynn *et al*, 2007). Perman and Byrne (2006), argue that when an ADF test indicates that a unit root is present in a time series, then the unit root ought to be considered as a single permanent break in a deterministic part of a stationary or trend-stationary process.

The ADF and PP tests have very low power against 1(0) alternatives that are close to being 1(1) (near non-stationary processes or highly persistent processes). To get maximum power against very persistent alternatives, it is preferable to use the KPSS unit root tests.

7.6.4   Kwiatkowski, Phillips, Schmidt and Shin (KPSS) Tests

Unlike unit root tests, stationary tests exhibit significance stationarity covered by the null hypothesis that in turn alters both the null and alternative hypotheses under unit root tests essentially the ADF tests examined in the previous section. The earlier tests of Dickey-Fuller and PP tests estimated a null hypothesis that contained a unit root.

the innovative approach by Kwiatkowski, Phillips, Schmidt and Shin (1992) and subsequently known as the KPSS test, on the other hand exhibits a null hypothesis of a stationary series through either mean or linear trend and the alternative that infers non-stationarity of a series due to the existence of a unit root. The KPSS model displays series of estimations characteristic of a combination of; the deterministic trend, the random walk process and stationary error term. Alok Bhargava proposed such models in 1982 in his Ph.D. thesis where several John von Neumann or Durbin-Watson type finite sample tests for unit roots where developed (see Bhargava, 1986). The KPSS test is determined by the residuals that originate from the ordinary least squares (OLS) regression estimations of the dependent variable (y_t) on the explanatory variable (x_t): the KPSS model estimates the following equation;

$$y_t = \omega + \delta y_{t-1} + \sigma_t \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots 7.6$$

$$\sigma_t = v_t + \theta v_{t-1}, \delta = 1 \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots 7.7$$

The model demonstrates a stimulating link between KPSS test and DF test, the DF test examines $\delta = 1$ based on the premise that $\theta = 0$, accordingly, θ is perceived as a nuisance parameter. Kwiatkowski, Phillips, Schmidt and Shin establish θ to be a nuisance parameter and test the significance of $\theta = -1$ with consideration that $\theta = 0$ through integration of the Lagrange Multiplier test of the null hypothesis $\Phi_u^2 = 0$. Following the subsequent development of the test by Denis Kwiatkowski, Peter C. B. Phillips, Peter Schmidt and Yongcheol Shin (1992), which involved a test of the null hypothesis with an observable series that contained trend stationarity (stationary around a deterministic trend). This implies that the series is illustrated as the sum of deterministic trend, random walk and stationary error besides, the test sought to test the hypothesis that the random walk has zero variance. According to Syczewska (2010), the KPSS test statistics is explained as follows;

- Testing a null hypothesis of stationarity around a linear trend versus alternative of presence of a unit root.

- Testing a null hypothesis of stationarity around mean, versus alternative of presence of a unit root.

The KPSS test has as the null that the variable is stationary, I (1). The DF-test has as the null that the variable is integrated. The KPSS test is perhaps better, if there is a priori knowledge suggesting I (0) as a reasonable maintained hypothesis (Sjö, 2008). KPSS type tests are intended to complement unit root tests, such as the Dickey–Fuller tests. By testing both the unit root hypothesis and the stationarity hypothesis, one can distinguish series that appear to be stationary, series that appear to have a unit root, and series for which the data (or the tests) are not sufficiently informative to be sure whether they are stationary or integrated.

7.6.5 Cointegration Test

Once variables have been classified as integrated of order I (0), I (1), I (2) etc. it is possible to set up models that lead to stationary relations among the variables, and where standard inference is possible. The necessary criteria for stationarity among non-stationary variables is called cointegration (Sjö, 2008). The idea of cointegration originally attained extensive popularity through Granger (1981) and further reinforced by the residual based Engle and Granger (1987), Engle and Yoo (1987), Phillips and Ouliaris (1990), Stock and Watson (1988), Phillips (1986 & 1987) and Johansen (1988, 1991 & 1995a) maximum likelihood estimation approach which is tested on a vector regressive (VAR) technique as well as the Autoregressive Distributed Lag (ARDL) bounds testing method.

The motive behind the cointegration tests is primarily to establish whether the entire variables in both the FMOLS and DOLS approaches as well as the ARDL models are cointegrated. Gujarati (2003), notes that cointegration of two or more-time series suggest that there exists a long-run or equilibrium relationship between them. Cointegration is derived from existence of significant link between two or more series in order to establish an equilibrium relationship that culminates into long run. Economic variables are described as cointegrated under the circumstances of linear composition under stationarity. Therefore, a cointegrating relationship between economic variables could particularly exhibit a long-term or equilibrium phenomenon. Importantly, the cointegrating variables can possibly digress from the conventional short-run relationship however; they would regain their initial relation albeit in the long run. Therefore, the economic interpretation of cointegration implies that although the

series may independently display non-stationarity, subsequently, they converge jointly which in turn drives the stochastic trends to stationarity.

Considering that the series' long-run relationship is equilibrium and the series inevitably merge later, thus the error term may be regarded as the disequilibrium disturbance or the extent of deviation from equilibrium at a particular time t. Among the numerous techniques employed for cointegration testing, Engle-Granger (1987) residual based and the Johansen and Juselius (1990) are widely used. The Engle-Granger method attempts to establish the rationale of both the equilibrium relationship of the residuals or stationarity process whilst the Johansen and Juselius method analyses the rank of the matrix. However, prior to testing the rank of Π, it is imperative to take into consideration.

it is imperative to establish the suitable order (k) of the VAR. the Johansen method is affected by the lag length employed and it is crucial to decide on the optical lag length (Brooks, 2002). Seddighi *et al* (2000) explains that optimally implies that the selected lag length should produce the number and form of cointegration relations that conform to all the a priori knowledge associated with economic theory. However, considering that the vast majority of the cointegration techniques have limitations especially related to the implementation of multivariate models, Brooks (2002), advocates the application of multivariate methods of information criteria which include; the sequential revised likelihood ratio (LR), Akaike information criterion (AIC), Hannan-Quinn information criterion (HQ) and the Final prediction error (FPE) Schwarz information criterion (SIC). Importantly, it is imperative to employ both information criterion procedures with a *priori* awareness to basic elements of economic theory to determine the appropriate order of the VAR. this is to eradicate the possibility of presence of inconsistent VAR order choices. Sjö (2008), observes that testing for cointegration is a necessary step to check if econometric modelling empirically establishes meaningful relationships. The FMOLS and DOLS approach test monetary and fiscal policy against unemployment. Hence the Johansen cointegration method is applied in this model.

Upon ascertainment of suitable VAR order (k) and deterministic trend assumption, it is possible to test the rank of the Π. Johansen technique postulates two likelihood ratio (LR) test estimates aimed for canonical correlations; the trace test and the maximum

eigenvalue test as indicated below. Essentially, application of the Johansen technique involves undertaking several procedures that include:

- Step 1: testing the order of integration

  The first step when undertaking the Johansen methodology involves testing the order of integration of varies being examined. In pursuit of determining the order of integration all, the variables are prearranged. Cointegration is undertaken once all the variables are integrated of the same order and data thereby represented schematically to establish the presence of a linear time trend across variables.

- Step II: setting the relevant lag length applicable to the model

  This entails model estimation and further establishing the rank of $\prod$.

- Step III: determining the model applicable regarding deterministic elements constituted in multivariate framework. It is important to examine the standardised co-integrating vectors (s) and rate of adjustment coefficients.

- Step IV: determining the number of co-integrating vectors.

This step entails executing causality tests to the error correction model to establish the appropriate structural model and further ascertaining the applicability of the model.

Suppose the vector of p-variables [LUNEMPLOY, LMONEY SUPPLY, LREER, LINT, LGOVTEXP, LGOVTREV, LTAXREV, LTO;], $Z_t = (Z_{1t},\ldots Z_{pt})$, is generated by the k-order vector autoregressive process with Gaussian errors:

$$Z_t = A_1 Z_{t-1} + \ldots + A_k Z_{t-k} + \mu + \varepsilon_t \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (7.8)$$

$t = 1,\ldots\ldots,T$

Where, Z_t is a p x 1 vector of 1(1) variables, the A's are estimated parameters, $\varepsilon_1,\ldots.\varepsilon_T$ are i..i..d., $Np(0,\sum)$ and μ is a vector of constants. An error correction specification is used to distinguish between stationarity by linear combination and by differencing and is given as follows:

$$\Delta Z_t = \Gamma_1 \Delta Z_{t-1} + \ldots\ldots + \Gamma_{k-1} \Delta Z_{t-k+1} + \Pi Z_{t-k} + \mu + \varepsilon_t, \ t = 1,\ldots,T\ldots\ldots\ldots\ldots\ldots\ldots(7.9)$$

Information about the number of co-integrating vectors is determined from the rank of Π. specifically, the rank of Π determines how many linear combinations of Z_t are stationary. In the case where $0 < \text{rank} (\pi) = r < P$, Π can be factored as $\alpha\beta'$ (or $\Pi = \alpha\beta'$), where α β are both $p \times r$ matrices. Brooks (2002) notes that it is possible for cointegrating variables to deviate from the short-run relationship however, their connection would inevitably be regained in the long run. This particular notion is fundamentally valuable in the model as the study endeavours to establish and differentiate the monetary and fiscal policy variables that exhibit long-term relationships with unemployment. The existence of a cointegration (s) link (s) manifests itself around the vector error correction model (VECM) framework.

Considering the study additionally employed the ARDL approach to test the monetary and fiscal policy framework on inflation, the ARDL bounds testing approach to cointegration was also used to establish the cointegration relationship among the monetary and fiscal policy variables against inflation. Harris and Sollis (2003) argues that the ARDL method provides unbiased and valid estimates of long run models even when some of the regressors are endogenous. Whilst the Johansen cointegration method necessitates use of large data samples, the the ARDL procedure provides statistically significant results in small samples (Pesaran & Shin, 1997; Pesaran & Shin, 1999). This implies that as pointed out by Chaudhry and Chaudhry (2006) it eliminates biasness involved with estimation of small data samples.

7.6.6   The Vector Error Correction Model (VECM)

A natural progression from a VAR representation is the VECM model, especially when the level series are non-stationary (Sreedharan, 2004). If it is established that the relevant variables are cointegrated it is appropriate to estimate an error correction model. The measurement of the speed of adjustment is of paramount importance in economics because it shows policy makers the likely trend of shocks or deviations. In addition, ECMs are formulated in terms of first differences, which typically eliminate trends from the variables involved; they resolve the problem of spurious regressions. In an error-correction model (ECM), the short-term dynamics of the variables in the system are influenced by the deviation from equilibrium. Cointegrating relationships can be imposed by re-parameterizing the VAR model as a vector error correction model (VECM) Kilian and L¨utkepohl (2016).

The VECM describes short-run dynamics of all the individual variables stipulated in the system, this is applied to a model structure that essentially lays the foundation from short-run dynamics to long-run equilibrium relationships advocated in conventional economic literature. This implies that the identified cointegrating relationship exhibited in the VECM regulates any long-run characteristics of the endogenous variables to approximate to their cointegrating links, besides facilitating for realisation of short-run adjustments. The establishment of cointegrating vectors allows the subsequent estimation of the VECM that fundamentally specifies the number of cointegrating vectors, trend assumptions applied and systematically analysing the model on accurate cointegrating relation (s). For instance, a rank of two indicates that two linearly independent combinations of the non-stationary variables will be stationary (Asari *et al*, 2011).

$$\Delta Z_t = \Gamma_1 \Delta X_t + \Gamma_2 (Z_{t-1} - K_{kt-1}) + \mu_t \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots 7.10$$

$Z_{t-1} - K_{kt-1}$ denotes the error correction term. The implicit coefficient of xt-1 of one in this representation indicates coefficients Z and X are proportionately related in the long-run. The framework of error correction models can be explained as follows: essentially, Z is assumed to be adjusted between t-1 and t following the adjustments across the values of the explanatory variables X between t-1 and t, this is also relatively used to counteract the presence of any disequilibrium throughout the past period. Assuming that the error correction term displays zero lag, this would implicitly be expressed as Z being adjusted between t-1 and t as a reaction to disequilibrium at time t. variable K represents the long-run link corresponding between X and Z whilst Γ_1 illustrates the short-run relationship manifested around adjustments in X and adjustments in Z. Γ_2 displays the adjustment process hence reclaim the initial equilibrium position. Additionally, it also estimates the scope of equilibrium disturbance observed in the previous period appropriately neutralised. The fact that the disequilibrium error term is stationary because the ECM has important implications such as the fact that the two variables are cointegrated implies there is some adjustment process that prevents the errors in the long-run relationship from becoming larger and larger.

The principal superiority of the application of the VECM is attributed to the following features; cointegration regressions largely focus on the long-run relationships between

variables Error Correction Models on the other hand, further reinforce the scope of specific dynamic adjustments between the first differences exhibited in the variables. Additionally, considering ECMs are illustrated with reference to first differences, the drawback of spurious regressions is further reconciled as in turn trends emerging from the variables under consideration are eradicated in terms of econometric application, ECMs offer simplicity and facilitate appropriate use of general-to-specific approaches of estimations which in turn is intended to realise an efficient ECM model suitable for all various data sets. In view of the econometric practicability of cointegration that postulates that the disequilibrium stochastic disturbance is stationary, the ECMs fundamentally related with; the cointegration of two variables indicates the implicit adjustment process that intercepts errors in the long-run relationships further expand significantly. Asari *et al* (2011) argues that a negative and significant coefficient of the ECM indicates that any short-term fluctuations between the independent variables and the dependent variable will give rise to a stable long-run relationship between the variables. Following the comprehensive estimation using the VECM model, it is fundamental to test the residuals originating from the VECM primarily for normality, heteroscedastic and autocorrelation.

7.6.7   Fully Modified Least Squares (FMOLS)

Fully modified least squares (FMOLS) regression was originally designed in work by Phillips and Hansen (1990) to provide optimal estimates of cointegrating regressions (Phillips, 1995). Phillips (1995) further observes that this method modifies least squares to account for serial correlation effects and for the endogeneity in the regressors which is attributed to presence of cointegrating relationship.

FMOLS is used in econometric regression analysis to examine the influence of independent variables on dependent variables following relevant cointegration of the underlying variables in the model. Therefore, FMOLS explain the impact of long run independent variables against dependent variables. According to (Harris, 1995; Harris and Sollis, 2003), this cointegration method by Philips and Hansen (1990) assumes the existence of a single cointegrating vector and involves adjusting OLS estimates of both long run parameters and their associated t-values to accommodate for any bias owing to autocorrelation and endogeneity problems present in OLS residuals. Consequently, the resulting estimator is asymptotically unbiased and has fully efficient

normal asymptotical properties allowing for the use of standard Wald tests using asymptotic chi-square ($\chi2$) statistical inference (Belke and Czudaj, 2010). Bashier (2014) observes FMOLS method utilizes "Kernal' estimators of the nuisance parameters that affect the asymptotic distribution of the OLS estimator. FMOLS technique generates robust estimations than the Engel-Granger approaches particularly with regards to normalization of inference issues, hence, plausible estimations. This is additionally observed by (Himansu, 2007). FMOLS will be used in the study to investigate long run relationships among the monetary and fiscal variables in the estimated model. Bashier (2014) notes FMOLS yield reliable estimates for small sample size and provides a check for robustness of the results.

7.6.8 Dynamic Least Squares (DOLS)

Dynamic Least Squares (DOLS) is an advancement to the Engel-Granger estimation techniques developed by Stock and Watson (1993). The DOLS as proposed by Phillips and Loretan (1991) is one of three OLS estimators developed to resolve the "second-order-bias" issue existing in OLS. The test is a parametric method in which the lagged first difference terms are explicitly estimated (Saayman, 2010). Saayman further states, that DOLS extends the cointegrating regression by augmenting the errors with leads, lags and contemporaneous values of the regressors. Stock and Watson (1993) proposed the DOLS as an asymptotically effective OLS estimator to eliminate feedback from cointegration. Harris (1995) states the DOLS is a more powerful test for cointegration and yields unbiased long run estimations. The equation estimation in DOLS that also involves use of leads and lags of variables on the right-hand side yields effective long run relationship estimates and asymptotically valid t-statistics.

7.6.9 Autoregressive Distributed Lag (ARDL)

In order to generate a plausible estimation equation with essential statistical properties and conforms to a priori knowledge indicated, the Autoregressive Distributed Lag (ARDL) bounds testing approach is used in the study to examine the empirical long run relations as well as dynamic interrelationships between systems variables in the study. The ARDL bounds testing approach to cointegration is employed in the model estimation of the study. Unlike traditional cointegration techniques like; the Engel-

Granger (1987) and Johansen and Juselius (1990) that yield inadequate test results in small samples, ARDL approach can be applicable if the variables of interest have ambiguous order of integration i.e. purely I(0), purely I(1) or I(0) / I(1) which is not acceptable in traditional approaches (Alimi,2014). Moreover, Cook (2006) notes the F-test in the ARDL framework possesses greater power than both the Engel-Granger and the Generalised Least squares-based cointegration tests. Originally developed by Pesaran and Shin (1999) and later advanced by Pesaran, Shin and Smith (2001), the ARDL yields robust cointegration estimates and more effective error correction model.

According to Srinivasan (2012), the ARDL approach is based on the estimation of an Unrestricted Error Correction Model (UECM) which offers various advantages over the conventional cointegration approaches. Srinivasan (2012) indicates the following advantages; **first**, it estimates the short run and long run components of the model simultaneously, eliminating issues associated with omitted variables and autocorrelation. **Second**, the standard Wald or F-statistics used in the bounds test presents a non- standard distribution under the null hypothesis of cointegration relationship between the underlying variables, regardless whether the variables under consideration are I (0), I(1) or fractionally integrated. **Third**, the ARDL technique generally provides unbiased estimates of the long run model and valid t-statistic even when some of the regressors are endogenous (Harris and Sollis, 2003). **Fourth**, once the orders of the lags in the ARDL model have been appropriately selected, we can estimate the cointegration relationship using a simple Ordinary Least Square (OLS) method.

Estimation of the ARDL bounds testing approach involves several stages which include;

The first stage entails estimation of the equation via OLS in order to examine existence of long run relationship among the underlying variables. This also entails estimation of the F-test to investigate joint significance of the lagged coefficients. Pesaran, *et al.* (2001) establishes two sets of critical bound values for the F-statistics, if the calculated F-statistic is less than the value of the lower critical bound, hence, the null hypothesis is rejected, thereby suggesting existence of long run cointegration relationship among the model variables. On the other hand, if the calculated F-statistic value lies within the critical bounds, it implies inference is inconclusive (Srinivas, 2012).

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Establishment of cointegration is followed in the second stage by estimation of conditional ARDL long run model which ultimately entails selection of appropriate lag orders. Thus, the study employs the ARDL approach to examine the relationships between the dependent variables and the explanatory variables in the study.

7.6.10 Granger Causality Test

Causality simply describes the capability of a given variable to predict and thus causation between it and the other variable. Granger (1988) postulated that if cointegration between a dependent and independent variable is successfully established, then it implies at least one-directional Granger-causation exists. Brooks (2002), states that the Granger causality test has been widely used in economics. Eichler (2001), observes that the concept of Granger-causality is defined in terms of predictability and exploits the direction of the flow of time to achieve a causal ordering of associated variables. Considering that traditional regressions only display absolute correlations of variables, Granger causality on the other hand, establishes the practical capability of time series to effectually forecast another time series. Since it does not rely on the specification of an econometric model it is particularly suited for empirical model building strategies as such (Sims, 1980).

Granger (1969) explained causality to exist as follows; assuming stationarity, a variable Y is seen to Granger-cause variable X in case valuable information about the previous history of Y is fundamental in predicting the future position of X beyond knowledge of the previous history of variable X and all additional relevant past information *U*. The standard Granger causality test examines whether past changes in one variable, *x*, help to explain current and past changes in another variable, *y*. Where this is true, then the conclusion is that *x* Granger causes *y*. The above experiment is repeated with *x* and *y* interchanged to determine whether causality runs in the other direction. The Granger causality test primarily considers prediction than causation, this is in view of the fact that although past phenomena can possibly cause or predict the future, on the other hand, future events are unable to causal or predict past events. Thus, four possible outcomes are possible:

- Unidirectional causality: x Granger causes y, but not vice versa.

- Unidirectional causality: y Granger causes x, but not vice versa;

- Bi-directional causality: x Granger causes y and y Granger causes x;

- Independence: neither variable Granger causes the other

The application of the standard Granger test requires that the variables be stationary. Most economic variables are non-stationary in level forms. Thus, differenced stationary variables are used in conducting the standard Granger causality test. According to Lin (2008), the Granger causality test assumes two important assumptions: firstly, the future cannot cause the past. The past causes the present or the future resulting into "expectations". Secondly, a cause contains unique information about an effect not available elsewhere. Lütkepohl (2007), argues that Granger causality tests are usually based on improved linear prediction with in a specific model. This is in view of inadequate availability of comprehensive information concerning variables moreover; there exists a linear functionality aspect to the applied method. The original explanation of Granger Precisely assumed availability of all the relevant information to be examined. Testing for Granger causality requires knowledge about the properties of the time series under consideration (Bruns & Stern, 2015). If the time series are integrated, Wald test statistics for Granger causality in a VAR in levels follow non-standard asymptotic distributions and depend on nuisance parameters (Sims *et al*, 1990; Toda & Phillips, 1993).

The scope of integration existing in the time series can be determined by the application of various unit root tests. However, a majority of unit root tests have a limitation of low power especially when applied to small samples. If the time series in question are indeed first order integrated (I (1)) but not cointegrated, a VAR in first differences provides a valid framework for testing Granger causality using Wald tests. Instead, if the time series are I (1) and cointegrated, a vector error correction model (VECM) is the appropriate framework for Granger causality testing. If the time series are not integrated (I (0)), Granger causality can be directly tested using a VAR in levels as the unrestricted model (Bruns & Stern, 2015). Thus, Granger causality test can be implemented using various methodologies although the applicability of each specific model is essentially determined by the properties of the time series under consideration. Bruns and Stern (2015), postulate that pre-testing biases are introduced by testing for the order of integration and cointegration to decide the appropriate framework applicable to Granger causality testing. Toda and Yamamoto (1995)

established a Granger causality testing approach counter the pre-testing prerequisite. They show that if a VAR in levels is augmented by a number of lags equal to the highest degree of integration, a Wald test that does not restrict the augmenting lags is asymptotically X^2 distributed irrespective of the order of integration and cointegration (Bruns & Stern, 2015). This implies that the Granger causality can be tested through estimation of a VAR model in turn elimination of deterministic elements and thus, examines any impediments on its coefficient.

The Granger (1969) causality test applied to two variables X_t and Y_t incorporates a VAR model to be estimated which includes the following;

$$Y_t = \alpha_1 + \sum_{i=1}^{n} \varphi_i X_{t-1} + \sum_{j=1}^{m} \rho_j y_{t-j} + \mathcal{E}_{1t} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots 7.11$$

$$X_t = \alpha_2 + \sum_{i=1}^{n} \delta_i X_{t-1} + \sum_{j=1}^{m} \Phi_j y_{t-j} + \mathcal{E}_{2t} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots 7.12$$

$\mathcal{E}_{yt}$ and $\mathcal{E}_{xt}$ are assumed uncorrelated white-noise error terms. Thus, x_t fails to Granger cause y_t if $\varphi_1 = \varphi_2 = \varphi_3 = \ldots\ldots = \varphi_i = 0$, additionally, the F test can also further be applied to the estimation analysis. Granger (1969), observes that if no cointegration is found between variables, then the standard causality test can be applied, on the other hand, manifestation of cointegration implies that causality can be tested by applying the VECM technique. The short-term causality of the VECM can be tested using the *Wald* test, and the long-term causality is tested by examining whether the error-correction coefficient in the model is significantly different from zero (Badarudin, 2009).

According to Usman and Asafo-Adjei Sarpong (2009), Granger-causality can be applied in three different situations that include:

- A simple Granger-causality test involves estimation of two variables and their lags.

- A multivariate Granger-causality test entails examining more than two variables in the estimation analysis, because it is assumed that more than one variable can influence the results.

- Granger-causality can also be tested in a VAR framework; in this case, the multivariate model can be extended in order to test for the simultaneity of all the variables under consideration.

This study employs both VECM and Granger-causality tests to establish the existence of causality between monetary and fiscal policy variables in the estimation analysis. The VECM and Granger-causality also further enable to test the strength of hypothesis under taken. The use of Akaike information criterion (AIC) and Schwartz's (1978) Bayesian information criterion (BIC) enables to select the appropriate true lag length in examining Granger-causality tests. Selection of the appropriate true lag length is paramount when dealing with Granger causality tests especially concerning the use of the VAR model to limit the possibility of overestimation or under estimation in the analysis.

7.6.11   Diagnostic checks

Diagnostic checks relating to the properties of data to be used in time series modelling are now routinely implemented in empirical research

The third stage in the Box-Jenkins approach is called model diagnostic checking which involves techniques like over fitting, residual plots, and more importantly, checking that the residuals are approximately uncorrelated (Li, 2003). In order to test the robustness of the model applied in the study, it is important to perform diagnostics tests of the residuals. Diagnostic checks play a fundamental purpose in examining the impact of monetary and fiscal policy on inflation and unemployment as it substantiates parameter estimation results obtained using the estimated model. Additionally, performing diagnostic checks is also paramount especially when dealing with time series models because the diagnostic tests are formulated to primarily investigate the correlation structure of a time series.

Kuan (2008) observes that, a serially uncorrelated time series will display no linear function of the lagged variables to account for the behaviour of the current variable, no function whether linear or nonlinear of the lagged variables can characterise the behaviour of the current variable if the time series is a martingale difference sequence. Kuan further notes that for a serially independent time series, there is no relationship between the current and past variables, thus, diagnostic testing on data series thus

provides information regarding how these data might be modelled. In empirical examination, the estimation of the model is followed by the application of diagnostic checks to assess model residuals that additionally constitute testing of model adequacy. Li (2003) observes that the techniques for diagnostic checks make good modelling sense since in time series analysis, a good model should be able to describe the dependence structure of the data adequately, and one important measurement of dependence is via the autocorrelation function. According to Kuan (2008), the tests of serial uncorrelatedness include the well-known Q tests of Box and Pierce (1970) and Ljung and Box (1978), the robust Q∗ test of Lobato, Nankervis, and Savin (2001), the spectral tests of Durlauf (1991), and the robust spectral test of Deo (2000). Good time series ought to yield relatively uncorrelated residuals implying that the residuals are relatively white noise. Diagnostic checks help to test the stochastic properties of the model such as residual autocorrelation, heteroscedasticity and normality. The various multivariate extensions to these residual tests aforementioned are explored in this study below

6.6.11.1 Stability Tests

There are three major stages in the now standard "Box-Jenkins" time series modelling techniques for Gaussian time series: Model identification, parameter estimation, and diagnostic checking (Adler, Feldman & Gallagher, 1998). Parameter constancy is a basic requirement for accurate forecast in time series regression models (Khedhiri, 1993). Structural stability remains a fundamental property of numerous econometric models; this is in view of the economic premise, which maintains that, a wide sphere of empirical time series relationships tends to exhibit instability over time. Structurally unstable models tend to lead to erroneous sample interpretations and forecasts. Thus, testing for parameter stability and structural adjustments in time series remains vital in empirical estimation. In time series analysis, autoregressive (AR) and linear approaches are popularly applied which is attributed to the comparative unambiguity associated to them particularly in terms of mathematical conformity. In time series analysis, autoregressive (AR) and linear processes are widely used due to their (relatively simple) mathematical tractability (Aue, 2006). Over the recent past, it has been observed that the assumption of linearity may hinder comparative model estimation of large collection of data; Aue (2006) further maintains that financial data

exhibits heteroscedasticity whilst biological data suffers from random perturbations. Hence, during the recent past there has been an increasing interest in non-linear time series. According to Dalla, Giraitis and Phillips (2015), although series of financial returns may reasonably be assumed to have constant mean and be serially uncorrelated, constancy of the unconditional variance of returns may well be unrealistic, particularly over long historical periods. The AR Roots Graph shows the inverse roots of the characteristic AR polynomial. If all roots have modulus less than one and lie inside the unit circle, then it implies that the estimated VAR is stable (stationary). This study seeks to examine tests for parameter stability in time series regressions and further apply the tests to determine the stability of the linkage between monetary, fiscal variables and the unemployment and inflation dynamics for Uganda over time. Testing for parameter stability is widely applied in standard time series regressions framework that exhibit lagged dependent variables and additional stochastic and deterministic regressors. This implies subsequent evaluation of various tests for parameter stability and further traces the derivation of the necessary asymptotic null distribution, then followed by the evaluation of the stability of unemployment, inflation, monetary and fiscal dynamics.

Essentially, it is imperative to analyse stability tests in multivariate time series regressions and their limiting null distribution. Stock (1994) notes that in the realm of monetary economics, for example, introduction of different financial instruments, changes in operating procedures of the central bank and increasing openness of the economy to international capital flows all might result in changes in the relation between money and output. Thus, adequate interpretation of changes in economic dynamics is paramount in empirical estimation, inference, forecasting and additionally formulating economic policies to stabilise economic fluctuations in the economy.

Farhani (2012) notes that tests for parameter instability and structural changes facilitate the appropriate selection of suitable model for given time series, that is to say that we must decide whether to keep the model in its integral form (if the parameters are fixed over the total period), or to divide it (if there is a breakpoint(s)). Several tests of parameter instability have been proposed with the most known that include: The Chow test, Likelihood ratio (LR) test, CUSUM test, CUSUM square test, Wald test and the Ramsey stability test, Lagrange multiplier (LM) test. Each test implicitly uses an

estimate of a change point (Farhani, 2012). To generate robust policy interpretations, a wide variety of tests for parameter stability are applied, for example; time- varying tests that test for random coefficients and cumulative sum tests that test for observations of recursive residuals. The study employs; Normality, CUSUM, Ramsey, Wald stability tests and the AR inverse roots. Farhani (2012) observes that parameter instability in time series may reflect structural phenomena (model misspecification, omitted variables, measurement error) or punctual events (oil crisis, economic policy measures, new regulations). Thus, examination of these tests is principally crucial in interpreting economic mechanisms besides, establishing projections for policy implementations. Time series dynamics are particularly vulnerable to shifts that occur in the mean and variance of the series. Neglecting such shifts therefore has many potential implications because model dynamics adjust to compensate for the omission of structural changes, leading to the fitting of spurious models and drawing controversial conclusions on the time forms of dependence and policy assessments concerning the impact of unanticipated shocks (Dalla, Giraitis & Phillips, 2015).

In the case, that the VAR is not stable, certain results such as impulse response standard errors will not be valid (Brooks, 2002). Because parameter stability tests embody detection of prevalence of structural break points, total time period to be examined is divided into numerous sub-divisions to mitigate the possibility of insignificant coefficients or inadequate adjustment coefficient. Farhani (2015) maintains that parameter stability tests are advantageous because they can be used to any model. Hence can be applied to various models.

7.6.11.2 **Breusch-Pagan- Godfrey Heteroscedasticity Test**

A critical assumption of the classical linear regression model is homoscedasticity– that the variance of the error term is constant over various values of the independent variables. However, this assumption may not always hold. When it does not happen, you have heteroscedasticity (Pedace, 2013). In empirical analysis, the existence of asymmetrical variance is referred to as heteroscedasticity. On the other hand, the existence of a series of random variables that exhibit constant variance is termed as homoscedasticity. Linear regression analysis is profoundly used in econometrics because it generates robust predictions, however, it necessitates the satisfaction of data such as; linearity, additivity and homoscedasticity which rarely exists especially

in complex data series. Takaendesa (2006) observes that test regression is run by regressing each cross product of the residuals on the cross products of the regressors and testing the joint significance of the regression. Gelfand (2015) observes that Homoscedasticity is required to ensure that the regression coefficient estimates from linear regression have the smallest standard errors when compared to other linear, unbiased estimators. In contrast, the presence of heteroscedasticity disrupts this assumption and different standard errors exhibit disparate variances and consequently, the diagonal components of the covariance matrix display unequal correspondence. The heteroscedasticity test is an enhancement to White's (1980) test that pertains to equation structures that additionally is further developed in Doornik (1995, in E views 5:712). It tests the null hypothesis of the existence of homoscedasticity in error terms and independence of the regressors to eliminate the drawback of misspecification.

Granger and Teräsvirta (1993) illustrate the important function of heteroscedasticity particularly in statistical inference of linearity estimation. Importantly, regression analysis primarily assumes that the variance of the error term remains constant across all observations. Homoscedastic errors arise when the error terms exhibit significant constant variance, which applies residual plots to examine its assumption. Error terms that do not exhibit constant variance are termed as heteroskedastic. According to Murray (2008), heteroscedasticity occurs:

- The variance of ε_i is not constant a constant σ^2

- The variance of ε_i is greater for some observations than for others.

$$\text{VAR } (\varepsilon_i) = \sigma_i^2$$

There are a number of formal statistical tests for heteroscedasticity (Brooks, 2002). The most widely used test for heteroscedasticity is the white test that analyses dynamics of heteroscedasticity system to operate as a function of one or more of the independent variables of the model, it also assumes heteroscedasticity to be a function of the squared values of the independent variables and to administer their cross products on adequate residuals. Murray (2005) also notes that the white test is the most general test for heteroscedasticity. He further contends that, the white test's

basic premise is: if the disturbances are homoscedastic, then squared errors are on average roughly constant. According to Pedace (2013), the white test is similar to the Breusch-Pagan test, but the white test allows the independent variable to have a nonlinear and interactive effect on the error variance. The null hypothesis for the white test is homoscedasticity and if we fail to reject the null hypothesis then we have homoscedasticity. If we reject the null hypothesis, then we have heteroscedasticity. Murray (2005) establishes two types of heteroscedasticity tests:

- Tests for continuous changes in variance: white and Breusch-Pagan tests

- Tests for discrete (lumpy) changes in variance: The Goldfeld- Quandt test

In the regression analysis, residuals facilitate the diagnosis process of checking the performance of the variance within a data set.

7.6.11.3 **Residual Normality Tests**

In many econometric models, distributional assumptions play an important role in the estimation, inference and forecasting procedures (Bontemps & Meddahi, 2005). One of the most commonly applied tests for normality is the Jarque-Bera (1980) test. It uses the property of a normally distributed random variable that the entire distribution is characterised by the first two moments-the mean and the variance. Thadewald and Büning (2007) further note, that Normality may be the most common assumption in applying statistical procedures as in the Classical Linear Regression Model (CLRM) where the (unobserved) disturbance vector 1 is assumed to be normally distributed.

Lobato and Velasco (2004) argue that in econometrics, testing for normality is customarily performed by means of skewness-kurtosis test. In general, deviations from normality although a wide range of statistical operations assume normal distribution, various transformations are used to correct non-normally distributed data (Garson, 2010). According to Vasu (1979), correlation, least-squares regression, factor analysis and related linear techniques are relatively robust against non-extreme deviations from normality provided errors are not severely asymmetric. The existence of intense outliers may generate observably acute symmetry essentially; Steenkamp and van Trijp (1991) note that log-linear analysis, logistic regressions and related statistical techniques that use maximum likelihood estimations tend to be additionally robust

against moderate deviations from normality. Precisely, the existence of a white noise process in its coherence manifests in uncorrelated observations. This is, substantiated further through the application of a portmanteau test like Lung-Box or Box-Pierce.

If the series displays Gaussian white noise with uncorrelated observations that additionally are normally distributed, which implies independent time series. Composition of series residuals are tested through the normality and the Portmanteau tests. Bontemps and Meddahi (2005) observe, the initial literature on testing normality includes tests based on cumulative distribution function by (Kolmogorov, 1933; Smirnov, 1939), the characteristic function (Koutrouvelis, 1980; Koutrouvelis & Kellermeier, 1981; Epps & Pulley, 1983), the moment generating function (Epps *et al.,* 1982), the third and fourth moment (Mardia, 1970; Bowman & Shenton, 1975; Jarque & Bera, 1980), and the Hermite polynomials (Kiefer & Salmon, 1983; Hall, 1990; van der Klaauw & Koning, 2003). Importantly, normality tests assume the considerable incorporation of unobservable variables; hence, prior estimation of model parameters followed by normality testing of fitted variables including residuals is of paramount significance in regression analysis. In the linear homoscedastic model, White and MacDonald (1980) stated that various tests are robust against parameter uncertainty, particularly in tests based on moments that used standardized residuals.

Dufour *et al.* (1998) developed Monte Carlo tests to take into account parameter uncertainty in the linear homoscedastic regression model in finite samples (Bontemps & Meddahi, 2005). Thadewald and Büning (2007) further note that the test statistic Jarque and Bera (*JB*) is a function of the measures of skewness S and Kurtois K computed from the samples under review. Hence, this study applies the multivariate extension residual normality test that is considered in the JB normality test. The JB test relates to the differentiation between the third and fourth moments of the residuals in relation with the residuals generated from normal distribution. Ideally, the appropriate orthogonalisation approach (residual factorisation) suitable for the JB test is Urzua's (1997) multivariate normality test. Tiwari and Tiwari (2010) note, Urzua's test makes a small sample correction to the transformed residuals before computing the JB test particularly if the sample elicit size of analysis under review is small. The Jarque-Bera test statistic asymptotically follows an X^2 under the null hypothesis that the distribution of the series is symmetric. The null hypothesis of normality would be

rejected if the residuals from the model are either significantly skewed or leptokurtic/ platykurtic or both (Brooks, 2002).

7.7   CONCLUSION

Chapter seven has presented the methodology framework applied in the reseach study. It included: the model specification and estimation techniwues adopted. This research used the quantitative estimation method to analyse the research study. The study employed data obtained from the World Bank and IMF international financial statistics, Uganda Bureau of Satistics (UBOS), MoFPED and MLGSD. To empirically examine the impact of monetary and fiscal policy on both unemployment and inflation. In Uganda, the study employed two models. The FMOLS and DOLS estimation approaches to investigate the influence of monetary and fiscal policy on unemployment. The ARDL approach was applied to the monetary and fiscal policy on inflation. Hence the used the Joahansen cointegration method as well as the ARDL bounds testing approach.the relevant variables for the study include: (UNEMPLOYMENT) and (INFLATION) which represented the dependent variables. The monetary policy variables include; money supply, interest rate and real effective exchange rate, the cfiscal variables are; government expenditure, government revenue, tax revenue and trade openness. It is the application of the FMOLS and DOLS as well as the ARDL estimation methods in this study which sets it apart from the earlier studies conducted in the macroeconomic field of monetary and fiscal policy frameworks and their influence on unemployment and inflation.

Additionally, the chapter presented stationarity/unit root tests extended with inclusion of structural breaks. The stationarity tests included: the augmented Dickey Fuller test, the Phillips Perron test and the Kwiatkowski-Phillips-Schmidt-Shin test. The Johansen cointegration method as well as the ARDL bounds testing approach are also discussed followed by a discussion on the various diagnostic tests for the study is additionally provided as follows: normality tests, heteroscedasticity test, stability tests such as AR characteristic polynomial tests and CUSUM tests, multicollinearity tests and autocorrelation tests.

The next chapter presents the analytical framework and discussion of empirical findings from the

CHAPTER EIGHT

PRESENTATION AND ANALYSIS OF EMPIRICAL FINDINGS ON THE IMPACT OF FISCAL POLICY AND MONETARY POLICY ON UNEMPLOYMENT IN UGANDA

8.1   INTRODUCTION

The primary objective of this chapter is to present explanations to the issues raised in the first chapter in other words, the chapter intends to present relevant empirical findings of the study. Results obtained from this chapter attempt to explain the impact of fiscal and monetary policy on unemployment in Uganda during the period under review. A comprehensive study review is undertaken based on the analytical framework proposed in chapter six. The chapter is divided into two parts; the first part analyses fiscal policy on unemployment in Uganda. The second part analyses monetary policy on unemployment in Uganda. Essentially both parts in the chapter will additionally test for unit root/ stationarity tests, the Johnsen Cointegration tests and diagnostic tests as well as the Granger causality test. In order to analyze the long-run effects on the selected variables, a Fully Modified Ordinary Least Squares (FMOLS) model as well as Dynamic Ordinary Least Squares Models (DOLS) were run. This is followed by analyzing the short run dynamics through the Error Correction term (ECM) in order to establish the speed of adjustment back to equilibrium. Since Uganda's economy had sevarl regime changes, there is a possibility for structural breaks in the economy. It is for this reason that the data was tested for structural breaks. The results of structural breaks are reported in the next sub-section.

8.1.1   Unit Root with Structural Breaks

Unit root test is known as random or stochastic situations which transform over time predominantly in vast majority of financial time series data. This implies that a variable that exhibits variation in its mean or variance is termed as unit root or non-stationary variable. Considering that most statistical data may potentially exhibit non- stationary variables, it becomes essential to test relevant variables in order to limit spurious statistical inferences. Thus, testing for unit root is a common routine in econometric analysis, since the non-stationary data does not give straightforward results and hence directs for misleading conclusions (Campbell and Perron 1991). A huge feature of

macroeconomic and financial time series data is the presence of structural dynamics. However, the inadequacy of unit root test is its inability to take into consideration the possibility of structural breaks. Structural breaks elements tend to prompt notable socio-economic transformation that if not taken into consideration may generate invalid unit root outcomes. As a result, Perron (1989) integrated structural breaks and illustrated rejection of the null hypothesis in unit root tests through the ADF test. Thus, numerous studies have estimated the ADF test incorporating presence of exogenous and endogenous structural breaks in the tests (Perron, 1997; Lumsdaine and Papell 1997; Lee and Strazicich 2003). Owing to changes in the economic system resulting from domestic policy reforms or change in external macroeconomic situations, macroeconomic time series data tend to exhibit breaks.

In the context of Uganda, rigorous structural policy reforms were implemented since the 1980s that transformed the Ugandan economy. The Chow's break point test is used in order to investigate presence of break points in our data. To investigate existence of considerable differences in the estimated equations, the Chow test fits the relevant equation independently. Any pronounced difference in the test reveals structural transformation in the relationships. Firstly, the stationarity tests are performed using the ADF, PP and KPSS unit root tests in order to investigate any non-stationarity in the series. Table 8.1 show the results for the ADF, PP and KPSS unit root tests respectively. Results revealed indicate data tests in levels and after differencing once and twice.

Table 8.1: Augmented Dickey-Fuller, Phillips-Perron and Kwiatkowski, Phillips, Schmidt and Shin (KPSS) Tests

Variables	Model	ADF p-values $H_0:\rho=1$	Phillps-Perron p-values $H_0:\rho=1$	KPSS p-values $H_0:\rho\neq1$	Order of integration
Lgovexp	intercept	0.3259	0.2910	0.0000	
	Trend and intercept	0.7657	0.7354	0.1337	
	None	0.5498	0.5531		
Dlgovexp	intercept	0.0000***	0.0000***	0.8810	I(1)
	Trend and intercept	0.0021***	0.0001***	0.2230	I(1)
	None	0.0000***	0.0000***		I(1)
lgovtrev	intercept	0.4751	0.2469	0.0000	
	Trend and intercept	0.3312	0.2165	0.0001	
	None	0.6993	0.7229		
Dlgovtrev	intercept	0.0000***	0.0000***	0.8173	I(1)
	Trend and intercept	0.0000***	0.0000***	0.9943	I(1)
	None	0.0000***	0.0000***		I(1)
Linf	intercept	0.5867	0.3997	0.0000	
	Trend and intercept	0.8924	0.2116	0.0000	
	None	0.1449	0.1575		
Dlinf	intercept	0.0000***	0.0000***	0.5826	I(1)
	Trend and intercept	0.0001***	0.0000***	0.8525	I(1)
	None	0.0000***	0.0000***		I(1)
Lint	intercept	0.0856	0.0902*	0.0000	

Variables	Model	ADF p-values $H_0: \rho=1$	Phillps-Perron p-values $H_0: \rho=1$	KPSS p-values $H_0: \rho \neq 1$	Order of integration
	Trend and intercept	0.1746	0.2164	0.8997	
	None	0.8841	0.8089		
Dlint	intercept	0.0063***	0.0063***	0.2939	I(1)
	Trend and intercept	0.1947	0.0163**	0.0760	I(1)
	None	0.0003***	0.0004***		I(1)
Lms	intercept	0.4415	0.3546	0.0000	
	Trend and intercept	0.7285	0.6274	0.0432	
	None	0.8689	0.8629		
Dlms	intercept	0.0001***	0.0001***	0.3756	I(1)
	Trend and intercept	0.0009***	0.0009***	0.9568	I(1)
	None	0.0000***	0.0000***		I(1)
Lreer	intercept	0.0002***	0.0070***	0.0000	
	Trend and intercept	0.0187**	0.1238	0.0000	
	None	0.1049	0.0096***		
Dlreer	intercept	0.0060***	0.0114**	0.0463	I(1)
	Trend and intercept	0.0000***	0.0134**	0.0159	I(1)
	None	0.0006***	0.0012***		I(1)
Ltaxrev	intercept	0.0001***	0.0848*	0.0000	
	Trend and intercept	0.0000***	0.0435**	0.0000	

Variables	Model	ADF p-values $H_0:\rho=1$	Phillps-Perron p-values $H_0:\rho=1$	KPSS p-values $H_0:\rho\neq1$	Order of integration
	None	0.7105	0.8904		
Dltaxrev	intercept	0.0000***	0.0000***	0.4721	I(1)
	Trend and intercept	0.0066***	0.0000***	0.6078	I(1)
	None	0.0000***	0.0000***		I(1)
Lto	intercept	0.6437	0.5676	0.0000	
	Trend and intercept	0.0028	0.0000***	0.0000	
	None	0.7000	0.7043		
Dlto	intercept	0.0000***	0.0002***	0.8733	I(1)
	Trend and intercept	0.0000***	0.0000***	0.1173	I(1)
	None	0.0000***	0.0000***		I(1)
Lun	intercept	0.0154**	0.0153**	0.0000	
	Trend and intercept	0.0217**	0.0195**	0.0012	
	None	0.7613	0.9028		
Dlun	intercept	0.0000	0.0000***	0.5430	I(1)
	Trend and intercept	0.0000	0.0000***	0.7808	I(1)
	None	0.0000	0.0000***		I(1)

Notes

The null hypothesis, H_0= Variables exhibit a unit root

*** indicates stationarity at 1% significant level

** indicates stationarity at 5% significant level

* indicates stationarity at 10% significant level

L represents Logarithms of the employed variables

D represents the relevant variables have been differenced.

The ADF and PP tests show the null hypothesis of a unit root implying non-stationarity of the data variables. The estimated statistic value is compared with the critical value. If the statistic value is greater than the critical value at the specified confidence levels and additionally significant, then the null hypothesis of non-stationarity cannot be rejected. In order to minimise the issues of low power estimation tests and investigate any potentiality of explosiveness of the model series, the PP test is conducted. The PP test is conducted to minimize potential explosiveness of series in our model besides it additionally tackles any consequences emanating from low power tests. According to the results in the table, the PP results seem quite parallel to the ADF test results.

The series according to the ADF results reveal non-stationarity of majorly all in their level form, however, when differenced the series all become stationary and further exhibit significance levels at 1% although the variable of Lint became stationary after second differencing, on the other hand the PP test results also initially show that none of the series is stationary in their levels but become stationary when differenced. Furthermore, the PP series reveal significant levels of 1%. The notable variance about the results is shown with respect to Lint and Lreer variables under the PP test. Under the ADF test Lint became stationary after second differencing whilst under the PP test Lint is stationary after first differencing with or without an intercept as well as a trend and intercept albeit at 1% and 5% significance, Lint subsequently becomes stationary at 1% when differenced. Under the ADF test Lreer is stationary at 1% at first difference but under the PP test when differenced with intercept or trend and intercept, it is stationary at 5% significance and 1% with neither intercept or trend and intercept.

Ltaxrev and Lun are initially stationary in their levels at 1% and 5% under the ADF test, under the PP test both series variables are stationary at 1%. Considering the results of the ADF and PP tests, it is seemingly clear that more or less the series are all stationary and integrated of the same order.

The results from the KPSS test additionally reveal series stationarity moreover in their levels and significant without being differenced. Importantly, the PP tests test the null hypothesis of the unit root test, whilst the KPSS shows its null hypothesis as stationary.

Hence rejecting the null hypothesis under the PP test implies no unit root in the series however, rejecting the null hypothesis under the KPSS implies non-stationarity or existence of a unit root in the series. The KPSS results notably diverge from the PP tests. The KPSS tests applied in the confidence level variables fail to reject the null hypothesis of a unit root test. If the test statistic is superior to the critical value in the PP test, then the null hypothesis of non-stationarity can be rejected, however, a higher critical value than the test statistic implies we cannot reject the null hypothesis of stationarity. It is not surprising nevertheless that INT, GOVTREV and TAXREV are stationary as they measure the economic capacity of the Ugandan economy in terms of job creation. We therefore further examine the stationarity dynamics of the unit root tests employing the Chow break point test to ascertain the potentiality of the structural breaks in our data. This is illustrated below in table 8.2.

Structural breaks in time-series that are not accounted for, can lead to biased parameter estimates. They can also lead unit-root tests to falsely accept a null hypothesis of non-stationarity (Byrne & Perman, 2006). Although visual plots of time series are able to establish manifestation of structural breaks, nevertheless, empirical testing is essential to determine specific breakpoint dates. The Chow test is commonly employed to test the probable presence of structural breaks. The Chow test basically splits the sample into various sub-periods, analyses the relevant parameters for each specific sub-period and compares the F-statistics. Hendry (1995) defines structures As the set of basic, permanent feature of the economic mechanism. Causes of structural change may include technical progress, R&D, new legislation, institutional changes, regime shifts, financial innovation, and shifting demography, evolving social and political mores, as well as conflicts and other major catastrophes' (Hendry, 2009). table 8.2 below indicate presence of structural breaks during the period 2002 and 2006 thus indicating presence of a unit root in the data.

Table 8.2: Chow Breakpoint Test Results in 2002, 2006

Chow Breakpoint Test: 2002

F-statistic	12 .65362	Prob. F (5,24)	0.0000
Log likelihood	43.89167	Prob. Chi-Square (5)	0.0000
Wald Statistic	63.26812	Prob. Chi-Square (5)	0.0000

Chow Breakpoint Test: 2006

F-statistic	7.261674	Prob. F(5,24)	0.0003
Log likelihood ratio	31.32818	Prob. Chi-Square(5)	0.0000
Wald Statistic	36.30837	Prob. Chi-Square(5)	0.0000

Figure 8.1: Cusum Parameter Stability Tests for the Period 2002 and 2006
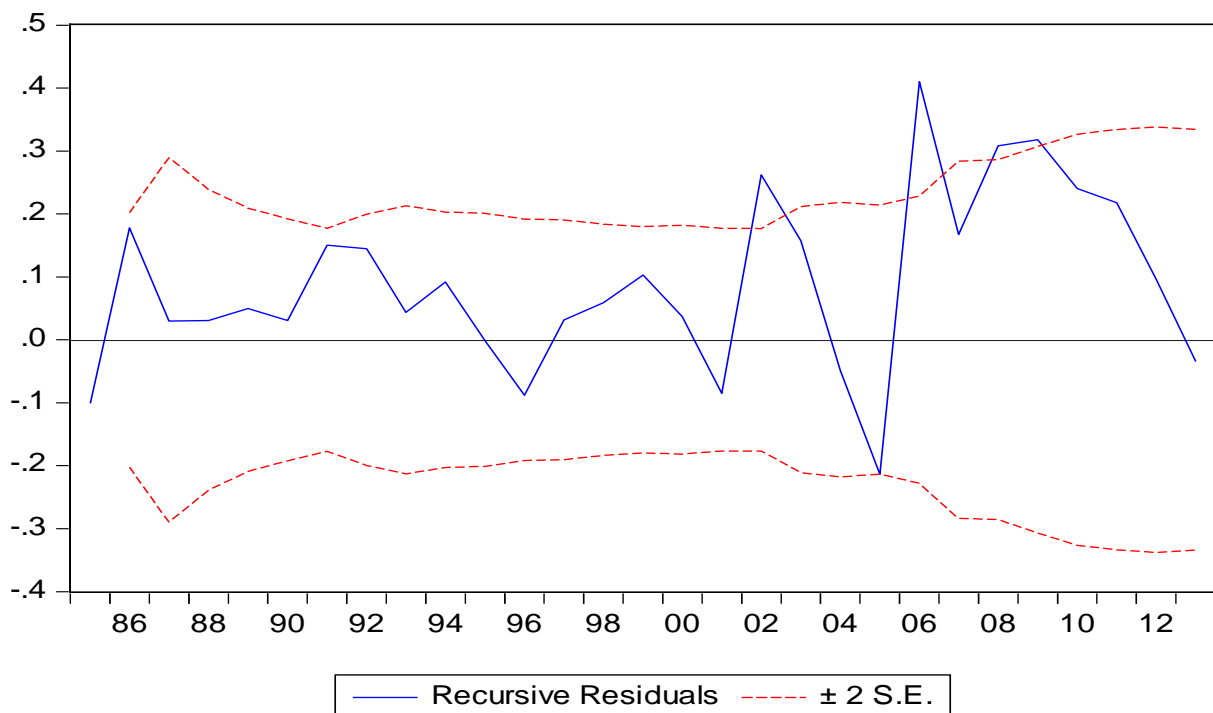
The reason that may be attributed towards these structural breaks are explained in the following paragraph:

Following prolonged periods of economic and financial decline and political volatility in Uganda in the 1970s, policy authorities adopted a wide range of rehabilitation and recovery programmes in 1987 to restore macroeconomic solidity which witnessed large inflows of donor funds in the mid-1990s and early 2000s. The implementation of numerous SAPs constituted among others liberalisation of the financial sector particularly shifting away from direct to indirect monetary policy management. Further liberalisation of the capital account in 1997 constituted ceasing the tax exemptions on income earned on Treasury Bills and other central bank securities in 2001/02 FY. The tax exemptions had been in place since the 1970.

As part of its regulation of demand for base money policy, BOU also instituted its BOU treasury bill along the treasury bills however, the BOU Bill was subsequently terminated in 2000/01 and replaced with the repurchase agreements (repos), moreover the inter-bank foreign exchange market was also established in 2000/01 and BOU further limited its intervention in the exchange rate market. However, the rapid economic growth attained in the 1990s notably deteriorated from 2006 to 2012 in spite of continuous economic reforms. After a long period of rapid economic growth, Uganda's rate of economic growth declined between 2006 and 2012 as the macroeconomic environment became more volatile (World Bank, 2013). The World Bank further notes deterioration in the terms of trade, the fiscal and monetary policy slippages, the prolonged drought, and subsequent tightening of monetary policy to stabilize the economy, were the main factors behind the economy's deceleration. Drought and floods at the start of the 2006/07 FY accelerated underlying inflation above headline inflation. Comparing the time periods of implementation of structural adjustments in Uganda with structural breaks determined by the Chow test, the study notably observes identical time periods. Noteworthy, observed in the initial chapter, the 1990s and early 2000s witnessed massive structural changes. On the other hand, the changing global dynamics and regional East African integration exposed Uganda to exogenous shocks that slowed down its growth rates.

The stationary methods used to test for stationarity have largely displayed non-stationarity of the data series in levels and stationarity when differenced once and twice, hence, most series are integrated of the same order I(1).

8.1.2   Tests for Cointegration

Cointegration analysis is performed using the Johansen method to test the long run equilibrium relationship between monetary and fiscal policy and their determinants. Establishing presence of potential long run relationships between monetary and fiscal policy and the relevant determinants facilitates appropriate economic inferences validated from the study outcomes. The essential benefit of the cointegration approach enables us to integrate the long run and short run relationships between variables through a unified combined framework. In other words, cointegration tests reveal whether all our study variables move along together especially over a longer period. The Johansen approach enables all variables to exhibit endogeneity hence easy determination of all cointegrating links between variables.

If the variables are cointegrated it implies stationarity in the linear combination of the relevant variables. Cointegrating multiple variables entails observing essential specifications like; variables ought to be integrated of the same order; if non-stationary variables are regressed in their level form, however, their relevant linear combinations should be stationary. This study employs the Johansen and Juselius (1990) maximum likelihood method to test for cointegration. In the Johansen method, two tests are used to detect cointegration and the number of cointegrating vectors r (Enders, 2008); the Trace test and the Maximum Eingenvalue Test. The Trace test jointly tests the null hypothesis of no cointegration (H_0: r= 0) as against the alternative hypothesis of presence of cointegration (H_1: r > 0). The Maximum Eigenvalue test conducts tests on each eigenvalue separately. It tests the null hypothesis that the number of cointegrating vectors is equal to r against the alternative of r+1 cointegrating vectors (Brooks, 2008). The Johansen approach establishes the number of cointegrating vectors in a non-stationary time series Vector Autoregression (VAR) within the vector error correction model (VECM). The VAR model is adjusted into a VECM through differentiation. The cointegration vector is traditionally identified as specifying the equilibrium relationship between relevant individual non- stationary variables. When the critical value is smaller than the test statistic, then we reject the null hypothesis of

no cointegration. Selection of the appropriate optimal lag length is paramount in the Johansen approach since the critical values are receptive to the lag length as well as the number of deterministic terms in the VECM. Testing for cointegration with application of models that use many variables tends to generate limitations simply on the basis that too many cointegration relationships seem complex or implausible to interpret.

Juselius (1994) notes, "the main difficulty is the interpretation of cointegrating vectors which include a large number of variables". To limit any possible inconsistencies in the estimation process, Hall (1990) suggests estimating a simplified parsimonious and dynamic model that is efficiently stable. OLS may be used to obtain consistent estimates of cointegrating vectors (Zakrajsek, 2009). In order to minimize the drawbacks of omitted variables bias, it is important to use a model that initiates notably meaningful results and incorporates as many variables as advanced in economic theory.

The Johansen method entails determination of the lag order and the deterministic trend assumption of the VAR. subsequently, the Johansen cointegration test is estimated employing 1 lag for the VAR. this is essential to limit potential spurious rejection or acceptance of estimated outcomes. For instance, considering η variables with k lag length in our model, it is appropriate to estimate η ($\eta k + l$) coefficients as the degree of rejecting the null hypothesis is influenced by the lag length. Hence, large lag lengths may override the degrees of freedom. On the other hand, too small lag lengths may nullify important lag elements from the VAR moreover, the presence of serial correlation generates unpredictable estimated coefficients.

Table 8.3: The Johansen Cointegration Rank Test for Fiscal Policy on Unemployment

Sample (adjusted): 1982 2013
Included observations: 32 after adjustments
Trend assumption: Linear deterministic trend
Series: LUNEMPLOYMENT LGOVTEXP LGOVTREV LTAXREV LTO SB
Lags interval (in first differences): 1 to 1

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
At most 1 *	0.649750	73.65449	69.81889	0.0239
At most 2 *	0.477407	40.08306	47.85613	0.2196
At most 3	0.408511	19.31660	29.79707	0.4703
At most 4	0.074452	2.513021	15.49471	0.9846
At most 5	0.001162	0.037219	3.841466	0.8470

Trace test indicates 3 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values
Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**
At most 1	0.649750	33.57143	33.87687	0.0543
At most 2	0.477407	20.76646	27.58434	0.2906
At most 3	0.408511	16.80358	21.13162	0.1815
At most 4	0.074452	2.475802	14.26460	0.9754
At most 5	0.001162	0.037219	3.841466	0.8470

Max-eigenvalue test indicates 1 cointegrating eqn(s) at the 0.05 level

* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

The Johansen cointegration test based on the trace test is shown in table 8.3. Since the results in section 8.2 indicate all the relevant variables are I (1) at 0.05 at 1% significance level, we test the possibility of cointegration among the variables. This study employs the multivariate cointegration approach by Johansen (1991) to the variables. Cointegration analysis is inherently multivariate as a single time-series and cannot be integrated. Furthermore, Hall (1997) postulates the Johansen multivariate procedure is a powerful way of analysing data as it allows a complex interaction of causality and structure which allows us to understand systems in a much deeper way. Table 8.3 shows the cointegration test results for the fiscal policy model based on trace and maximum eigenvalue statistics. The upper part of the table shows the Johansen cointegration test based on the trace test whilst the bottom part presents results on the maximum eigenvalue test.

The trace statistic tests the null hypothesis of r cointegrating vectors against the alternative hypothesis on η cointegrating link. The null hypothesis of no couintegrating vectors is rejected on the basis of the test statistic of 143.4122 which is above the 5% critical value of approximately 95.75. Furthermore, the null hypothesis that there at most 1 cointegrating vectors in rejected, however, the null hypothesis that there at most 3 cointegrating vectors cannot be rejected since the test statistic of approximately 40.08 is notably smaller when compared to the 5% critical value of 47.86. Therefore, the trace test indicates 3 cointegrating relationships/ vectors at the 5% significant level. The maximum eigenvalue test is undertaken on a null hypothesis of the number of cointegrating equations (r) against the alternative hypothesis of number of cointegration equations plus one ($r + 1$). It implies that there are two cointegrating relationships among unemployment, government expenditure, government revenue; tax revenue and trade openness.

The maximum eigenvalue procedure of the Johansen test equally rejects the null hypothesis of no cointegration although fails to reject the null hypothesis of at most 1 cointegrating vectors considering the test statistic of 33.57 is notably lower than the 5% critical value of about 33.88. Thus, the maximum eigenvalue test indicates therefore that there is only 1 cointegrating relationship in the fiscal policy model. The trace test and the maximum eigenvalues test distinctly present differing results although the trace test is markedly adequately robust than the maximum eigenvalue

approach of the Johansen test. Nonetheless, for flexible estimation outcomes we analyse the results of each test on the basis of a *priori* theoretical framework to generate the appropriate cointegration rank. Johansen and Juselius (1990) propose investigating the estimated cointegrating vector and determine the appropriate choice on the interpretability of the cointegrating relationships. The estimated VECMs are limited to 1 and 2 cointegrating vectors independently as indicated by the maximum eigenvalue and trace test, respectively. Results generated by the estimations confirm Luintel and Khan's (1999) demonstrating robustness of the trace statistics than the maximum eigenvalue test. Considering 1 cointegrating relationship specified by the maximum eigenvalue test is unable to generate economically significant results. Consequently, the conclusion is there are 2 cointegrating relationships in the fiscal policy and unemployment model. Importantly, the additional aspect from the analysis is that there are cointegrating relationships between $I(0)$ and $I(1)$ variables, hence reinforcing Harris's (1995: 80) findings that variables integrated of different orders may be possibly cointegrated. This implies that there is one significant long run relationship between the relevant variables (based on the trace test), considering variables may either exhibit short run or long run influences. Hence, a vector error correction model (VECM) is employed to dissipate these notable influences.

8.1.3   The Long-run Relationship

The findings on the existence of a cointegration equation in the above section implies estimation of the long run elasticities with the application of the Fully Modified Ordinary Squares (FMOLS) technique. The FMOLS estimator was originally proposed and developed by Phillips and Hansen (1990). This study employs the FMOLS approach in order to investigate long run effects of variables to determine the scope of influence of fiscal policy on unemployment. FMOLS uses a semi-parametric correction to negate issues emanating from long run correlations between cointegrating regressors and stochastic regression innovations. In order to achieve asymptotic efficiency, this technique modifies least squares to account for serial correlation effects and test for the endogeneity in the regressors that result from the existence of Co-integration Relationships" (Rukhsana and Shahbaz, 2009).

Table 8.4: Fully Modified Least Squares Test Results

Dependent Variable: LUNEMPLOYMENT
Method: Fully Modified Least Squares (FMOLS)
Sample (adjusted): 1981 2013
Included observations: 33 after adjustments
Cointegrating equation deterministics: C
Long-run covariance estimate (Bartlett kernel, Newey-West fixed bandwidth = 4.0000)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LGOVTEXP	-1.146381	0.442437	-2.591062	0.0152
LGOVTREV	-0.009867	0.142678	-0.069158	0.9454
LTAXREV	0.156769	0.064315	2.437530	0.0217
LTO	0.321095	0.144925	2.215595	0.0353
SB	0.233354	0.108102	2.158647	0.0399
C	0.658071	0.508997	1.292880	0.2070

R-squared	0.476401	Mean dependent var		1.109587
Adjusted R-squared	0.379438	S.D. dependent var		0.180350
S.E. of regression	0.142072	Sum squared resid		0.544982
Long-run variance	0.019157			

The Fully Modified Ordinary Least Squares (FMOLS) method utilizes "Kernal estimators of the Nuisance parameters that affect the asymptotic distribution of the OLS estimator (Bashier, 2014). We estimate the long run elasticities employing FMOLS approach. Table 8.4 presents the results of the estimated non-pre-whitened Barlett Kernel, Newey-West fixed bandwidth = 40.000 FMOLS model. Its cointegrating equation is summarised as follows

$$LUNEMPLOYMENT = \mathbf{0.66} + \mathbf{0.23}_{sb} - \mathbf{1.15}LGOVTEXP - \mathbf{0.01}LGOVTREV + \mathbf{0.16}LTAXREV + \mathbf{0.32}LTO \dots\dots\dots\dots\dots (7.1)$$

The FMOLS results show that the relationship between total government expenditure (LGOVTEXP) and unemployment (LUNEMPLOYMENT) is negative and statistically significant with a p-value at 0.0152. This finding suggests that total government expenditure in the economy of Uganda reduces unemployment by -1.14. The relationship between total government revenue (LGOVTREV) is negative and statistically insignificant. This result suggests that total government revenue in Uganda reduces unemployment by 0.009 or 1%. However, when testing for tax revenue on its

own, the relationship between tax revenue (LTAXREV) and unemployment is positive and statistically significant. This means that revenue derived from tax increases unemployment. On the other hand, the relationship between trade openness (LTO) is positive and statistically significant. This implies that the increase in Uganda's trade openness increases unemployment by 0.321. This finding is consistent with the findings of Ssewanyana, Matovu and Twimukye (2011). Importantly, the coefficient of (SB) which reflects the various policy reforms that Uganda implemented has a positive relationship with unemployment as well are statistically significant. This finding suggests that the various policy reforms implemented in Uganda did little to mitigate unemployment in the country. The notable observation is the R-squared value of 0.48 which suggests that only 48% of the model is explained.

Figure 8.2: FMOLS Normality Test
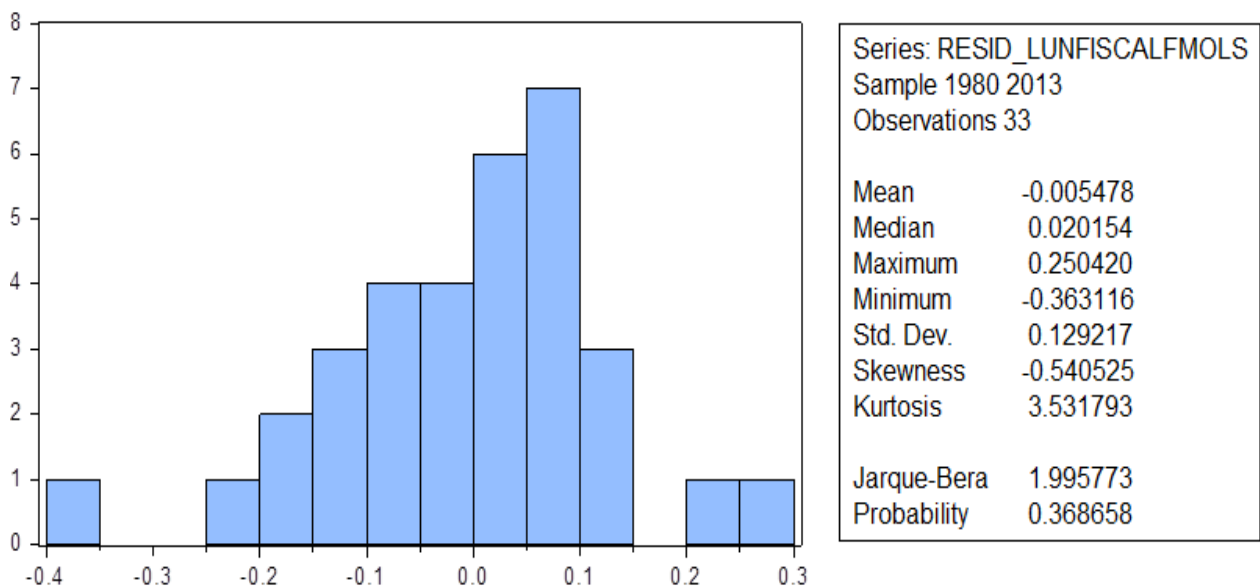
To establish reliability of the results in the above estimated FMOLS estimation equation, residual normality tests for the model are conducted, hence diagnostics ought to be examined. A model with residuals that are not distributed normally generates inefficient estimations. The figure 8.2 above presents Jarque-Bera normality test with a value of 1.99 which is statistically insignificant at 1% level. This finding therefore suggests that we fail to reject the null hypothesis which states that our model residuals are normally distributed thus a desirable situation as it means our estimates are systematic and not biased. Notably it is observed that the insufficient R^2 value suggests that variations in unemployment are inadequately explained by

variations in total government expenditure, total government revenue, total tax revenue, trade openness and structural reforms in Uganda.

Table 8.5: Correlogram for Fiscal Policy on LUNEMPLOYMENT

Sample: 1980 2013
Included observations: 33

Autocorrelation	Partial Correlation		AC	PAC	Q-Stat	Prob*
. |*. |	. |*. |	1	0.087	0.087	0.2761	0.599
.**| . |	.**| . |	2	-0.240	-0.249	2.4149	0.299
. *| . |	. *| . |	3	-0.123	-0.080	2.9948	0.392
. | . |	. | . |	4	0.059	0.021	3.1342	0.536
. *| . |	. *| . |	5	-0.069	-0.135	3.3329	0.649
. | . |	. | . |	6	-0.025	0.002	3.3591	0.763
. *| . |	. *| . |	7	-0.132	-0.186	4.1336	0.764
. |** |	. |** |	8	0.231	0.259	6.5891	0.582
. |** |	. |** |	9	0.339	0.264	12.107	0.207
. *| . |	. *| . |	10	-0.137	-0.165	13.051	0.221
.**| . |	. | . |	11	-0.213	0.020	15.442	0.163
. | . |	. | . |	12	0.011	-0.025	15.449	0.218
. | . |	. *| . |	13	-0.046	-0.121	15.569	0.273
. *| . |	. *| . |	14	-0.185	-0.182	17.649	0.223
. *| . |	. *| . |	15	-0.068	-0.080	17.949	0.265
. | . |	. *| . |	16	-0.010	-0.083	17.957	0.326

*Probabilities may not be valid for this equation specification.

It is imperative that the robustness of the estimated FMOLS is studied using the residual diagnostic technique of 'correlogram of squared residuals' in order to analyze the goodness of fit of FMOLS estimation equation. The results of the residual correlogram are presented in table 8.5 below. The observation from the sample autocorrelation function above indicates that the series is stationary. The table shows that the AC and PAC of correlogram the residuals are notably very small (nearly zero) at approximately all lags moreover, the Q-statistics observed at all lags appear insignificant with small p-values. Although the autocorrelation coefficients appear to be zero, however, there are significant at 1% and 5%. The correlogram indicates that the model is an AR (0). We fail to reject the null hypothesis of no serial correlation. This means that residuals are not serially correlated.

Having analysed the long run equation in FMOLS, the interest is on short run dynamics. In other wards if there are short run disequilibrium, how long and how much is restored back to equilibrium. In this instance, the test for the Error correction term (ECM) is conducted in table 7.5. The five-variable VECM results are shown in table 8.6. The VECM equation for LUNEMPLOYMENT is expressed as:

Table 8.6: Vector Error Correction for Fiscal Policy on Unemployment

Error Correction:	D(LUNEMPLOYMENT)	D(LTAXREV)	D(LTO)	D(LGOVTREV)	D(LGOVTEXP)	D(SB)
CointEq1	-0.312504	-0.705058	-0.051361	-0.131599	-0.164182	0.156280
	(0.16737)	(0.17927)	(0.08510)	(0.23508)	(0.07194)	(0.27295)
	[-1.86709]	[-3.93294]	[-0.60350]	[-0.55981]	[-2.28228]	[0.57256]
CointEq2	-0.128271	-0.547594	0.265317	-0.055180	0.031224	-0.402402
	(0.09852)	(0.10552)	(0.05009)	(0.13837)	(0.04234)	(0.16066)
	[-1.30198]	[-5.18943]	[5.29643]	[-0.39879]	[0.73739]	[-2.50462]

$\Delta LUNEMPLOYMENT_t$ = 0.156 ($LUNEMPLOYMENT_{t-1}$ – **0.71**$LTAXREV$ – **0.05**LTO – **0.31**$LGOVTREV$ – **0.16**$LGOVTEXP$) **-0.12**$\Delta LUNEMPLOYMENT_{t-1}$ – **0.55**$\Delta TAXREV_{t-1}$ + **0.27**ΔLTO_{t-1} – **0.06**$\Delta GOVTREV_{t-1}$ + **0.03**$\Delta GOVTEXP_{t-1}$

…………………………………………………………...………………………….….... (8.2)

($LUNEMPLOYMENT_{t-1}$ – **0.71**$LTAXREV$ – **0.05**LTO – **0.31**$LGOVTREV$ – **0.16**$LGOVTEXP$), show to be plausible and exhibit observable negative signs. The first equation indicates all variables as having negative signs. Their t-values include; -1.86709, -3.93294, -0.60350, -0.55981, -2.28228 and are not significant, albeit GOVTEXP and TAXREV. The second cointegration equation indicates differing results, UNEMPLOYMENT, TAXREV and GOVTREV manifest presence of error correction, however, TAXREV is significant. This implies that any interruptions in these variables generates long run equilibrium whilst TO and GOVTEXP have positive signs.

Figure 8.3: Inverse Roots of AR Characteristic Polynomial for Unemployment
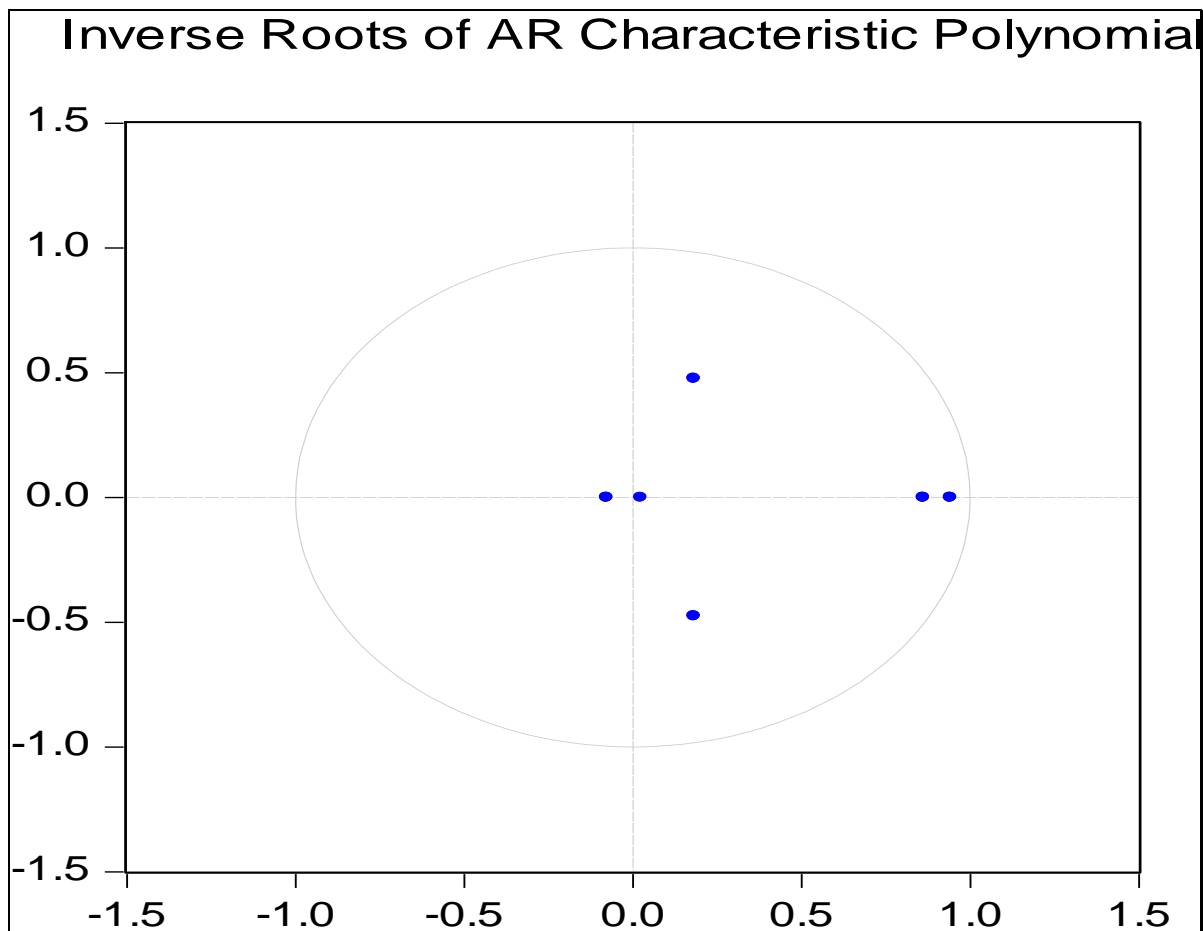
Figure 8.3 above presents the Autoregressive (AR) roots results. This study used the Autoregressive (AR) test in order to investigate stability of our VAR model. Figure 8.3 shows no roots lie outside of the unit circle hence stability of the VAR. the estimated VAR is stable (stationary) if all roots have modulus less than one and lie inside the unit circle. It is imperative to test VAR models for stability in order to yield robust VAR estimates. Figure 8.3 also shows that all the examined inverse roots of the AR polynomial indicate roots whose modulus are smaller than one and further lie within the unit circle. This implies the estimated VAR in this study is stable and stationary hence the VAR satisfied the stationarity condition. If each root has a modulus less than one, all the endogenous variables in a VAR system will be I (0) and therefore the variables to be estimated in the VAR model require no differencing (Johnston and Dinardo, 1997; Lutkepohl, 2004b).

Having analysed FMOLS together with short run dynamics, the next section examines the DOLS dynamics.

Table 8.7: Dynamic Least Squares Test Results

Dependent Variable: LUNEMPLOYMENT
Method: Dynamic Least Squares (DOLS)
Sample (adjusted): 1982 2012
Included observations: 31 after adjustments
Cointegrating equation deterministics: C
Fixed leads and lags specification (lead=1, lag=1)
Long-run variance estimate (Bartlett kernel, Newey-West fixed bandwidth = 4.0000)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LGOVTEXP	-1.833143	1.155210	-1.586848	0.1436
LGOVTREV	0.122600	0.311151	0.394022	0.7018
LTAXREV	0.227411	0.338771	0.671282	0.5172
LTO	0.330956	0.438547	0.754665	0.4679
SB	0.124309	0.313834	0.396098	0.7004
C	0.780786	1.436086	0.543690	0.5986

R-squared	0.908761	Mean dependent var		1.104896
Adjusted R-squared	0.726284	S.D. dependent var		0.181011
S.E. of regression	0.094701	Sum squared resid		0.089683
Long-run variance	0.007065			

Table 8.7 presents the Dynamic Least Squares (DOLS) results. Stock and Watson (1994) advanced a simple effective estimator known as the dynamic OLS (DOLS). The DOLS is another recent and robust technique used in particularly small samples that estimates long run equilibria and minimizes potential simultaneity bias among regressors. Stock and Watson (1994) propose a parametric method to investigate long run equilibria in approaches that include variables integrated of different orders but however, remain integrated. The results of the DOLS show insignificant relationship between all the variables and unemployment. Thus, we examine the dynamics of multi-collinearity in our estimation model in the following section.

Table 8.8: Multicollinearity Test- Variance Inflation Factors (VIF)

Variance Inflation Factors
Sample: 1980 2013
Included observations: 33

Variable	Coefficient Variance	Uncentered VIF	Centered VIF
LGOVTEXP	0.195750	260.5600	3.358843
LGOVTREV	0.020357	230.5437	4.846916
LTAXREV	0.004136	33.55625	1.573669
LTO	0.021003	456.0091	2.219101
SB	0.011686	1.220035	1.146094
C	0.259078	446.2931	NA

We test for multi-collinearity in the study in view of the several variables used in the study model. The use of many variables in model estimation generates high degree of multi-collinearity and the regression model estimates of the coefficients in turn are unstable thus, further inflating the coefficient standard errors. *A maximum VIF value in excess of 5 is often taken as an indication that multi-collinearity may be unduly influencing the least square estimates* (Neter, Wasserman and Kutner, 1989).

The Variance Inflation Factor (VIF) and tolerance are widely used approaches to detect the degree of multi-collinearity of the ith independent variable against other independent variables in a regression model. Table 8.8 presents the results of the multi-collinearity tests. The VIF results indicate all the model variables fulfill the condition of VIF "rule of thumb". This implies that the model is not affected with collinearity. All the variables are below the threshold general rule of thumb of 4. A VIF of 1 denotes absence of correlation among the ith predictor and the remaining predictor variables hence the variances are not inflated. The results in table 8.8 estimate both the centered (with constant) and uncentered (without constant) VIF in the model. Belsley (1991) argues the use of centered and uncentered VIF in order to obtain efficient collinearity results.

Table 8.9: Wald- Coefficient Restriction Test

Equation: Untitled			
Test Statistic	Value	df	Probability
F-statistic	7.394547	(5, 27)	0.0002
Chi-square	36.97274	5	0.0000
Null Hypothesis: C (1) =C (2) =C (3) = C (4) = C (5) = 0 Null Hypothesis Summary:			
Normalized Restriction (= 0)		Value	Std. Err.
C (1)		-1.146381	0.442437
C (2)		-0.009867	0.142678
C (3)		0.156769	0.064315
C (4)		0.321095	0.144925
C (5)		0.233354	0.108102
Restrictions are linear in coefficients.			

Table 8.9 shows the results of the Wald-coefficient restriction test. Score and Wald tests, along with likelihood ratio tests are known as asymptotically optimal tests and provide a general framework for deriving test statistics based on maximum likelihood theory (Carolan and Rayner, 2000). We use the Wald test over the other alternative likelihood tests in view of its small sample power properties. Considering the statistical significance at 5% of the chi-square value of 36.97274, we can thus reject the null hypothesis and conclude that all variables are jointly significant in explaining the variation in unemployment.

Having established the findings on the relationship between fiscal policy and unemployment as well as its various regressors, we additionally examine the impact of monetary policy on unemployment using various monetary variables being regressed against unemployment to empirically establish the relation between monetary policy dynamics and unemployment in Uganda. Thus, we examine the monetary policy dynamics and unemployment in the following section.

8.2   MONETARY POLICY ON UNEMPLOYMENT

This sub section seeks to study the relationship between monetary policy and unemployment through appropriate variables that include; interest rate, money supply, real effective exchange rates and inflation. The study regresses monetary policy against unemployment dynamics over the period 1980-2013.

Table 8.10: Johansen Cointegration Test for Monetary Policy on Unemployment

Date: 04/26/17   Time: 12:53
Included observations: 32 after adjustments
Trend assumption: Linear deterministic trend
Series: LUNEMPLOYMENT LINT LMS LREER LINF
Lags interval (in first differences): 1 to 1
Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.733639	99.48865	69.81889	0.0000
At most 1 *	0.638091	57.15572	47.85613	0.0053
At most 2	0.431541	24.63209	29.79707	0.1750
At most 3	0.110322	6.557676	15.49471	0.6296
At most 4	0.084268	2.817007	3.841466	0.0933

Trace test indicates 2 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values
Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	0.733639	42.33293	33.87687	0.0039
At most 1 *	0.638091	32.52362	27.58434	0.0106
At most 2	0.431541	18.07441	21.13162	0.1271
At most 3	0.110322	3.740668	14.26460	0.8856
At most 4	0.084268	2.817007	3.841466	0.0933

Max-eigenvalue test indicates 2 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values
Unrestricted Cointegrating Coefficients (normalized by b'*S11*b=I):

8.2.1   Cointegration Test Results

If p is the number of variables in the model and r represents the rank/ number of cointegrating vectors, the trace test statistic investigates the null hypothesis that $r \leq p$

against the alternative hypothesis. On the other hand, the maximum eigenvalue test statistic tests the null hypothesis that the number of cointegrating vectors r against the alternative hypothesis of $r + 1$ cointegrating vectors. The null hypothesis is rejected in both the trace test and maximum eigenvalue test if the test statistics are above their respective critical values and vice versa.

Accordingly, table 8.10 shows that at 5 percent significance level, the null hypothesis of no cointegration is rejected since the test statistic of 99.49 is greater than the 69.81 critical value. Likewise, the null hypothesis that there at most 1 cointegrating vector is also rejected in view of a higher test statistic of 57.16 compared to 47.86 critical value. However, the null hypothesis that there at most 2, 3 or 4 cointegrating vectors cannot be rejected since test statistics of 24.63, 6.56 and 2.81 are all smaller than their respective critical values of 29.80, 15.50 and 3.84. Thus, the trace statistic reveals presence of 2 cointegrating relationships between LUNEMPLOYMENT, LINT, LMS, LREER and LINF at 5% significance level.

The maximum eigenvalue test statistic also rejects the null hypothesis of no cointegration since the 42.33 test statistic is higher than the 33.88 critical value. Additionally, it also rejects the null hypothesis that there are at most 1 cointegrating vectors based on a high-test statistic of 32.52 against a low 27.58 critical value. Nonetheless, the null hypothesis of at most 2, 3 and 4 cointegrating fails to be rejected considering the low-test statistics of 18.16, 3.74 and 2.82 when compared to their respective 5% critical values of 21.13, 14.26 and 3.84 respectively. Hence, both the trace statistic and maximum eigenvalue tests indicate existence of 2 cointegrating relationships at 5% significance level among the model variables.

We use the single equation estimation method of FMOLS to examine the long run dynamics between unemployment, interest rates, money supply, real effective exchange rates and inflation in Uganda. This is presented in the table below.

Table 8.11: Fully Modified Least Squares

Dependent Variable: LUNEMPLOYMENT
Method: Fully Modified Least Squares (FMOLS)
Sample (adjusted): 1981 2013
Included observations: 33 after adjustments
Cointegrating equation deterministics: C
Long-run covariance estimate (Bartlett kernel, Newey-West fixed bandwidth = 4.0000)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LINT	-0.181960	0.149239	-1.219255	0.2333
LMS	0.113847	0.049189	2.314498	0.0285
LREER	-0.154872	0.093430	-1.657621	0.1090
LINF	0.069036	0.049368	1.398408	0.1734
SB	0.168394	0.145408	1.158078	0.2570
C	1.309493	0.772900	1.694258	0.1017

R-squared	0.235648	Mean dependent var		1.109587
Adjusted R-squared	0.094101	S.D. dependent var		0.180350
S.E. of regression	0.171655	Sum squared resid		0.795567
Long-run variance	0.035815			

Whilst the DOLS approach subdues relevant dynamic feedback in I (1) variables by incorporating presence of leads and lags, FMOLS on the other hand are based on semi-parametric approach through the estimation of nuisance parameters. Hence we estimate the DOLS to establish the results of the simple VECM. The FMOLS cointegration equation is indicated as:

$LUNEMPLOYMENT$ = 1.31 + 0.17$_{sb}$ – **0.18** $LINT$ + **0.11** LMS – **0.15** $LREER$ + **0.07** $LINF$ …………………………………………………………………........ (7.4)

From the table 8.11, it is observed that the coefficients of interest rates (LINT) has a negative relationship with unemployment albeit statistically insignificant as reflected by the p-value at 0.2333. The findings suggest that interest rates in Uganda reduce unemployment by 18%. The relationship between total money supply (LMS) and unemployment is positive and statistically significant. The results indicate that variation in money supply to be a driving force in mitigating unemployment in Uganda. Real effective exchange rates exhibit a negative relationship with unemployment but statistically insignificant with a p-value at 0.10. The results show that change in money

supply and inflation in form of price rise does not greatly impact job creation. The coefficients of inflation (LINF) and structural breaks (SB) both reveal positive relationships with unemployment at 0.0690 and 0.1683 respectively. Moreover, their coefficients are statistically insignificant. The FMOLS results suggest that with respect to the coefficient of (SB), the numerous monetary reforms implemented were inadequate in reducing unemployment. The R-squared value of 0.2356 is also inadequate.

Table8.12: Dynamic Least Squares Test Results

Dependent Variable: LUNEMPLOYMENT
Method: Dynamic Least Squares (DOLS)
Sample (adjusted): 1982 2012
Included observations: 31 after adjustments
Cointegrating equation deterministics: C
Fixed leads and lags specification (lead=1, lag=1)
Long-run variance estimate (Bartlett kernel, Newey-West fixed bandwidth = 4.0000)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LINT	-0.562782	0.264773	-2.125528	0.0595
LMS	-0.003956	0.077109	-0.051301	0.9601
LREER	-0.623985	0.182471	-3.419636	0.0066
LINF	0.293477	0.136182	2.155030	0.0566
SB	-0.657683	0.359874	-1.827536	0.0976
C	5.319876	1.809779	2.939517	0.0148

R-squared	0.837091	Mean dependent var	1.104896
Adjusted R-squared	0.511273	S.D. dependent var	0.181011
S.E. of regression	0.126543	Sum squared resid	0.160131
Long-run variance	0.012646		

The results in table 8.12 show the long run equation as:

$$LUNEMPLOYMENT = 5.32 - 0.66_{sb} - \mathbf{0.56}LINT - \mathbf{0.00}LMS - \mathbf{0.62}LREER + \mathbf{0.29}LINF$$

(8.5)

The results of the DOLS show that interest rates and unemployment are negatively related and statistically significant. This means that when interest rates increase by 1%, unemployment declines by 56%. High interest rates have a positive relationship with unemployment over time since it is desirable for investment particularly in

developing economies like Uganda with inadequate private sector systems. Although in the short run variation in nominal variables influence the economy, however, in the long run the economic agents are able to adjust. As a result, countries' real and nominal rates may show different developments over time (Nessén & Degrér, 2003). Blanchard (2003) argues that in the face of joint increase in interest rates and stock prices, there is increased anticipated profitability, increasing present values and long run real rates. Conversely, although the coefficient of money supply (LMS) has a negative relationship with unemployment however, it is statistically insignificant at 0.9601 p-value.

The relationship between real effective exchange rates (LREER) and unemployment is negative and statistically significant with p-value at 0.0066. This implies that a unitary increase in real exchange rates would result in a 62 percent decrease in unemployment. Inflation has a positive relationship with unemployment and statistically significant at p-value of 0.0566 which suggests that inflation declines unemployment. Notably, the coefficient of (SB) also has the expected negative sign and is further statistically significant. This finding indicates that the relevant monetary policy reforms that were implemented in Uganda significantly reduced unemployment. This is in line with findings of (Nyorekwa & Odhiambo, 2014; Tumusiime-Mutebile, 2000). The results of the DOLS also show the R-squared at 0.837 which is a desirable situation.

The observation from the investigation of the monetary policy dynamics in relation to unemployment using both FMOLS and DOLS indicates that the DOLS estimation technique generates effective results when applied to monetary policy. The results of the DOLS suggest all the coefficients in the estimation equation have expected signs and are statistically significant.

Figure 8.4: Normality Tests

Series: RESID	
Sample 1980 2013	
Observations 31	
Mean	1.25e-16
Median	-0.033730
Maximum	0.323973
Minimum	-0.200723
Std. Dev.	0.133203
Skewness	0.802760
Kurtosis	2.797089
Jarque-Bera	3.382702
Probability	0.184270
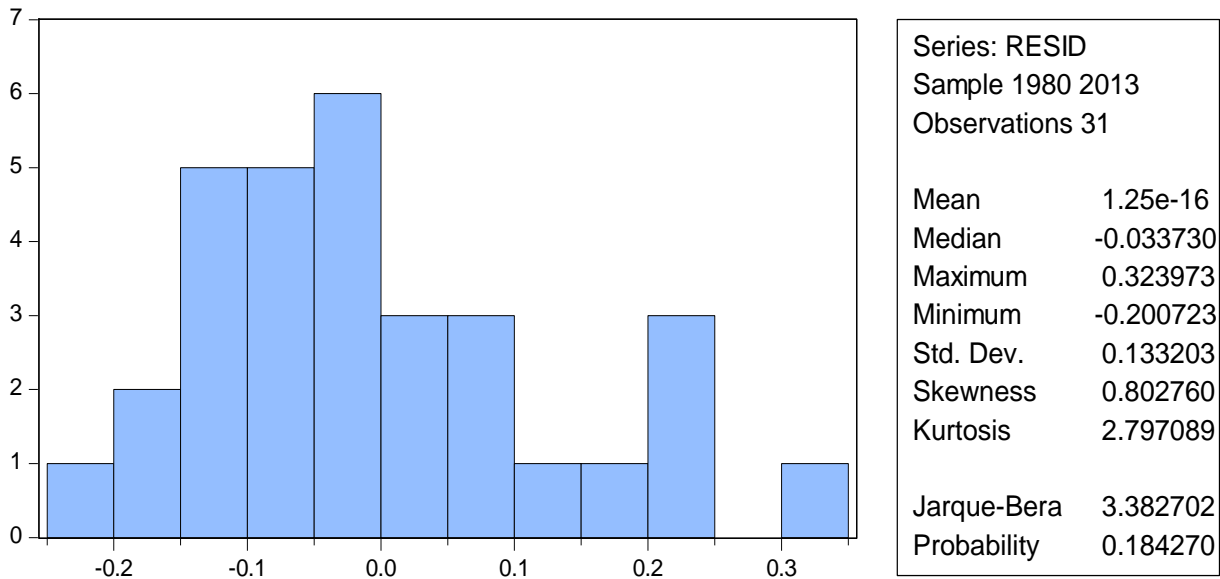
The residual normality test of the model is also conducted in order to generate effective estimations in the model. The Jarque-Bera normality test is presented in figure 8.4 with a value of 3.38 insignificant level at 5% level. A positive skewness value implies the outliners are greater than the mean which indicates a long distribution tail to the right. Therefore, the residuals in the regression model are normally distributed hence we fail to reject the null hypothesis an indication of unbiased model estimates.

Furthermore, to test for inaccuracies in the data and hence generate robust estimations, the variables are analysed for correlation using the covariance analysis which is "less sensitive to outliers".

Table 8.13: Covariance Analysis

Covariance Analysis: Ordinary Sample: 1980 2013 Included observations: 34					
Correlation t-Statistic Probability	**LINF**	**LINT**	**LMS**	**LREER**	**LUN**
LINF	1.000000 ----- -----				
LINT	0.182415 1.049502 0.3018	1.000000 ----- -----			
LMS	-0.130462 -0.744369 0.4621	0.458441 2.918036 0.0064	1.000000 ----- -----		
LREER	0.784463 7.155389 0.0000	-0.208353 -1.205071 0.2370	-0.393886 -2.424123 0.0212	1.000000 ----- -----	
LUN	-0.107204 -0.609950 0.5462	0.199053 1.149006 0.2591	0.422714 2.638564 0.0128	-0.378221 -2.311229 0.0274	1.000000 ----- -----

In table 8.13, we test for correlation among the variables using the covariance analysis (ANCOVA) which is also used in multi-regression models. Analysis of covariance (ANCOVA) is used in examining the differences in the mean values of the dependent variables that are related to the effect of the controlled independent variables while taking into account the influence of the uncontrolled independent variables (http://www.statisticssolutions.com/analysis-of-covariance-ancova/). In table 8.13, we examine the movement between various random variables and how the variables move together either in the same direction, different directions or no movement at all.

A value of 1 means that the variables always move in the same direction and a value of -1 means the two always move in the opposite direction. In the case where the variables are independent the covariance is zero which means the correlation is also zero. In other words, the two variables do not exhibit any movement relative to each other (http://financetrain.com/calculate-and-interpret-covariance-and-correlations/).

The covariance results in the figure show the covariance between inflation (LINF) and interest rates (LINT) is approximately 0.18, with the t-statistic value at 1.05 and insignificant p-value at 0.3018. This indicates a positive relationship between inflation and interest rates. The covariance between money supply (LMS) and inflation (LINF) indicates a negative relationship although when compared with interest rates (LINT) the relationship is positive with a significant p-value at 0.0064. Real exchange rate (LREER) has a covariance of 0.784463 with inflation (LINF) and t-statistic and p-values of 7.155389 and 0.0000 respectively hence showing a positive relationship. However, its covariance with LINT and LMS are both negative values of -0.208353 and -0.393886 respectively.

The covariance between unemployment (LUN) and LINF and LREER both are negative at -0.107204 and -0.378221 respectively. Importantly, unemployment and real exchange rate (LREER) have a negative and significant correlation with a p-value at 0.0274. However, when compared with LINT and LMS, their relationship with unemployment is positive at 0.199053 and 0.422714 covariances respectively. The relative t-statistic and p-values of LINT are 1.149006 and 0.2591 respectively. Money supply (LMS) has t-statistic value at 2.64 and a p-value of 0.0128. The covariance results in the figure indicates correlation between variables.

Table 8.14: Correlogram of Monetary Policy on Unemployment

Sample: 1980 2013
Included observations: 31

Autocorrelation	Partial Correlation		AC	PAC	Q-Stat	Prob*
. | . |	. | . |	1	0.007	0.007	0.0018	0.966
. *| . |	. *| . |	2	-0.199	-0.199	1.3964	0.497
. *| . |	. *| . |	3	-0.107	-0.108	1.8153	0.612
. | . |	. *| . |	4	-0.060	-0.105	1.9501	0.745
. *| . |	.**| . |	5	-0.183	-0.244	3.2673	0.659
. | . |	. *| . |	6	-0.030	-0.103	3.3032	0.770
. *| . |	***| . |	7	-0.195	-0.364	4.9235	0.669
. |* . |	. | . |	8	0.167	0.027	6.1607	0.629
. |**. |	. |* . |	9	0.320	0.162	10.923	0.281
. *| . |	.**| . |	10	-0.148	-0.266	11.995	0.285
. *| . |	. *| . |	11	-0.173	-0.161	13.528	0.260
. | . |	. *| . |	12	0.043	-0.131	13.629	0.325
. | . |	. *| . |	13	-0.008	-0.122	13.633	0.400
. | . |	. *| . |	14	-0.000	-0.068	13.633	0.477
. | . |	. *| . |	15	0.028	-0.095	13.683	0.550
. | . |	. *| . |	16	-0.046	-0.107	13.826	0.612

*Probabilities may not be valid for this equation specification.

The observation from the above graph suggests the first difference of the logarithm of fiscal and monetary policy appears to be stationary for all the relevant variables. Furthermore, the results from the sample autocorrelation function also indicate smaller autocorrelation coefficients of up to a lag of 16 quarters, moreover, they decline further towards zero. The autocorrelation results show stationary at 1% level. Based on the almost zero autocorrelation coefficients, this suggests no existence of a unit root.

Table 8.15: Wald Test

Equation: Untitled			
Test Statistic	**Value**	**df**	**Probability**
F-statistic	6.700007	(5, 10)	0.0055
Chi-square	33.50004	5	0.0000

Null Hypothesis: C (1) =C (2) =C (3) = C (4) = C (5) = 0
Null Hypothesis Summary:

Normalized Restriction (= 0)	Value	Std. Err.
C (1)	0.293477	0.136182
C (2)	-0.562782	0.264773
C (3)	-0.003956	0.077109
C (4)	-0.623985	0.182471
C (5)	-0.657683	0.359874

Restrictions are linear in coefficients.

A Wald test for our regression model was conducted in order to test whether the regression estimation coefficients mutually illustrate the potential variation in the dependent variables. The Wald test results in table 8.15 above tests the null hypothesis that all coefficients of the independent variables relate to zero. According to the Wald test results, we reject the null hypothesis since the p-value is less than the significance level. Hence, we reject the null hypothesis that all the model independent variable coefficients are jointly equal to zero.

8.2.2 Testing for Error Correction Model

The model is tested for stability in order to generate credible estimations. Figure 8.5 shows all the roots lie inside the unit circle therefore suggesting stability of the VAR.

Figure 8.5: Inverse Roots of AR Characteristic Polynomial
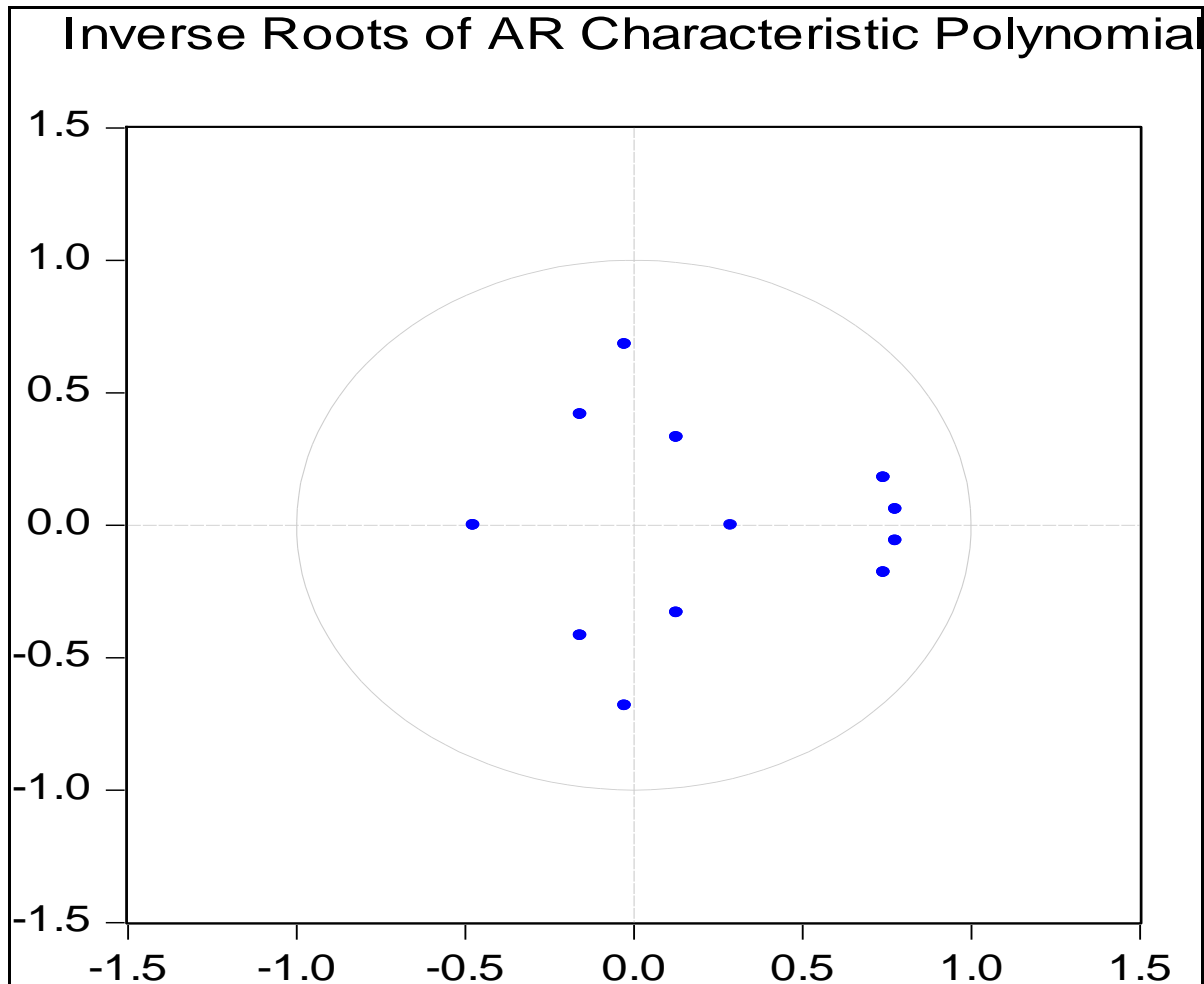
Table 8.16: Vector Error Correction Model for Monetary Policy on Unemployment

Error Correction:	D(LUNEMPLO YMENT)	D(LINF)	D(LINT)	D(LMS)	D(LREER)	D(SB)
CointEq1	-0.050475	1.284479	0.052014	0.221900	-0.550677	0.234510
	(0.13415)	(0.56311)	(0.06435)	(0.33458)	(0.14858)	(0.21168)
	[-0.37625]	[2.28106]	[0.80837]	[0.66321]	[-3.70622]	[1.10787]
CointEq2	0.028248	-1.286372	0.095245	0.333250	0.107436	-0.121512
	(0.09384)	(0.39388)	(0.04501)	(0.23403)	(0.10393)	(0.14806)
	[0.30103]	[-3.26592]	[2.11620]	[1.42395]	[1.03375]	[-0.82068]

In table 8.16, a comparison of the relevant coefficients of the error correction terms in cointEq1 is made. The coefficients of LUNEMPLOYMENT and LREER show correct negative signs implying there the most significant coefficients with t-values of -0.05 and -0.55 respectively. The negative signs imply that the speed of adjustment is approximately 50% and 55% respectively. This therefore indicates that for the deviation from equilibrium, a significant 50% and 55% is rectified in a time period as the variables shift towards restoration of equilibrium. The other variables either are less significant or exhibit the wrong signs. The results in the first cointegrating equation suggests that real exchange rates constitute the observed cointegrating relationship.

The second cointegration equation reveals a relationship between inflation (LINF) and unemployment. The results reveal inflation has a negative sign at -1.286 and statistically significant and reveal evidence of error correction and there is only one cointegration relationship. The coefficient of (SB) structural breaks however, is negative with a p-value at -0.82068 indicating that structural reforms in Uganda converge to their long run equilibrium. The positive signs indicated by unemployment (LUNEMPLOYMENT), interest rates (LINT), money supply (LMS) and real exchange rates (LREER) imply that any disequilibrium in total unemployment, total interest rates, total money supply and real exchange rates will persist over time.

8.2.3   Conclusion

This chapter presented and analysed the relevant empirical findings on how both monetary and fiscal policy influence on unemployment in Uganda. The first section of the chapter examined the properties of the time series data, Unit root tests were presented through the ADF, Phillips-Peron and KPSS tests for stationarity. Both the ADF and KPSS test revealed non- stationary data series in levels but tested stationary when differenced, the model variables showed to be integrated of order (1) and (2), two variables were differenced twice whilst the remaining variables were first difference stationary. Hence, the series are integrated of the order I (1) and I(2). To test the robustness of the model, we further tested for structural breaks in the data series using the Chow breakpoint test which revealed presence of structural breaks in the year 2002 and 2006 due to the various structural dynamics during these periods. To establish a relationship between unemployment and its monetary and fiscal policy determinants, the Johansen maximum likelihood cointegration test was also conducted.

The cointegration results revealed presence of cointegration between unemployment and the monetary and fiscal policy variables specified. Existence of cointegration implied estimation of the VECMs to determine the short run dynamics of parameters, the Fully Modified Least Squares (FMOLS) and Dynamic Least Squares (DOLS) were estimated for the long run parameter estimates. The FMOLS results indicated a positive relationship between unemployment and with most variables whilst there was a negative relationship between unemployment and government expenditure on the part of the fiscal policy side. The two equations in the VECM also revealed that unemployment has a negative relationship with government expenditure, tax revenue and the relevant fiscal reforms (structural breaks). Using the correlogram of squared residuals to test the goodness of fit of FMOLS, we failed to reject the null hypothesis of serial correlation. The Autoregressive (AR) test further showed stability of the VAR model since all roots lied inside the unit circle.

Additionally, the specified model was not affected by multi-collinearity as indicated in the multi-collinearity (VIF) test whilst the Wald test was also robust and the variables are jointly significant in explaining the variation in unemployment.

The second part of the chapter analysed the monetary policy dynamics against unemployment, the cointegration results revealed two cointegration relationships from the Trace and Maximum Eigenvalue test whilst the DOLS results indicated a positive and statistical relationship between unemployment and inflation, the other variables have a negative relationship with unemployment. Importantly, the specified model is also not biased since the Jarque-Bera Normality test shows normal distribution of model residuals. The VECM short run dynamics showed a relationship with real exchange rates and inflation against unemployment in the first and second equation respectively. Based on the empirical chapter analysis of the impact of both monetary and fiscal policy on unemployment, strong and practical deductions can be made from the chapter results.

CHAPTER NINE

PRESENTATION AND ANALYSIS OF EMPIRICAL FINDINGS ON THE IMPACT OF FISCAL AND MONETARY POLICY ON INFLATION IN UGANDA

9.1   INTRODUCTION

This chapter presents results of empirical estimation of monetary and fiscal policy impact on inflation. This chapter focuses on empirical analysis on the long run cointegration relationships between inflation and monetary policy as well as inflation and fiscal policy. A long run cointegration relationship between inflation, monetary policy and fiscal policy is analysed through use of Autoregressive Distributed Lag approach (ARDL), covering annual data 1980-2013. The Pesaran *et al.* (2001) bounds testing approach to cointegration within the Autoregressive Distributed Lag (ARDL) technique is applied.   The ARDL bounds testing approach examines the long run relationship between the dependent variable (DLINF) and fiscal policy variables, according to Mahran and Meshall (2014), unlike other cointegration techniques such as Johansen (1998); Phillips and Hansen (1990) approach and Engel-Granger (1987), the ARDL method is applicable irrespective of whether the model regressors are purely $I(0)$ or $I(1)$ or a mixture of both (Mahran and Meshall, 2014). Moreover, Haug (2002) notes the ARDL bounds testing approach is more suitable and provides better results for small sample size and the short and long run parameters are estimated simultaneously. According to Türsoy (2017), The ARDL model can be applied to different orders of integration for the variables. The dependent variable should be I (1); however, the other variables can be either I (0) and I (1) or a mixed order of integration.

The chapter is divided into two sections; the first section examines the impact of fiscal policy on inflation, the second section provides empirical analysis on the monetary policy dynamics on inflation.

9.2   AUTOREGRESSIVE DISTRIBUTED LAG (ARDL) APPROACH

This study employs the bounds testing approach based on empirical estimation of Auto Regressive Distributed Lag (ARDL) model to examine long run relationship between dependent variable inflation (DLINF) and the explanatory variables of both monetary and fiscal policy in Uganda.

Estimation of cointegration with the ARDL technique entails various steps; the first step is the bounds test which estimates the conditional unrestricted error correction model (UECM) to investigate presence of a long run relationship the dependent variable and the explanatory variables. In the next step, if a long run relationship is established via the bounds test, estimation of long run and related short run dynamics follows. Following establishment of long run relationship via the bounds test, the next phase involves estimation of the long run and corresponding short run dynamics. The ARDL model requires prior knowledge (selection) of the lag orders of variables (Mahran & Meshall, 2014) presented in the next section.

The choice of optimum lags used in the ARDL model is presented in the figure 8.1 below. The choice of lags in the model enables effective estimation of the long run and associated short run dynamic relationship. Figure 8.1 shows the number of lag selection in the model based on Akaike Information Criteria (AIC) from the top twenty results throughout thirty (30) ARDL model specifications conducted. Optimal lag selection is essential in the development of an effective and applicable model establishment. In the figure, we selected the ARDL model with three lags (2, 2, 1, 1, 3, and 3) as the optimal and notable effective model because its lower value of AIC at 1.32 which also corresponds with lag length in table 9.1.

Figure 9.1: Choice of Optimum Lags (Akaike Information Criterion)
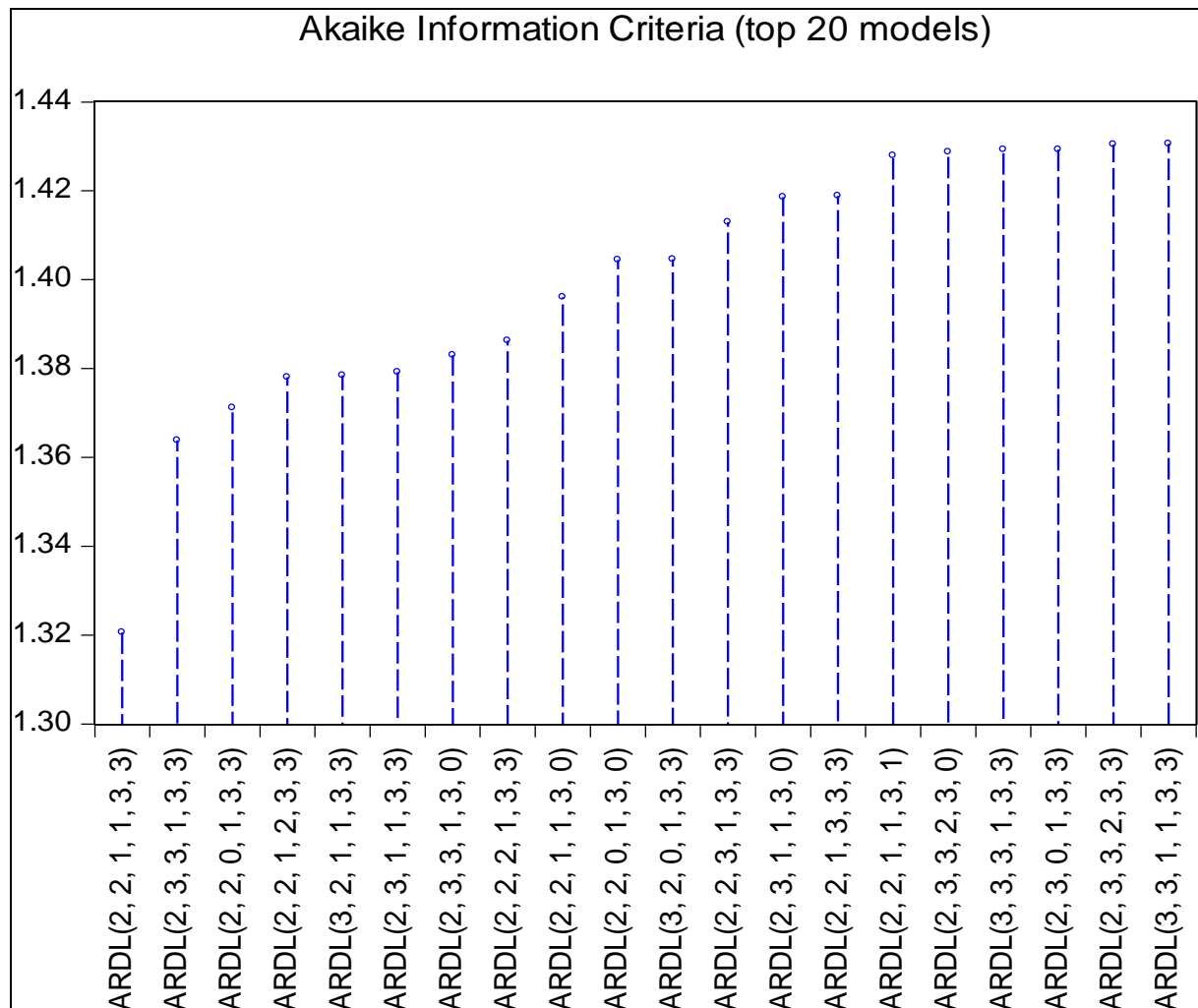
In order to generate relationships between dependent and independent variables in auto regression distributed lag model, the regressors constitute of lagged values of the dependent variables as well as the present and lagged values of relevant explanatory variables in a regression equation. Empirical regression in time series entails appropriate selection of suitable lags because the explanatory variables are able to impact the dependent variable with a time lag. The inclusion of lags in the regression equation enables likely possibility of reaction in form of short run, medium term and long run.

Table 9.1: ARDL of Fiscal Policy

Dependent Variable: DLINF
Sample (adjusted): 1984 2013
Included observations: 30 after adjustments
Maximum dependent lags: 3 (Automatic selection)
Model selection method: Akaike info criterion (AIC)
Dynamic regressors (3 lags, automatic): DLGOVTEXP DLGOVTREV DLTAXREV DLTO DLUN
Fixed regressors: C
Number of models evaluated: 3072
Selected model: ARDL (2, 2, 1, 1, 3, 3)

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
DLINF(-1)	-0.599771	0.137645	-4.357389	0.0009***
DLINF(-2)	-0.479188	0.137452	-3.486213	0.0045***
DLGOVTEXP	1.515756	1.596357	0.949510	0.3611
DLGOVTEXP(-1)	-2.436670	1.668184	-1.460672	0.1698
DLGOVTEXP(-2)	-4.386155	1.408243	-3.114630	0.0089***
DLGOVTREV	-0.750376	0.625072	-1.200465	0.2531
DLGOVTREV(-1)	0.739459	0.605245	1.221750	0.2453
DLTAXREV	-3.639364	0.618532	-5.883871	0.0001***
DLTAXREV(-1)	-2.064333	0.555898	-3.713508	0.0030***
DLTO	2.785570	1.148811	2.424741	0.0320**
DLTO(-1)	3.270276	1.064832	3.071165	0.0097***
DLTO(-2)	-0.205749	0.963699	-0.213499	0.8345
DLTO(-3)	1.719115	0.718418	2.392919	0.0340**
DLUN	-0.962022	0.644892	-1.491757	0.1616
DLUN(-1)	-0.146219	0.648886	-0.225339	0.8255
DLUN(-2)	-0.832417	0.619769	-1.343108	0.2041
DLUN(-3)	-0.986994	0.586400	-1.683141	0.1182
C	-0.261758	0.093955	-2.785995	0.0165**
R-squared	0.904107	Mean dependent var		-0.145399
Adjusted R-squared	0.768259	S.D. dependent var		0.844139
S.E. of regression	0.406364	Akaike info criterion		1.320576
Sum squared resid	1.981583	Schwarz criterion		2.161294
Log likelihood	-1.808634	Hannan-Quinn criter.		1.589529
F-statistic	6.655282	Durbin-Watson stat		1.661568
Prob(F-statistic)	0.000938			

Significance levels: ***(1%), **(5%), *(10%)

Table 9.1 above presents the results of the ARDL model on fiscal policy and inflation in Uganda. The ARDL results show the dependent variable regressed against the fiscal policy explanatory variables that include; total government expenditure

(DLGOVTEXP), total government revenue (DLGOVTREV), tax revenue (DLTAXREV), trade openness (DLTO) and unemployment (DLUN). The results indicate a negative and statistically significant relationship between the dependent variable inflation (DLINF) and inflation itself when lagged twice. This finding suggests the impact of previous inflation and current inflation takes effect after two lags. This finding could be attributed to expectations by the various economic agents. If households expect a rise in inflation, people may save more and consume less commodities thereby driving down consumption for goods and services. This is best explained by the adaptive expectations theory which states that individuals use past information to anticipate future economic situations. Therefore, accelerated inflation levels in the past is in turn anticipated to generate more rise in inflation rate.

Total government expenditure has a negative and statistically significant relationship with inflation when lagged twice. This could be explained by the finance of the government deficit especially if the deficit is funded through issuance of bonds, which in turn trigger rise in interest rates, this ultimately leads to demand in credit and thereby diminishing aggregate demand for products. Considering Uganda's fiscal deficit increased in the recent years along with the hike in interest rates, the decrease in inflation could be attributed to this since total government expenditure in low-income countries like Uganda is financed through borrowing. The coefficient of total government revenue (DLGOVTREV) lagged once indicates a positive but statistically insignificant relationship with inflation. The finding is consistent with the Barungi (1997) who notes monetary expansion as dominated by financing the deficit is instrumental in determining the pace of inflation. As noted in chapter five about the insufficient total tax revenue receipts, Uganda witnessed large inflows of donor aid over time, which may explain the positive relationship with inflation. Total tax revenue lagged once has a negative and statistically significant relationship with inflation. Increase in tax revenue implies increase in tax rates which in turn curtails individuals' disposable incomes thus, prompting consumption demand to decline.

The ARDL test results also show trade openness (DLTO) lagged three times has a positive and statistically significant relationship with inflation. Considering a significant devaluation of the Uganda Shilling, which puts pressure on not only interest rates but the general price level of goods and services in the economy, such a positive and

significant link is a possibility. Lin (2010) notes that heavily indebted countries have a positive relationship with inflation. Uganda is one the heavily indebted countries. Unemployment lagged three times has a negative but statistically insignificant relationship with inflation. This finding suggests the notable relevance of the Phillips curve as discussed in chapter two of this thesis. The results indicate a negative relationship between unemployment and inflation although largely insignificant. This finding is consistent with the Phillips curve, which states no trade-off between unemployment and inflation in the long run. A discussion with respect to the Phillips curve is presented in chapter two of this study. The overall model reflects a very high R^2 value of 0.904107. This indicates that 90% of the variation in the dependent variable, namely, inflation is explained by the independent variables in the model. The rest, 10% is explained by other important variables, which are excluded in the model. This basically implies that 90% of the variations in inflation are adequately explained by the underlying variables used in the model. The overall model is also significant with the F-statistic at 6,655282 which is greater than a critical F-statistic at 5% level. With respect to DW statistic at 1,661568 we conclude that decision

9.2.1   ARDL Bounds Testing for Cointegration

To investigate the empirical long run relationship as well as dynamic link between the specified variables and inflation, the Pesaran *et al.,* (2001) ARDL bounds testing approach to cointegration was conducted. The bounds test which is the first step in the ARDL approach to cointegration, constitutes estimation of the conditional unrestricted error correction model (UECM) which in turn enables effective analysis of long run relationship between inflation (DLINF) and the relevant explanatory variables considered in the model. Pesaran *et al.* (2001) observes that if all the variables under investigation are stationary, the next step is to apply the bounds testing approach that investigates cointegration between variables. Feridun (2010) observes the ARDL Bounds testing approach is likely to exhibit better statistical properties than conventional cointegration techniques because of its ability to draw on the unrestricted error correction model. Hence, we estimate the ARDL model as an essential basis for the application of the Bounds test for cointegration.

Table 9.2: F-bounds Test

Test Statistic	Value		Bound Critical Values	
F-statistic	17.2297	Significance Level	I(0) Bound	I(1) Bound
K	5	10%	2.08	3
		5%	2.39	3.38
		2.5%	2.7	3.73
		1%	3.06	4.15

If the F-statistics is greater than the upper bound critical value, then the null hypothesis of no cointegration is rejected which suggests cointegration of the underlying variable. The bounds test results above show higher values of the F-statistic than the upper bound values hence the rejection of the null hypothesis since the table shows existence of cointegration among the variables. The F-statistic enables smooth testing of joint performance of lagged variables undertaken in UECM, moreover, it establishes existence of long run equilibrium through analysis of null hypothesis of no cointegration against the alternative hypothesis of existence of long run equilibrium. Presence of cointegration in turn suggests existence of long run relationship between the dependent variable, inflation D (DLINF) and the underlying explanatory variables applied. Therefore, empirical results from the above estimations suggest that there is a long run relationship. This is followed by estimation of long run relations and corresponding error correction model (ECM) via the ARDL technique in the discussion below.

Table 9.3: ARDL Error Correction Regression

Dependent variable: D (DLINF)

Selected model: ARDL (2, 2, 1, 1, 3, 3)

Case 2: Restricted constant and No Trend

Sample: 1980 2013

Included observations: 30

ECM regression Case 2: Restricted Constant and No Trend				
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
D(DLINF(-1))	0.479188	0.096374	4.972172	0.0003
D(DLGOVTEXP)	1.515756	0.919867	1.647800	0.1253
D(DLGOVTEXP(-1))	4.386155	0.804452	5.452353	0.0001
D(DLGOVTREV)	-0.750376	0.218101	-3.440494	0.0049
D(DLTAXREV)	-3.639364	0.391211	-9.302824	0.0000
D(DLTO)	2.785570	0.535279	5.203961	0.0002
D(DLTO(-1))	-1.513367	0.679089	-2.228526	0.0457
D(DLTO(-2))	-1.719115	0.489088	-3.514939	0.0043
D(DLUN)	-0.962022	0.322012	-2.987532	0.0113
D(DLUN(-1))	1.819411	0.386656	4.705503	0.0005
D(DLUN(-2))	0.986994	0.308317	3.201229	0.0076
CointEq(-1)*	-2.078960	0.154596	-13.44772	0.0000
R-squared	0.963820	Mean dependent var		-0.040666
Adjusted R-squared	0.941711	S.D. dependent var		1.374281
S.E. of regression	0.331795	Akaike info criterion		0.920576
Sum squared resid	1.981583	Schwarz criterion		1.481055
Log likelihood	-1.808634	Hannan-Quinn criter.		1.099878
Durbin-Watson stat	1.661568			

*p-value incompatible with t-bounds distribution.

While the short run dynamics are captured by the individual coefficients of the lagged terms, the error correction term (ECT) contains the information of long run causality (Alimi, 2014). According to Nkoro and Uko (2016), The ARDL model is reparameterized into ECM when there is at least one cointegrating vector among the underlying variables. The reparameterized result gives the short-run dynamics and long run relationship of the underlying variables. Jointly-lagged coefficients and the ECT are used to verify joint causality between the variables (Türsoy, 2017). According to (Alimi, 2014), Significance of lagged explanatory variable depicts short run causality while a negative and statistical significant ECT is assumed to signify long run causality. The ARDL error correction regression results above indicate the error correction term at -2.078959 which is negative and statistically significant at 1% hence confirming the existence long run and implies long run cointegration relationship among system variables. According to (Banerjee *et al.*, 1998), a highly significant error correction term (ECT) provides further validation of the existence a long run relationship. The ECT illustrates the speed of adjustment in establishing equilibrium in the regression model. The coefficient of ECM values is -2.078959, suggesting the speed of adjustment at which the disequilibrium is corrected in the following period.

Having analysed the ECT and short run dynamics, diagnostic testing then follows in order to establish the robustness and adequacy of the model. Various diagnostic tests are performed to test for serial correlation, normality, stability and heteroscedasticity for consistency of the model. The diagnostic tests performed include; the Ramsey (1969) commonly known Regression Specification Error Test (RESET) that analyses the stability test, Breush-Godfrey autocorrelation test, White's heteroscedasticity test and the Jargue-Bera normality test.

According to (Mehran & Meshall, 2014), once the conditional ARDL model is estimated, diagnostic tests are applied to examine model specification and functional forms. As below.
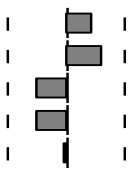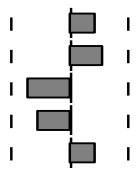
Table 9.4: SERIAL CORRELATION

Date: 06/04/17 Time: 01:04					
Sample: 1980 2013					
Included observations: 30					
Q-statistic probabilities adjusted for 2 dynamic regressors					

Autocorrelation	Partial Correlation		AC	PAC	Q-Stat	Prob*
		1	0.157	0.157	0.8157	0.366
		2	0.226	0.207	2.5723	0.276
		3	-0.178	-0.256	3.6996	0.296
		4	-0.186	-0.193	4.9806	0.289
		5	-0.013	0.168	4.9875	0.417

*Probabilities may not be valid for this equation specification.

Table 9.4 shows the serial correlation test results. According to the serial correlation results, we fail to reject the null hypothesis of no serial correlation. Although the p-values only illustrate estimations, nevertheless, they indicate clear evidence of no autocorrelation. The table results indicate no evidence of serial correlation up to the 5th lag. This suggests consistence of residuals, robustness and adequacy of the model.

Figure 9.2: Normality Test

Series: Residuals	
Sample 1984 2013	
Observations 30	
Mean	-4.26e-17
Median	0.008671
Maximum	0.694455
Minimum	-0.694971
Std. Dev.	0.261401
Skewness	-0.062115
Kurtosis	4.323122
Jarque-Bera	2.207605
Probability	0.331608
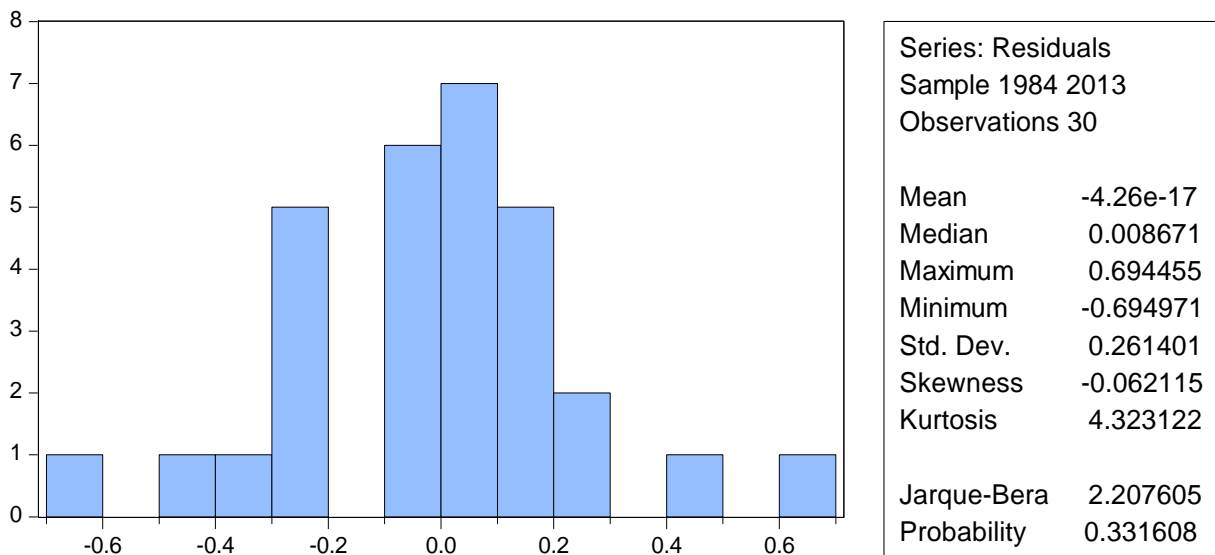
Additionally, residual normality tests are conducted in figure 8.2 above using the Jargue and Bera (1980) test. The normality test is applied to investigate applicability of the OLS classical assumption of normally distributed model residuals. Classical regression is based on the assumption that residuals are considered to be normally distributed between the zero mean and constant variance. Thus, the Jargue-Bera test

notably depends on the skewness and kurtosis of a distribution. Considering that the p-value of the JB- statistic in figure 8.3 is less than the chosen level of significance, hence we fail to reject the null hypothesis of normal distribution. The corresponding p-value is 0.331608.   We then conclude that the residuals are normally distributed around the mean zero.

Figure 9.3: CUSUM Stability Test
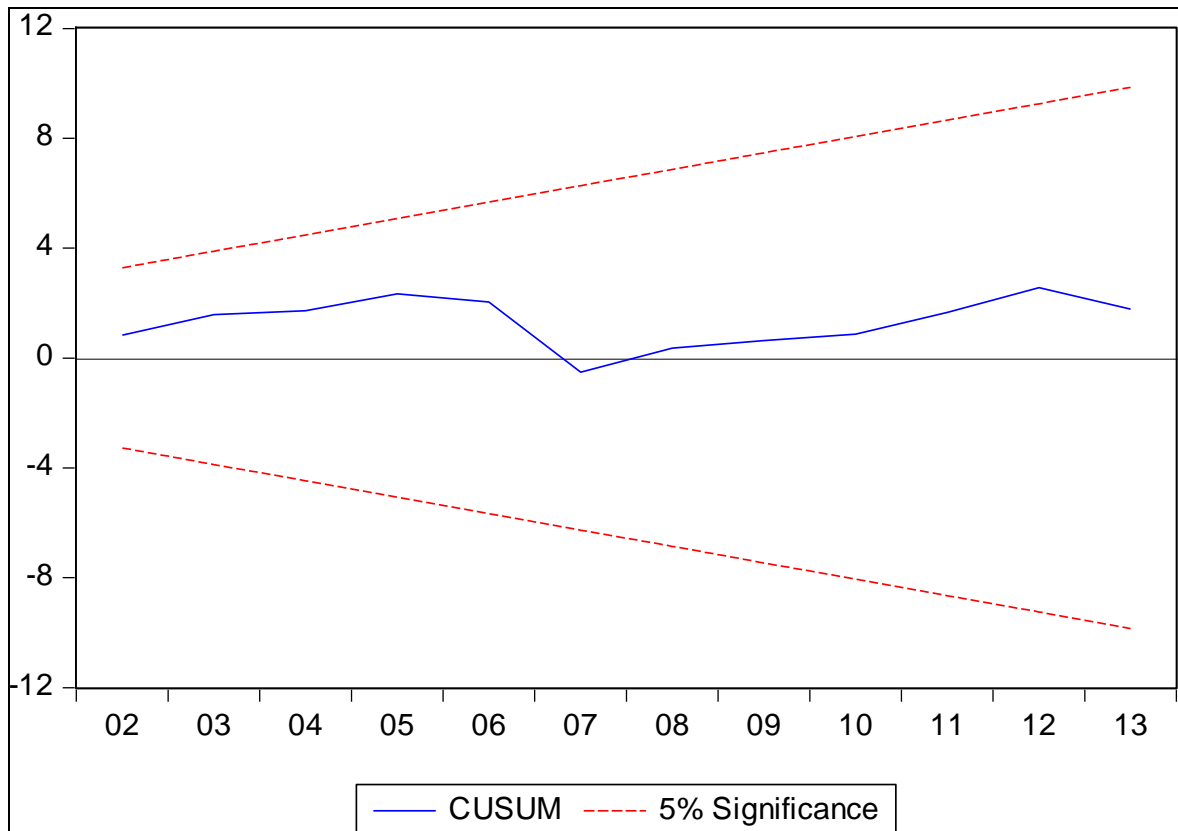
Additionally, stability tests are also performed by using the CUSUM stability test in figure 8.3 above. The CUSUM test by (Brown, Durbin and Evans, 1975) is based on the cumulative sum of recursive residuals. CUSUM and CUSUMQ are further applied to investigate long run analysis particularly structural stability of autoregressive model parameters. Stability of the coefficients estimated over the period undertaken is tested by using the recursive residual test for structural stability as developed by Brown *et al*. (1975). Residuals beyond the standard error bands indicate instability in the parameters. The CUSUM examines whether the regression coefficients are changing systematically (Mahran & Meshall, 2014). The CUSUM of recursive residuals are derived from a recursive model estimation and plotted against the time horizon of the

sample under consideration. These are compared with the critical bound values at specified significance level (Mahran & Meshall, 2014). If the plots of the CUSUM statistics are within the critical bounds boundaries of the five percent significance level, then the null hypothesis the model is not stable is rejected. In the figure plot, the CUSUM is plotted against the specified time period. The two straight lines illustrate critical bounds at the five percent level of significance. According to Mahran and Meshall, 2014, the null hypothesis of stable parameters is rejected if the respective plot notably crosses any of the straight lines over the sample period. Therefore, from the CUSUM results, we reject the null hypothesis of no stability.

Table 9.5: Ramsey Specification Test

	Value	df	Probability
t-statistic	1.994384	11	0.0715
F-statistic	3.977567	(1, 11)	0.0715
F-test summary:			
	Sum of Sq.	**df**	**Mean Squares**
Test SSR	0.526246	1	0.526246
Restricted SSR	1.981583	12	0.165132
Unrestricted SSR	1.455337	11	0.132303

Ramsey (1969) proposed the application of Ramsey's Regression Specification Error Test (RESET) to test for model misspecification. It tests implicitly whether a regression model is correctly specified in terms of the regressors that have been included (DeBenedictis and Giles, 1998). It is a likelihood test that differentiates the likelihood performance of the original regression analysis to an augmented regression. Ramsey and Alexander (1984) observed that the RESET test could detect specification errors in an equation. The Ramsey RESET test in table 8.6 above suggests stability of the model from the p-values. The results suggest that we fail to reject the null of misspecification at 5% level of significance.

Table 9.6: The Breusch-Pagan-Godfrey Heteroscedasticity Test

Heteroscedasticity Test: Breusch-Pagan-Godfrey			
F-statistic	0.814271	Prob. F(17,12)	0.6597
Obs*R-squared	16.06952	Prob. Chi-Square(17)	0.5189
Scaled explained SS	4.272077	Prob. Chi-Square(17)	0.9992

Furthermore, the test for heteroscedasticity in table 9.6 is performed. The Breusch-Pagan-Godfrey test is a Chi-squared test for conditional homoscedasticity (Breusch-Pagan, 1979). Heteroscedasticity depicts inadequacy of residuals to exhibit constant variance which generates inconsistent probability distributions. Consequently, resulting into inaccurate model estimations. The Breusch-Pagan-Godfrey test is used to test for heteroscedasticity. Based on the results in table 9.6, with an observed R-squared of 16.07 with a corresponding Chi-square probability value at 0.5, hence we cannot reject the null hypothesis of no heteroscedasticity at 5 percent significance level. This suggests that the variance of the residuals of the underlying model are constant and homoscedastic.

The Wald test in table 9.7 below is additionally employed to test for joint significance of the model coefficients in the underlying model. The results indicate significance based on the t-tests with significant p-values. This implies rejection of the null hypothesis which in turn implies the variables are jointly significance at 1 percent. With the F-statistic of 4.875646, Chi-square value at 29.25387 the respective p-values are around 0.0096 and 0.0001 respectively. The probability is less than five (5) percent. These findings suggest that a null hypothesis of no joint significance is rejected.

Table 9.7: The Wald Test

Equation: Untitled			
Test Statistic	**Value**	**df**	**Probability**
F-statistic	4.875646	(6, 12)	0.0096
Chi-square	29.25387	6	0.0001
Null Hypothesis: C (1) = C (2) = C (3) = C (4) = C (5) = C (6) = 0 Null Hypothesis Summary:			
Normalized Restriction (= 0)		**Value**	**Std. Err.**
C (1)		-0.599771	0.137645
C (2)		-0.479188	0.137452
C (3)		1.515756	1.596357
C (4)		-2.436670	1.668184
C (5)		-4.386155	1.408243
C (6)		-0.750376	0.625072

*Restrictions are linear in coefficients

Following the various diagnostic test results to serial correlation, normality, stability and heteroscedasticity of model coefficients in the above sections, the next section presents the Granger causality analysis of the underlying coefficients.

Table 9.8: Pairwise Granger Causality Test

Sample: 1980 2013
Lags: 2

Null Hypothesis	F-Statistic	Probability values
DLGOVTEXP does not Granger Cause DLINF DLINF does not Granger Cause DLGOVTEXP	0.19094 1.59459	0.8273 0.2222
DLGOVTREV does not Granger Cause DLINF DLINF does not Granger Cause DLGOVTREV	2.23675 2.83825	0.1270 0.0767*
DLTAXREV does not Granger Cause DLINF DLINF does not Granger Cause DLTAXREV	2.22658 0.83782	0.1281 0.4440
DLTO does not Granger Cause DLINF DLINF does not Granger Cause DLTO	0.74773 1.74177	0.4833 0.1950
DLUN does not Granger Cause DLINF DLINF does not Granger Cause DLUN	0.38764 0.29545	0.6825 0.7467
DLGOVTREV does not Granger Cause DLGOVTEXP DLGOVTEXP does not Granger Cause DLGOVTREV	0.01111 0.96267	0.9890 0.3951
DLTAXREV does not Granger Cause DLGOVTEXP DLGOVTEXP does not Granger Cause DLTAXREV	1.72162 1.21725	0.1985 0.3124
DLTO does not Granger Cause DLGOVTEXP DLGOVTEXP does not Granger Cause DLTO	0.54077 0.05020	0.5887 0.9511
DLUN does not Granger Cause DLGOVTEXP DLGOVTEXP does not Granger Cause DLUN	0.80995 0.48343	0.4558 0.6221
DLTAXREV does not Granger Cause DLGOVTREV DLGOVTREV does not Granger Cause DLTAXREV	1.95953 1.83666	0.1612 0.1794
DLTO does not Granger Cause DLGOVTREV DLGOVTREV does not Granger Cause DLTO	1.77322 0.67093	0.1897 0.5199
DLUN does not Granger Cause DLGOVTREV DLGOVTREV does not Granger Cause DLUN	0.76981 0.03745	0.4734 0.9633
DLTO does not Granger Cause DLTAXREV DLTAXREV does not Granger Cause DLTO	1.22043 1.55430	0.3115 0.2303
DLUN does not Granger Cause DLTAXREV DLTAXREV does not Granger Cause DLUN	0.29058 0.06740	0.7502 0.9350
DLUN does not Granger Cause DLTO DLTO does not Granger Cause DLUN	0.72000 0.29447	0.4962 0.7474

In the Granger causality table 9.8 above, portrays the direction of causality between inflation and the underlying explanatory variables. Causality exists when one variable is able to predict and cause a change in the other variable. The Granger causality test based on a standard F-test examines whether changes in one variable are able to generate changes in another variable. Table 9.8 above presents the Pairwise Granger causality tests between the dependent variable (DLINF) and the explanatory variables considered in the study. The results from table 8.6 indicate the analysis of the pairwise Granger causality of DLGOVTEXP and DLINF.

Therefore, the Granger causality test results indicates evidence of Granger causality between DLINF and DLGOVTREV with a probability value of 0.0767. This suggests rejection of the null hypothesis at 10% level. This implies that DLINF Granger causes DLGOVTREV. Apart from evidence of this causality, the results show no evidence of existence of Granger causality between the other remaining variables.

The next section presents the influence of monetary policy dynamics on inflation.

9.3   ESTIMATION OF THE IMPACT OF MONETARY POLICY ON INFLATION USING THE ARDL MODEL

Following discussion of the findings on the fiscal policy impact on inflation in the previous section, this section presents empirical findings on monetary policy and its influence on inflation in Uganda using the ARDL. Monetary policy determinants are regressed against inflation to establish the relationship between the coefficients and inflation. The coefficients which regressed were against the dependent variable inflation (DLINF) include; interest rates (DLINT), money supply (DLMS) and real effective exchange rates (DLREER).

9.3.1   Selection of the Optimal lag

From the figure 9.4 below, it is notably clear the model estimation employed five lags. Hence, the model in the study used the Akaike information criterion (AIC) with five lags was selected as the appropriate optimal lag length. This is further illustrated in the figure 9.4 below. From the Akaike information criteria models in the figure below, the ARDL model with five lags was selected since it indicated the lowest AIC value at -1.5.

Figure 9.4: ARDL Choice of Optimal Lag Length

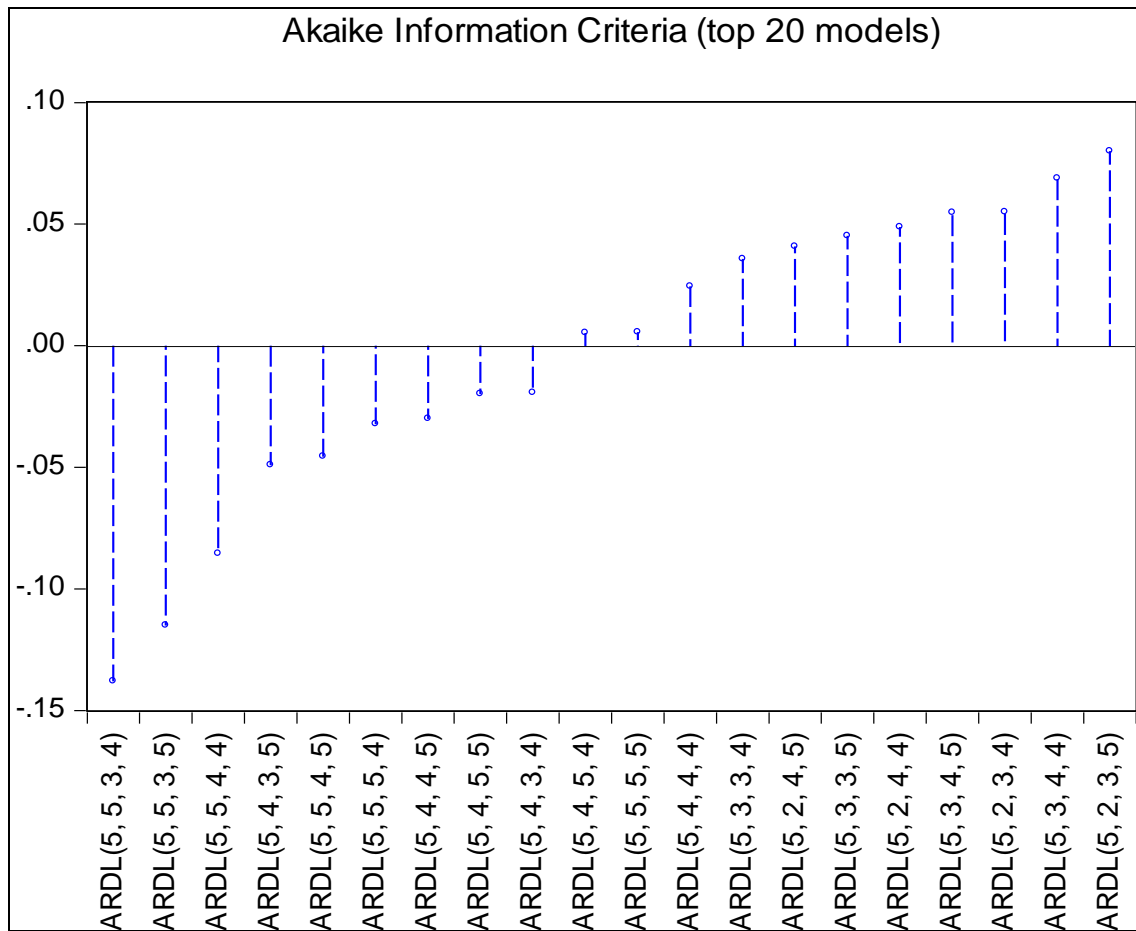Akaike Information Criteria (top 20 models)

Table 9.9: ARDL Monetary Policy

Dependent Variable: DLINF
Sample (adjusted): 1986 2013
Included observations: 28 after adjustments
Maximum dependent lags: 5 (Automatic selection)
Dynamic regressors (5lags, automatic): DLINT DLMS DLREER
Fixed regressors: C
Number of models evaluated: 1080
Selected Model: ARDL (5, 5, 3, 4)

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
DLINF(-1)	0.674393	0.228956	2.945508	0.0215
DLINF(-2)	-0.434033	0.219564	-1.976797	0.0886
DLINF(-3)	-0.828488	0.230948	-3.587333	0.0089
DLINF(-4)	-0.520413	0.147495	-3.528356	0.0096
DLINF(-5)	0.465462	0.172198	2.703062	0.0305
DLINT	1.038836	0.940746	1.104269	0.3060
DLINT(-1)	-3.526435	1.137241	-3.100870	0.0173
DLINT(-2)	1.098693	0.930710	1.180488	0.2764
DLINT(-3)	1.469642	1.126045	1.305137	0.2331
DLINT(-4)	-1.317601	1.286390	-1.024262	0.3398
DLINT(-5)	1.247284	1.030369	1.210522	0.2654
DLMS	1.128870	0.266170	4.241165	0.0038
DLMS(-1)	-1.225742	0.294937	-4.155950	0.0043
DLMS(-2)	0.003374	0.160965	0.020960	0.9839
DLMS(-3)	0.252156	0.137685	1.831393	0.1097
DLREER	-7.487854	1.452493	-5.155174	0.0013
DLREER(-1)	12.84849	2.158702	5.951953	0.0006
DLREER(-2)	-1.049997	0.971340	-1.080977	0.3155
DLREER(-3)	-6.769207	1.075495	-6.294037	0.0004
DLREER(-4)	6.377488	1.174824	5.428463	0.0010

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
C	0.033923	0.084824	0.399926	0.7011
R-squared	0.974943	Mean dependent var		-0.141304
Adjusted R-squared	0.903353	S.D. dependent var		0.686307
S.E. of regression	0.213360	Akaike info criterion		-0.137964
Sum squared resid	0.318658	Schwarz criterion		0.861189
Log likelihood	22.93150	Hannan-Quinn criter.		0.167487
F-statistic	13.61831	Durbin-Watson stat		2.465677
Prob(F-statistic)	0.000846			

The ARDL results in table 9.9 above show that inflation lagged five times against itself has a positive and statistically significant relationship with the dependent variable DLINF. This implies that inflation in the current period takes effect after five lags which happens to be positively related. This finding is empirically consistent with Kabundi (2012), who investigated the inflation dynamics in Uganda and established evidence of inflation inertia "*which can be attributed to expectations of agents and/or inflation persistence*". The coefficient of DLINT lagged five times shows a positive albeit, statistically insignificant relationship with inflation. This finding suggests that interest rates lagged five times has a positive relationship with inflation, however, this relationship is insignificant. Lower interest rates suggest more money supply in the economy which in turn raises consumer demand, growth in demand for products generates inflationary pressures. Durevall *et al.* (2013) established evidence of long term relationship between money aggregate and inflation in Uganda. Kabundi (2012) explains that an expansionary monetary policy aimed at stimulating the real sector is inflationary in Uganda.

 The coefficient of money supply (DLMS) lagged three times has a positive and statistically insignificant relationship with inflation. This implies that the rise in money supply positively impacts inflation in the long run although statistically insignificant. This finding is consistent with conventional economic theory that states that any increase in growth of money supply ultimately generates inflation. On the other hand, the coefficient of DLREER also indicates a positive but statistically significant

relationship with inflation. This implies rise in real effective exchange rates positively affect inflation which is consistent with economic theory, when the Uganda shilling rises, imports increase but exports fall. Barungi (1997) notes devaluation has been found to have an indirect impact on the general price level through its effect on the parallel exchange rate and the budget. Real exchange rates significantly impact prices in the economy through foreign trade position, BOP as well as production and consumption. The R^2 value is 0.9750 suggests 90% of the variations in inflation are explained by the explanatory variables included in the model.

Table 9.10: Bounds Testing Approach to Cointegration

F-Bounds Test		Null Hypothesis: No levels relationship		
Test Statistic	**Value**	**Significance**	**I(0)**	**I(1)**
F-statistic	5.691772	10%	2.37	3.2
K	3	5%	2.79	3.67
		2.5%	3.15	4.08
		1%	3.65	4.66

*Null hypothesis: No levels relationship

Having established the appropriate ARDL specification for the model, table 8.10 above explains cointegration relationship. The F-statistic estimates the long run relationship between monetary policy and inflation model. The endogenous variable is regressed against its explanatory variables to establish existence of correlation. The F-statistic is compared with the relevant critical values. Consequently, the results from the table indicate the F-statistic (5.69) which is computed at K = 3 (number of independent variables) is greater than the upper critical bound value of (4.66%) at all significant levels. Hence, the null hypothesis of no long run relationship among the variables is rejected. Therefore, the F-bounds test results suggest evidence of existence of true cointegration between the monetary policy coefficients and inflation.

Table 9.11: SHORT RUN DYNAMICS

ARDL Error Correction Regression
Dependent Variable: D (DLINF)
Selected Model: ARDL (2, 2, 1, 1, 3, 3)
Sample: 1980 2013
Included observations: 30

ECM Regression				
Case 2: Restricted Constant and No Trend				
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
D(DLINF(-1))	1.317472	0.277326	4.750623	0.0021
D(DLINF(-2))	0.883440	0.244242	3.617060	0.0085
D(DLINF(-3))	0.054951	0.126875	0.433112	0.6780
D(DLINF(-4))	-0.465462	0.097932	-4.752887	0.0021
D(DLINT)	1.038836	0.538659	1.928560	0.0951
D(DLINT(-1))	-2.498017	0.671203	-3.721703	0.0074
D(DLINT(-2))	-1.399324	0.525109	-2.664825	0.0322
D(DLINT(-3))	0.070318	0.752631	0.093429	0.9282
D(DLINT(-4))	-1.247284	0.497989	-2.504641	0.0407
D(DLMS)	1.128870	0.160676	7.025736	0.0002
D(DLMS(-1))	-0.255529	0.110120	-2.320460	0.0534
D(DLMS(-2))	-0.252156	0.090914	-2.773562	0.0276
D(DLREER)	-7.487854	0.867886	-8.627690	0.0001
D(DLREER(-1))	1.441716	0.432816	3.331012	0.0126
D(DLREER(-2))	0.391719	0.520672	0.752333	0.4764
D(DLREER(-3))	-6.377488	0.657133	-9.705026	0.0000
ECM(-1)*	-1.643080	0.245699	-6.687381	0.0003
R-squared	0.990022	Mean dependent var		-0.093010
Adjusted R-squared	0.975507	S.D. dependent var		1.087547
S.E. of regression	0.170203	Akaike info criterion		-0.423679
Sum squared resid	0.318658	Schwarz criterion		0.385160
Log likelihood	22.93150	Hannan-Quinn criter.		-0.176409
Durbin-Watson stat	2.465677			

The error correction term is examined next in the table 9.11 above. The cointegration equation above additionally shows the ECM term (-1.643080) as negative and significant at 1% level. This suggests existence of stable long run relationship and further implies a long run cointegrating relationship among the model variables. Banerjee *et al.*, (1998) further observed that a highly significant error correction term further indicates evidence of existing stable long-term relationship. The error term indicates the speed of adjustment of coefficients. It illustrates the degree of deviation from long run equilibrium relationship that can be corrected in the short run. Hence, a negative error correction term confirms existence of cointegration among the model variables.

The next step in the ARDL estimation process constitutes diagnostic tests. Diagnostic tests are performed to test for serial correlation, misspecification, stability and heteroscedasticity. Additionally, normality tests and CUSUM tests for stability of the underlying model are conducted in order to check for robustness and adequacy of the model. Residual diagnostic tests illustrate organization and patterns of residuals in the model. Diagnostic tests are key to determining adequate inference established from the model estimations.

Figure 9.5: Normality Test
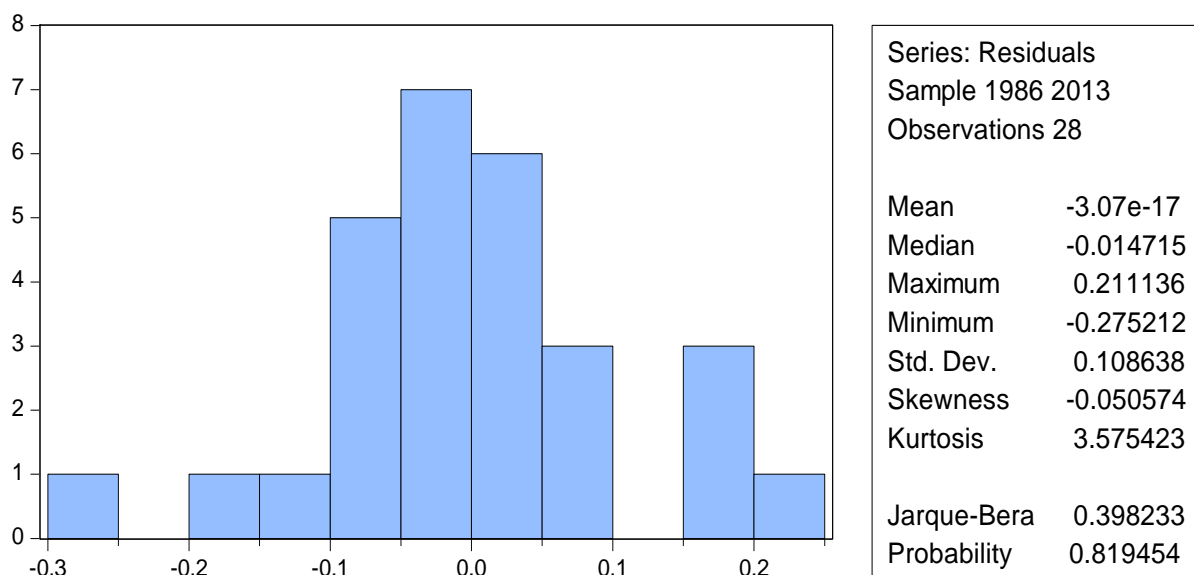
The Jarque-Bera (1980) normality test is conducted to investigate the goodness of fit of normal distribution. In the Jarque-Bera normality test, values of skewness and kurtosis are examined to correspond to normal distribution. From the results above in

figure 9.5, the skewness of -0.050574 and appropriate kurtosis of 3.575423 both indicate normal distribution of data. Furthermore, the Jarque-Bera normality value of 0.398 which is also insignificant at 1% also suggests the model is normally distributed. Hence, we fail to reject the null hypothesis and therefore conclude that the residuals in the above normality illustration are normally distributed. This finding is adequate in concluding the model estimates to be efficient and unbiased.

Table 9.12: Correlogram of Serial Correlation

```
Date: 06/04/17   Time: 00:45
Sample: 1980 2013
Included observations: 28
Q-statistic probabilities adjusted for 5 dynamic regressors
```

Autocorrelation	Partial Correlation		AC	PAC	Q-Stat	Prob*
		1	-0.240	-0.240	1.7869	0.181
		2	-0.063	-0.127	1.9133	0.384
		3	0.163	0.125	2.8097	0.422
		4	-0.208	-0.156	4.3184	0.365
		5	0.202	0.156	5.8067	0.325
		6	-0.054	-0.027	5.9169	0.433
		7	-0.125	-0.077	6.5459	0.478
		8	-0.183	-0.350	7.9540	0.438
		9	-0.019	-0.109	7.9696	0.537
		10	-0.088	-0.238	8.3326	0.596
		11	-0.018	-0.068	8.3494	0.682
		12	0.048	-0.065	8.4695	0.747

*Probabilities may not be valid for this equation specification.

The correlogram above in table 9.12 shows patterns of system residuals for autocorrelation. It is observed from the results that the AC and PAC of residual values are nearly small at almost all lags. The autocorrelation function shows almost zero autocorrelation coefficients. Moreover, the autocorrelation coefficients decline towards zero with the lag lengths further suggesting a stationary process. This implies that the residuals of the fitted regression equation are not correlated. Hence, there is indication of evidence of goodness of fit of the model. Therefore, the sample residual autocorrelation function implies failure of rejection of the null hypothesis of no serial correlation.

The study further tests for consistence of model estimation as well as estimated standard errors by additionally testing for heteroscedasticity in the following table below.

Table 9.13: Breusch-Pagan-Godfrey Heteroscedasticity Test

Heteroscedasticity Test: Breusch-Pagan-Godfrey			
F-statistic	0.567651	Prob. F(20,7)	0.8486
Obs*R-squared	17.32055	Prob. Chi-Square(20)	0.6321
Scaled explained SS	1.393992	Prob. Chi-Square(20)	1.0000

Robust standard errors are examined via the Breusch- Pagan-Godfrey serial correlation test. This tests for existence of constant variance in estimated observations. The Presence of constant variance in residuals indicates generation of reliable estimates. The null hypothesis for heteroscedasticity postulates that the residuals have no heteroscedasticity. Thereby implying homoscedastic residuals in the model. The test results show a value of 0.567 for the F-statistic. Based on the finding, the null hypothesis of no heteroscedasticity cannot be rejected. This suggests no evidence of serial correlation between the residuals hence no omission of essential variables in the model.

Table 9.14: Ramsey RESET Test

	Value	df	Probability
t-statistic	1.435800	6	0.2011
F-statistic	2.061520	(1, 6)	0.2011
F-test summary:	Sum of Squares	df	Mean Squares
Test SSR	0.081488	1	0.081488
Restricted SSR	0.318658	7	0.045523
Unrestricted SSR	0.237170	6	0.039528

The Ramsey Regression Specification Error Test (RESET) is further conducted to examine specification errors in the estimation analysis in the model. The findings in the table 9.14 show the F-statistic for the null hypothesis at 2.06 with a p-value of

0.2011. Thus, the null hypothesis cannot be rejected on the basis of the RESET test results. Under the RESET test, the null hypothesis states that the regression model is correctly specified. This therefore implies that the specified model is correctly specified in terms of adequate inclusion of both the explanatory and dependent variables, hence the model effectively accounts for the appropriate form of relationship between the dependent variable and the explanatory variables.

Table 9.15: Wald Test

Test Statistic	Value	df	Probability
F-statistic	10.67106	(4, 7)	0.0042
Chi-square	42.68424	4	0.0000

Null Hypothesis Summary:		

| Normalized Restriction (= 0)	Value	Std. Err.
C(1)	0.674393	0.228956
C(2)	-0.434033	0.219564
C(3)	-0.828488	0.230948
C(4)	-0.520413	0.147495

Restrictions are linear in coefficients

The Wald test used in this analysis is conducted to test the joint significance of a sub-group of coefficients or the underlying variables in the model. The objective is to investigate the joint significance of the variables in the estimation process. The null hypothesis of the Wald test states the dependent variable is not jointly caused by all the independent variables. In table 9.15 which shows the Wald test results, based on the statistical significance of the Chi-square value of 42.68424 hence, we fail to reject the null hypothesis of no joint significance in the residuals. This finding implies that the model variables are jointly significant and therefore, no misspecification in the model. This is a desirable result in the estimation analysis.

Further expanding to the above diagnostic tests, stability tests are performed to examine consistence of long run estimates by using the Cumulative Sum of recursive residuals (CUSUM). These CUSUM and CUSUMQ tests are proposed by Pesaran and Shin (1999, 2001). The test statistic of Cusum tests is graphed in form of residual patterns hence, its significance can be identified as well as the point for potential

instability (structural break) may appear. The CUSUM stability test is presented below in the figure.

Figure 9.6: CUSUM Stability Test
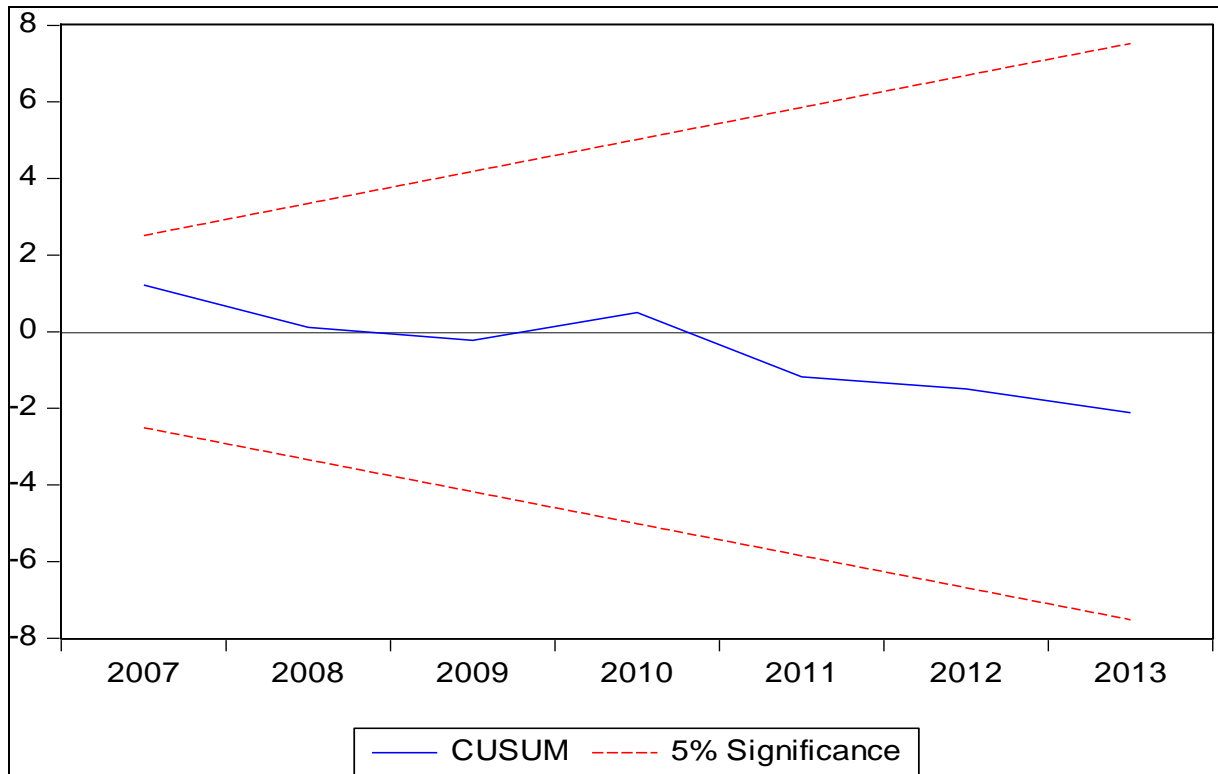
From the CUSUM test results above, the plot of CUSUM statistics lies within the critical bounds at 5% significance level thereby suggesting stability of residuals in the graph. This implies that the estimated coefficients are notably stable. Based on the pattern of the CUSUM test that did not cross the critical limits, this finding suggests the model estimates to be stable and no evidence of indication of structural break, thus, the estimated model results are therefore reliable and adequate.

Additionally, causality between the various variables is examined using the Pairwise Granger causality test below.

Table 9.16: Pairwise Granger Causality Test

Null Hypothesis:	Observations	F-Statistic	Probability
DLINT does not Granger Cause DLINF	31	0.53682	0.5909
DLINF does not Granger Cause DLINT		6.48200	0.0052*
DLMS does not Granger Cause DLINF	31	0.33315	0.7197
DLINF does not Granger Cause DLMS		0.00680	0.9932
DLREER does not Granger Cause DLINF	31	4.25302	0.0252*
DLINF does not Granger Cause DLREER		1.26471	0.2991
DLMS does not Granger Cause DLINT	31	0.14101	0.8691
DLINT does not Granger Cause DLMS		0.32162	0.7278
DLREER does not Granger Cause DLINT	31	0.95410	0.3982
DLINT does not Granger Cause DLREER		1.40141	0.2642
DLREER does not Granger Cause DLMS	31	0.56071	0.5776
DLMS does not Granger Cause DLREER		0.00025	0.9998

The Granger causality test results show evidence of Granger causality between DLINF and DLINT with a probability value of 0.0052 which is less than 5%. This suggests rejection of the null hypothesis which states that DLINF does not Granger cause DLINT. Therefore, the alternative hypothesis is rather accepted, implying that DLINF does Granger cause DLINT. Similarly, the results show causality between DLREER and DLINF with a probability value of 0.0252 which is also less than the 5% hence, the null hypothesis of DLREER does not Granger cause DLINF is rejected in favour of the alternative hypothesis. Thus, DLREER does Granger cause DLINF. Apart from these two coefficients, the Granger causality results show no evidence of Granger causality between the remaining variables.

9.3.2 Concluding Remarks

Chapter eight presented an empirically analysed monetary and fiscal policy dynamics on inflation using Eviews 9. This chapter analysis was presented in two sections; section one examined fiscal policy dynamics on inflation whilst section two analysed

the impact of monetary policy on inflation. The chapter presents and interprets the relevant findings in the two sections as well as descriptive statistics employed in the chapter. The ARDL technique was primarily used in the model estimation in both sections of the chapter. Various preliminary tests are conducted in order to establish integration properties of the underlying data.

Section one presented and discussed the results on the impact of fiscal policy on inflation. The dependent variable inflation was regressed against the explanatory variables of fiscal policy which included; total government expenditure (DLGOVTEXP), total government revenue (DLGOVTREV), tax revenue (DLTAXREV), trade openness (DLTO) and unemployment (DLUN). The ARDL three lag estimation model was used to empirically examine the long run relationship between inflation and the underlying independent variables. The Bounds Cointegration tests were conducted to empirically establish cointegrating relationships between inflation and the relevant independent variables. Several diagnostic tests were additionally performed against serial correlation, normality and heteroscedasticity.

The estimated coefficients were found to be stable under the Ramset RESET and CUSUM stability test. Having lagged the coefficients to establish effective cointegration relationship, the results indicated true and significant cointegration between inflation and the coefficients. The ARDL results in table 8.1 showed total government expenditure (DLGOVTEXP) lagged twice and tax revenue (DLTAXREV) lagged once have negative and significant relationships with inflation. This implies that growth in public spending reduces inflation. Keynes famously argued for the fundamental role of government expenditure as an effective tool to achieve stability and further stimulate investment. In developing countries, public expenditures may be accelerated in order to finance increasing expenditures which in turn may result in increased tax rates and borrowing, thus, reducing inflationary pressures. On the other hand, economic theory establishes that increased tax revenue automatically reduces inflation in the economy. This is because tax rates are raised which reduces money growth in the economy. This corresponds well with the results of the Granger causality tests which revealed that inflation Granger causes government revenue. However, unemployment (DLUN) showed a negative but statistically insignificant relationship with inflation. The remaining variables; total government revenue (DLGOVTREV)

lagged indicated a positive but statistically insignificant relationship with inflation whilst trade openness (DLTO) lagged three times showed a positive and statistically insignificant relationship with inflation. These findings suggest that trade openness is a key component of fiscal policy in determining inflation. The above empirical results justified the appropriate use of the ARDL as the suited technique moreover, the empirical tests all revealed adequacy and appropriation of the underlying model.

The second section examined the monetary policy dynamics against inflation, a maximum of five (5) lags were used to investigate the monetary policy influence on inflation. The dependent variable (DLINF) was regressed against the independent variables which include; inflation (DLINF), interest rates (DLINT), money supply (DLMS) and real exchange rate (DLREER). As expected from a *priori* expectations, inflation is linked to both interest rates and total government revenue. During periods of increasing inflation rates, policy makers embark on a contractionary monetary policy through rise in interest rates and tax rates in order to curtail the rising inflationary pressures in the economy.

Based on the descriptive statistics in the two-chapter sections, on the part of the fiscal policy and inflation, the ARDL bounds testing approach to cointegration indicated a negative and statistically significant relationship between the dependent variable (DLINF) and the independent variable of inflation, particularly in the long run. This suggests that inflation exhibits a cointegration relationship with itself in Uganda. Kabundi (2012) established evidence of inflation inertia as one of the underlying long run determinants in inflation dynamics in Uganda. DLINF lagged five times showed a positive and statistically significant relationship with inflation, however, in lags 2, 3 and 4, it showed a negative and significant relationship with inflation. Interest rate (DLINT) lagged five times and money supply (DLMS) lagged thrice both indicated a positive and insignificant relationship with inflation. Real exchange rate (DLREER) is a key determinant of inflation since it revealed a positive and statistically significant relationship with inflation in the long run. These findings suggest exchange rates play a key role in determining inflation. On the other hand, with regards to the analysis of monetary policy and inflation, the bounds testing approach shows a long run relationship with inflation and itself. This finding is line with the result on fiscal policy and inflation. This implies that in Uganda, past inflationary situations negatively impact

current inflation. This confirms a demonstration by Tumusiime-Mutebile in (2015) when interest rates were hiked in anticipation of rising inflationary pressures. "In light of the risks to higher inflation, Bank of Uganda believes that a tighter monetary policy stance is warranted" Mutebile said. "The future path of the exchange rate poses risk to inflation." https://blogs.wsj.com/frontiers/2015/08/10/uganda-hikes-rates-to-tackle-pre-election-inflation-surge/.

Real exchange rates also exhibit a significantly negative relationship with inflation. Evidence of negative relationship between inflation and real exchange rate is further substantiated by the Pairwise Granger causality test. The Granger causality test reveals evidence of causality between inflation against total government expenditure, total tax revenue and real effective exchange rates. The various diagnostic tests performed in this chapter showed no evidence of autocorrelation, evidence of white noise or instability of data employed moreover, the residuals errors are normally distributed. This suggests the estimation model and data coefficients analysed as not biased and adequate. An understanding of monetary and fiscal policy dynamics and how these two macroeconomic agents in Uganda impact both inflation and unemployment. Therefore, the results generated from this research study are efficient and adequate. Considerable conclusions about the study can be drawn and inferred, moreover, these conclusions can be used in appropriate policy formulations.

CHAPTER TEN

SUMMARY, CONCLUSIONS AND POLICY RECOMMENDATIONS

10.1   INTRODUCTION

Monetary policy and fiscal policy dynamics continue to dominate macroeconomic analysis among policy authorities across all economies. In low income countries like Uganda, policy makers face the dilemma between the objectives of stable prices against employment creation. Monetary policy dynamics in Uganda have transformed considerably over the years, this was primarily driven by escalating inflation rates during the previous period which ultimately formed the basis of macroeconomic management in the economy. The decade of the 1980s in Uganda witnessed a rapid increase in the rate of inflation, with an annual average of more than 100% during 1981 — 1989 (Barungi, 1997). However, the fiscal structure in Uganda hinged on private investment enhancement and export diversification.

10.2   SUMMARY

The primary purpose of this study sought to examine the impact of monetary and fiscal policy dynamics on inflation and unemployment in Uganda. Based on this, four prime empirically testable objectives were outlined; the first objective presented a theoretical and empirical literature review on unemployment and inflation. The second analysed the trends in unemployment and inflation in Uganda between 1980 and 2013. The third objective set out to identify the extent to which both monetary and fiscal policy minimise the adverse effect of volatilities emanating from labour market (unemployment) and inflationary situations. Considering the socio-economic background of the country, monetary policy largely focused on inflation control.

Despite the observable economic transformation in Uganda that characterized transforming the monetary policy regime, alongside liberalization of the economy particularly the financial and trade sectors, the country has in the recent past experienced rapid growth in unemployment particularly severe youth unemployment and volatility in inflationary pressures hence, this study contributes towards the observable macroeconomic policy discourse in Uganda. Conventional economic literature on structural transformation postulates the pursuit of employment creation

through enhancement of the manufacturing sector, however, the services and construction sectors in Uganda stimulated employment creation during the 1990s. While progress partly relates to a low starting point and post-conflict catch-up, policy reforms have also played an important role. These can be considered in three phases. From the late 1980s until the 2000s, a period of 'stabilisation', policies to promote macroeconomic stability helped spur rapid economic growth, while investment and promotion of the private sector, as well as diversification of exports, helped expand employment opportunities (Bruce *et al.*, 2015). This chapter presents a summary of study review, the relevant findings, and its contribution to the body of knowledge as well as policy recommendations for future research.

Since the foundation of this research focuses on monetary policy, fiscal policy and their influence on inflation and unemployment, chapter 2 lays the foundation by examining the broad range of monetary theories as well as empirical literature from the industrialised and developing economies, particularly the literature from the Asian and European perspective as well as the Americas and rest of Africa perspectives on monetary policy. Theories like; the classical quantity school of thought on money, the Keynesian Phillips curve, Milton Friedman's monetarism theory, the Phillips curve, the commonly known the new Keynesian Phillips curve (NKPC) and the Expectations Augmented Philips curve. Since the research study examines how both monetary and fiscal policies in Uganda impact unemployment and inflation, this chapter further analysed the Phillips curve developed by A.W Phillips (which is based on empirical analysis on the inflation and unemployment dynamics in the economy inform of money wages.

Phillips (1958) established a trade-off between unemployment and inflation, thereby suggesting policy makers' dilemma in policy formulation and macroeconomic management. Policy authorities in Uganda emphasized the interaction of monetary and fiscal policy in the stabilization process in order to stimulate domestic and external stability of the economy. Monetarists on the other hand refute existence of long run trade-off between unemployment and inflation. This ultimately gave rise to the widely known Monetarists Vs Keynesian school of thought. Monetarists argue unemployment as supply side situation and thus, being determined by the natural rate of unemployment. Contrastingly, Keynesian school of thought is based on demand side

unemployment. Additionally, monetarists postulated the fundamental purpose of monetary policy in the stabilization process whilst Keynesians argue the fundamental role of fiscal policy. But importantly the significance of both policy tools depending on circumstances. The monetarism school of thought is based largely on; role of money aggregates in policy analysis, short run and long run neutrality of money and nominal and real interest rates. Friedman's (1968) Expectations-augmented Phillips curve which incorporates "*adaptive expectations hypothesis*" into the Phillips curve and asserts the natural rate of unemployment. The incorporation of sticky prices into dynamic stochastic general equilibrium models gave rise to a policy tradeoff between output and inflation stabilization that came to be known as the New Keynesian Phillips curve (Schmitt-Grohé and Uribe, 2008). The advancement of the Keynesian and monetarist views still dominate macroeconomic analysis especially with regards to the rules vs discretion policy implementation in stimulating sustained full employment output. Drummond, Wajid and Williams (2015) note that numerous challenges in the coordination between monetary and fiscal policy remain, essentially government monetary financing is a concern.

Following analysis of the monetary framework and literature on monetary policy in chapter two, chapter three presented the theoretical framework on fiscal policy as well as literature review on fiscal policy. The implications of the great depression in 1930s changed economic and political perspectives in which the dynamics on the role of the government in the economy notably changed. It is widely observed that a stable and predictable economic landscape greatly improves social and economic welfare of the masses. Issing (2005) explains that in the short run, households prefer economic stability along with rising employment and stable incomes that enables sustainable demand over time, whilst in the long run, unnecessary economic fluctuations diminish the growth outlook by increasing the riskiness of investment. Macroeconomic analysis is founded on the core ideas and premise of the classical economists and the Keynesians. Hence, chapter three presented various classical and Keynesians theoretical framework on fiscal policy. This chapter examined the Keynesian theory of fiscal policy and the Ricardian equivalence. Keynes is notably known for his arguments in favour of fiscal policy to stimulate the economy. The core component of Keynesian economics is based on the argument that the macro economy can experience disequilibrium for a longer time than anticipated as attributed to the liquidity trap,

hence, Keynes proposes government intervention to mitigate disequilibrium in demand in order to stimulate growth as well as employment levels. Keynesian theory is based on aggregate demand, stick wages and liquidity trap and growth of savings.

According to Thirlwall (2007), Keynes policies to maintain aggregate demand in the face of shocks and deliberate government policies to promote employment through investment in labour intensive public infrastructure projects in order to absorb the surplus labour and thus stimulating the economy's capacity in developing countries. The classical economist David Ricardo developed the Ricardian equivalence which states that rise in government borrowing does not positively impact consumption expenditure due to individual expectations in the economy in the form of tax cuts or increased government expenditure which generates future increases in taxes. Accordingly, the Ricardian theory of fiscal policy is based on rational expectations hypothesis and income life-cycle hypothesis. Additionally, the chapter analysed various empirical reviews on the patterns of fiscal policy in the developed countries and developing countries of Asia as well as Africa.

Having examined the theoretical structures of both monetary and fiscal policy in chapter two and three, chapter four presented a broader assessment on monetary and fiscal policy in Uganda, as well as the inflation and unemployment outlook in the country over time. Uganda's monetary policy framework transformed greatly over the years from the 1970s with annual averages of more than 100% during 1981-1989, as indicated by Barungi (1997). Therefore, the first part of the chapter examines Uganda's monetary regimes after the withdrawal of the East Africa currency board (EACB), through the SAP implementation policies which enabled the shift from direct to indirect monetary regimes to the present bank of Uganda monetary anchor of Inflation Targeting Lite (ITL). The theoretical monetary transmission mechanism as well as the process of monetary transmission mechanism in Uganda by BOU were also discussed in this chapter. The latter part of chapter four discusses and examines the trends in unemployment and inflation during the period under consideration. As discussed in the chapter, inflation levels prior the 1990s skyrocketed above 100% whilst unemployment levels largely remained low and stable throughout.

Chapter five primarily focused on discussion, presentation and analysis of fiscal policy dynamics and the trends of its relevant determinants like total government

expenditure, total government revenue, tax revenue, trade openness and the effect of these fiscal variables on unemployment during the period 1980-2013.

In developing countries like Uganda, the role of the government is an integral part towards stabilization and sustainable growth. Keynesian economics is largely based on fiscal policy which entails increased government spending in order to stimulate aggregate demand. The classical economists refute Keynesian principles on the basis that rise in government spending stifles private investment and ultimately leads to crowding out. In his *A Treatise on Money* (1930) Keynes argued that, "For the engine which drives enterprise is not thrift, but profit." Hemming and Mahfouz (2002) argue the simplest Keynesian model assumes price rigidity and excess capacity, so that output is determined by aggregate demand. Vladimirov and Neicheva (2008) observe the stabilizing role of budgetary policy is questioned by the Ricardian equivalence theorem. This view applies the logic of the forward-looking consumer (Mankiw, 2003).

At any time, the Bank of Uganda and Ministry of Finance, Planning and Economic Development (MoFPED) seek to apply various monetary and fiscal policy instruments to achieve desired macroeconomic objectives. Hence, this suggests interaction of monetary and fiscal policy in the economy. Considering the implementation of various SAPs in Uganda in the 1990s which witnessed large inflows of foreign aid, over the recent past, the fiscal deficit accelerated while unemployment levels also rose. Barungi (1997) noted the major conclusions are that monetary expansion as dominated by the financing of the fiscal deficit is instrumental in determining the pace of inflation. The acquisition of donor aid entailed macroeconomic reforms like public sector restructuring, privatization mainly to curtail poverty levels.

According to (MoFPED), The 2015/16 fiscal year (FY) represented the end of the Millennium Development Goals (MDGs) and transition to the Sustainable Development Goals (SDGs). As indicated in the chapter, total tax revenue lagged behind government expectations which constrained the fiscal outlook. On the other hand, public spending accelerated in an effort to stimulate the economy, this is further illustrated by the percentage of total government expenditure across all the sectors of the economy over time.

Having discussed the conceptual framework of the study as well as the theoretical and empirical literature reviews in chapters two, three, four and five, the methodology analysis was discussed in chapter six. This chapter sought to explain how the problems mentioned in chapter one would be mitigated. The data analysis of the study was also conducted in this chapter, moreover the data was time series data. The data used in the study were extracted from published sources of the Bank of Uganda (BOU) staff papers and website, World Bank and IMF international financial statistics supplement series, Uganda Bureau of Statistics (UBOS) statistical abstracts, Ministry of Finance, Planning and Economic Development (MoFPED) Drafts, the Uganda Revenue Authority (URA) drafts. The data obtained for this research review were processed using the E-views (Econometric views) software package.

The E-views' simplistic and time-saving programmes as well as being robust yielded statistical estimates that enables easy application. The theoretical and conceptual analysis reviewed as well as relevant empirical literature studied in the preceding chapters were the foundation to specification of the study model. Considering that the research study investigated the impact of monetary and fiscal policies on unemployment and inflation, the model specification in the study used the following variables; total government expenditure (GOVTEXP), total government revenue (GOVTREV), tax revenue (TAXREV), trade openness (TO), and interest rate (INT), money supply (MS), real effective exchange rate (REER) as fiscal and monetary variables respectively which were also the independent variables. These variables were regressed against the dependent variables of unemployment (UN) and inflation (INF).

Considering multiple explanatory variables used and the two dependent variables used, the model specification was divided into two parts. The first part estimated fiscal and monetary policy against unemployment, the second part analysed fiscal and monetary policy on inflation. To this end, two estimation techniques were used in the study; Ordinary Least Squares (OLS) specifically; the Fully Modified Least Squares (FMOLS) and Dynamic Least Squares (DOLS). The Auto Regressive Distributed Lag Estimation (ARDL) method was also used. Two estimation techniques were also used in order to test plausibility and robustness of the estimation results. The data series were tested for stationarity/ unit root using the Augmented Dickey Fuller (ADF), the

Phillips-Perron (PP) and the Kwiatkowski-Phillips-Schmidt and Shin (KPSS) tests to determine the order of integration for the variables. The Johansen Cointegration tests were also conducted to test presence of cointegration among the variables which was followed by estimation of the vector error correction model. Long run relationship was additionally tested using the FMOLS and DOLS.

Additionally, the ARDL as well as ARDL Error Correction model were estimated followed by optimal selection of the lag order to be used, this was followed by the bounds testing approach that tests cointegration among the variables. Various diagnostic tests were tested; normality tests, serial correlation, Wald test, multi-collinearity, heteroscedasticity tests, stability tests were conducted. To establish existence of causality between the variables used in the models, Granger causality tests were also performed in the study.

Having tested all the model variables, empirical findings on the impact of fiscal and monetary policies on unemployment were presented in chapter seven. Since econometric modelling requires integration of the variables being modelled, stationarity tests were conducted in the chapter. Since the variables indicated existence of unit roots, all the variables were integrated of the same order I (1) to induce stationarity. Additionally, in order to generate plausible estimation results, the CUSUM stability tests were performed which showed stability. Using one lag, the study also tested for Johansen cointegration technique. Since the chapter was divided into 2 parts, the first part analysed fiscal policy dynamics on unemployment whilst the second part examined monetary policy dynamics on unemployment.

The trace cointegration test on the fiscal policy and unemployment dynamics indicated existence of three cointegration equations at 5% significance level whilst the maximum Eigenvalue reflected at least 1 cointegration equation at 5% significance level. Presence of cointegration led to estimation of the long run elasticities using FMOLS and DOLS. FMOLS results revealed total government expenditure (LGOVTEXP) is negatively and significantly related with unemployment (LUNEMPLOYMENT) whilst total government revenue (LGOVTREV) is negatively related but statistically insignificant with unemployment. Tax revenue (LTAXREV) and trade openness (LTO) however, showed a positive and statistically significant relationship with unemployment. Additionally, the Vector Error Correction model (VECM) for fiscal

policy was tested, the first cointegration equation revealed a negative relationship between LTAXREV and LGOVTEXP against unemployment.in the second VECM equation, the results revealed tax revenue (LTAXREV) and structural reforms represented by the coefficient of structural break (SB) implemented during the period in the study, both negatively impact on unemployment. The remaining variables; trade openness (LTO), total government revenue (LGOVTREV) and total government expenditure (LGOVTEXP) all had positive relationships with unemployment or were negatively but insignificantly related with unemployment. Furthermore, the FMOLS showed an R^2 value of 0.476. The DOLS estimation results for fiscal policy against unemployment revealed statistically insignificant relationship between the all the variables used with unemployment with R^2 value at 0.908. Although LGOVTEXP reflected a negative link with unemployment, nevertheless, this negative link was statistically insignificant.

The second part of chapter seven estimated monetary policy against unemployment using the following variables; unemployment (LUNEMPLOYMENT), interest rate (LINT), money supply (LMS), real effective exchange rate (LREER) and inflation (LINF). The trace cointegration and maximum Eigenvalue cointegration tests both revealed 2 cointegration equations at 5% significance level respectively. The FMOLS results indicated LINT and LREER both negatively impact unemployment however, the impact was statistically insignificant. LMS, LINF and structural break (SB) all showed positive and insignificant relationship with unemployment. The DOLS estimation results in this section revealed lint, LMS, LREER and SB all negatively impact moreover, apart from LMS, their relationship with unemployment was statistically significant. LMS showed a negative but statistically insignificant relationship. LINF showed a positive and statistically significant relationship with inflation.

The VECM results for monetary policy and unemployment results indicated, in the first VECM equation that LREER has a negative impact on unemployment. The second VECM equation revealed LINF has a negative relationship with unemployment. Normality, multi-collinearity and autocorrelation tests were tested for all the fiscal and monetary model. Autoregressive characteristic polynomial tests and joint significance test were also performed, all the diagnostic results performed

revealed that variations in unemployment are appropriately explained by all the explanatory variables employed.

Chapter eight investigated the impact of fiscal and monetary policy on inflation. In order to generate robust and plausible results estimations, the ARDL model was used in this chapter. Having tested all the variables for stationarity, the chapter estimated the ARDL, the optimal lag order, the bounds testing approach to cointegration were all tested. Furthermore, the ARDL Error Correction regression model was conducted. The first part of the chapter investigated fiscal policy and inflation. The advantage of using the ARDL model according to Srinivasan (2012) is that, the standard Wald or F-statistics used in the bounds test has a non-standard distribution under the null hypothesis of no-cointegration relationship between the examined variables, irrespective whether the underlying variables are I(0), I(1) or fractionally integrated. Importantly, the bounds testing approach is appropriate for this study since according to Pesaran *et al.* (2001), it can be applied to a small sample study.

The variables regressed in the ARDL; total government expenditure (DLGOVTEXP), total government revenue (DLGOVTREV), tax revenue (DLTAXREV), trade openness (DLTO) and unemployment (DLUN) as the explanatory variables regressed against inflation (DLINF) the dependent variable.

Since choice of the appropriate lag order is a prerequisite in the ARDL, the Akaike Information Criteria (AIC) and Schwartz Information Criteria (SIC) were conducted in the lag order process on the top 20 models. The AIC established the appropriate model approach, hence, the model with three lags was selected since it had the lowest AIC. Therefore, the AIC with three lags was established as the optimal lag of the regressive model. The model estimated further underwent autocorrelation, heteroscedasticity tests, stability, and normality test to test for serial correlation. Having selected the appropriate lag order model, the Wald test was further undertaken to test for long run elasticities. Accordingly, the estimation analysis of the Wald test is represented below as;

The null hypothesis states that: C = (1) C = (2) C= (3) C (4) C (4) C (5) C (6) = 0

The alternative hypothesis states: C = (1) C = (2) C= (3) C (4) C (4) C (5) C (6) ≠ 0

Hence, the Wald test results showed the F-statistic value at 4.875646 with a probability value of 0.0096. The chi-square indicated a value of 29.25387 and a probability value of 0.0001. Considering the Wald test F-statistic was greater than Pesaran critical bound value of 4.85, hence, the null hypothesis was rejected in favour of the alternative hypothesis. This suggested that significance of the all the variables employed in the ARDL model therefore indicating long run existence.

From the results of the ARDL, it was discovered that when the dependent variable (DLINF) was regressed against itself, the results showed a negative and statistically significant relationship with inflation both in the first and second lag. Total government expenditure (DLGOVTEXP) revealed a negative and a significant relationship with inflation in the second lag. When total government revenue (DLGOVTREV) was lagged once it revealed a positive relationship with inflation although the relationship was insignificant. Tax revenue (DLTAXREV) as expected negatively impacts inflation in lag one. Trade openness on the other hand, positively impacts inflation when lagged three times. Moreover, this impact was statistically significant. The relationship between unemployment (DLUN) and inflation showed a negative but insignificant sign when lagged three times. The ARDL model also revealed an R^2 value of 0.904107. The bounds tests indicated an F-statistic value of 17.22297, the upper critical bound values showed values of 3, 3.38, 3.73 and 4.15 at 10%, 5%, 2.5% and 1% significant levels respectively. Therefore, suggesting true cointegration existence among the variables.

Additionally, the error correction regression model was also investigated. Results revealed a negatively and statistically significant value of the ECT (-2.078960) with a probability value of 0.0000. A negative and significant ECT value is desired in the ARDL model since it shows evidence of long run relationship. Therefore, the ECT revealed existence of long run. Several diagnostic tests conducted like, serial correlation, heteroscedasticity and normality tests, stability tests all revealed stability of the model residuals and no evidence of presence of autocorrelation. Furthermore, the pairwise granger causality test was also tested to investigate any causality between the variables used. The Granger results revealed only inflation (DLINF) Granger causes total government revenue (DLGOVTREV) with a probability value of less than 5% (0.0767), this suggested rejection of the null hypothesis. The other

remaining variables showed no evidence of Granger causality. This is consistent with economic theory.

The second part of chapter eight investigated the monetary policy and inflation dynamics. This section selected the AIC model with five lags as the optimal lag. The Wald test showed the F-statistic value of 10.67106 with a probability value of 0.0042 and the Chi-square value of 42.68424 and probability value of 0.0000. Since the F-statistic of the Wald test is greater than the Pesaran upper critical bound of 4.85, the null hypothesis was rejected. This suggested evidence of long run existence amongst the variables employed. Since this section investigated monetary policy and inflation. The variables used are as follows; interest rate (DLINT), money supply (DLMS) and real effective exchange rate (DLREER) which were the independent variables against the dependent variable (DLINF). The ARDL results revealed, inflation (DLINF) positively affects inflation when lagged five times. The relationship is statistically significant. Interest rate (DLINT) showed a positive but insignificant relationship with inflation at the fifth lag. As expected total money supply (DLMS) had a positive relationship with inflation although the relationship was statistically insignificant in the third lag. Real exchange rates (DLREER) positively impact inflation with a statistically significant relationship. The R^2 value of the model was indicated at 0.974943.

The bounds test showed the F-statistic value at 5.691772, the upper critical values were 3.2, 3.67, 4.08 and 4.66 at 10%, 5%, 2.5% and 1% respectively. Hence, the null hypothesis was rejected. This implied existence of true cointegration. The ECM was thereby regressed to investigate error correction.

The ECT indicated a negative and statistically significant value at -1.643080 and a probability value at 0.0003. The diagnostic tests conducted showed no evidence of serial correlation, moreover the model residuals revealed to be stable and normally distributed. The Granger causality illustrated evidence of Granger causality between inflation (DLINF) and interest rate DLINT with a probability value of less than 5% at 0.0052. This suggested rejection of the null hypothesis and acceptance of the alternative hypothesis. This implied DLINF does Granger cause DLINT. The results also indicated evidence of granger causality between real exchange rate DLREER and DLINF with a p-value of 0.0252. The alternative hypothesis which states that DLREER does Granger cause DLINF was accepted against the null hypothesis.

10.3   CONCLUSIONS

This study investigated the extent of government monetary and fiscal policies impact unemployment and inflation in Uganda. As chapter three, four and five indicate, Uganda's success in the control of inflation from the 1990s is well documented, whilst, unemployment figures remained adequately stable in the same period along with driving down poverty level in the economy. Bank of Uganda's primary objective remains steady prices, Uganda's ability to effectively bring inflation down to less than 10% over the past period was largely based on economic liberalization. The financial markets especially interest rates and exchange rates formed BOU's key monetary policy instruments that contributed to its objective. Despite the country's economic progress over the years, perpetuation of jobless growth continuously constrained the economy. Due to the complex structural dynamics in low income countries like Uganda, fiscal policy in form of the government's role remains an integral part of economic progress, especially if properly synchronised with monetary policy (Jha, 2007). Uganda's economic turbulence was highlighted in the initial chapters of the study.

Chapter one particularly highlighted the fundamental role of the rehabilitation and recovery programme which comprised of various structural adjustment programmes, that policy makers embarked on in the 1990s, notably the recovery programmes prompted the country's economic progress. The transformation in Uganda's monetary policy framework entailed the shift from direct to indirect inflation regulation to the current monetary anchor of Inflation Targeting Lite (ITL). The economy's recovery was based on programmes like Poverty Action Plan (PEAP), the Millennium Development Goals (MDGs).

Despite numerous fiscal reforms, the fiscal outlook remained inadequate attributed to by shallow public expenditure and insufficient revenues and a weak private sector. Whilst inflation has been curtailed for much since the 1990s, unemployment in Uganda continued to rise largely driven by population growth and expanding youth. The World Bank established Uganda with the youngest population in the world as well as highest youth unemployment. Moreover, in the 2011/12 budget speech, the minister of finance acknowledged the escalating unemployment levels implied that the economy only absorbed 20 percent of the youth. In the recent past the economy has progressed

sluggishly compared to its East African counterparts of Kenya and Tanzania due to inflation volatility and a weak fiscal environment.

It has been observed that the failure to effectively line fiscal policy with monetary policy undermines the economy's capacity to external shocks, which weakened exchange rate position and investment outlook. Although the service sector notably improved however, manufacturing and industrial sectors remain sluggish, ultimately, employment growth is slow notwithstanding the agriculture sector's slow growth. This has generated uncertainty in the macro-fiscal economy. The challenge has been to balance sustainable government expenditure expansions financed largely through foreign aid whilst mindful of the fiscal deficit as well as budget inadequacies. As observed by Bbaale (2013), the informal sector is the largest employer in Uganda. This explains the shallow tax revenue structure, moreover, imports exceedingly outweigh exports. Therefore, in line with the empirical findings in the study, policy implications on the use of monetary and fiscal policy to impact unemployment and inflation in Uganda are discussed.

10.4   POLICY IMPLICATIONS AND RECOMMENDATIONS

The thrust of this study examines the influence of monetary and fiscal policies on unemployment and inflation in Uganda. Using FMOLS and DOLS, monetary and fiscal policy dynamics against unemployment was firstly investigated. This was followed by the investigation of monetary and fiscal dynamics on inflation using the ARDL technique. Examining Uganda's economic history and the monetary and fiscal policy characteristics which have evolved since the 'stabilization period', this study therefore plays a purpose for present and future considerations of policy makers in Uganda.

The results of the empirical findings analysed collectively present a number of policy implications:

The FMOLS long run results in chapter seven revealed LGOVTEXP and LGOVTREV negatively impact unemployment although the link between LGOVTREV and unemployment was statistically insignificant. This is consistent with economic theory particularly Keynesian economics, expansion in government spending ought to bring down unemployment. The negative but insignificant link between LGOVTREV and unemployment could be because government revenue is mainly comprised of donor

grants rather than tax revenue. Trade openness (LTO) and structural reforms (SB) both positively impact unemployment. This suggests that the relevant liberalisation and structural policies unsuccessfully generated employment opportunities. Uganda's imports exceed exports, a position attributed to, the large volume of agricultural products exported compared to various imports. Over the years, the currency (Shilling) has notably declined against major currencies including the Kenya Shilling one of the country's major trading partners. The R^2 value of 0.476401 suggests that 48% of variations in unemployment are explained by the fiscal variables used in the model whilst 53% is explained by other factors which are not included in the model.

The ECM results indicate a relationship between LTAXREV, LGOVTEXP and SB however, the positive coefficient of LTO suggests any disequilibrium in trade openness continues to grow.

The DOLS results on monetary policy and unemployment showed interest rates (LINT), real exchange rates, structural policies (SB) and money supply (LMS) all negatively influence unemployment although the relationship between LMS and unemployment is insignificant. These findings suggest inclination to stimulate investment demand specifically foreign investment through the bond and capital transactions so as to create employment opportunities. The monetary structural reforms appear more successful in reducing unemployment than the fiscal policy reforms particularly the structural reforms on trade liberalisation. This implies a rise in interest rates and real exchange rates that induce investment demand. A key feature of the shallow financial sector is slow savings and a weak aggregate demand.

The predominantly large informal sector manifested in underemployment ought to be integrated with the more productive sectors of the economy. Considering that in low income countries the private sector is less efficient to create jobs, high interest rates attract foreign investment. Uganda being a landlocked country, increased real exchange rates would reduce the cost of intermediate inputs to producing firms. Implementing effective trade policies that anchor foreign capital, savings and induce local firms will generate productive employment over time. This is further manifested in the Error correction model results that showed evidence of a cointegration relationship between structural breaks (SB) and unemployment. The ECM results also show in the first equation a value of -0.31 implying that 31 percent of the variation in

unemployment is corrected whilst the second equation indicated a value of -0.12 an indicvation that only 12 percent of the variations is corrected.

The ARDL technique was used to examine monetary and fiscal policies on inflation. The study established that inflation expectations play a key role in determining inflation in the economy. DLINF lagged twice against itself revealed a negative and significant relationship. Economic agents' anticipation of more implementation of policies by the bank of Uganda influence inflation in the long run. Total government expenditure (DLGOVTEXP) similarly negatives impacts inflation in Uganda. Such a phenomenon exists when the government finances its debt through issuance of bonds to the public thereby decreasing the volume of money supply in circulation. It has been established that the impact of government expenditure on inflation depends on the monetary conditions (expansionary or contractionary monetary policy) in the economy. During periods of low growth in liquidity, government expenditure does result in inflationary pressures. Additionally, the Pairwise Granger causality test revealed existence of Granger causality between DLINF and DLGOVTREV. This is because inflation results in increased taxation which in turn impacts total government revenue.

The ARDL results indicated inflation is determined by inflation itself (DLINF) and real exchange rates (DLREER). Inflation when lagged with itself five times showed a negative and significant link with inflation however, the relationship with inflation was positive in the fifth lag. This suggests economic agents react to policy changes overtime. Importantly, the Granger causality results indicated that DLREER does Granger cause DLINF. If the rise in real exchange rate is accompanied by GDP growth, Kamin and Rogers (2000) observe that it stimulates export diversification and improved competitiveness and output growth in developing countries, especially if effective policies are implemented in the economy. According to Dornbusch (1994) a real depreciation of a currency encourages exports and curtails import demand which in turn boosts aggregate demand. Coherent policies intended to facilitate export growth stimulates the economy on a developmental approach for sustainable progress.

One of the key obstacles to Uganda's growth progress is anchoring monetary and fiscal policy objectives given the complex macro-economic environment in the country. Growth in government spending ought to be supplemented with private domestic and

foreign investment. The ARDL results revealed that inflation expectations play a key role in determining inflation in the economy, this is in line with the findings of Kabundi (2012). The real exchange rate DLREER remains a key tool in both monetary and fiscal policy implementation in Uganda.

A critical finding in the study with regards to fiscal reforms and trade openness that showed positive relationship with unemployment. This suggests the structural reforms have been inadequate in stimulating employment in the country. The FMOLS indicated an R^2 value of 0.476401, suggests that only 0.476 of the variations in unemployment are explained by the fiscal policy explanatory variables. This implies that more efficient structural policies are required to stimulate employment. In low income countries progressive, economic growth should manifest into employment generation for the growing population.

The expanding informal sector should be aligned with mainstream productive employment in an effort to improve saving and entrepreneurship. The growth of private investment is largely constrained by high interest rates to expand total government revenue; however, this has curtailed domestic investment as well as incentive to borrow. Richens (2013) observed that despite substantial improvements in tax administration tax revenue of 12 to 13% of GDP was low even by African standards. This implies stronger tax reforms especially vat and income tax exemptions aligned with the objective of expanding the formal sector all essential to increase tax revenue and ultimately growth in GDP.

The total share of percentage government expenditure between 2001/02 to 2010/11 showed, whilst a large share of government funds is spent on transport and works, the share on education and health was notably insufficient. Infrastructural development and human capacity are both key drivers of meaningful growth. It has been established that the biggest challenge to the rapid rise in youth unemployment is structural unemployment. The advancement in agriculture should be supplemented with improvement in manufacturing and industry to generate long-term growth.

Estimation results in chapter five revealed government spending was utilized to finance the budget deficit. Economic theory postulates that government investment expenditure negatively impacts unemployment. The OECD policy brief (2008) review

observed infrastructure projects such as transport, electricity, telecommunications and water drive economic welfare.

The empirical OLS estimation results in chapter seven suggest over reliance on monetary policies to effectuate desired objectives, Keynesian economics asserts interaction of monetary and fiscal policy to stabilize the economy. Policy authorities should stimulate domestic demand to drive economic activity. The benefits of stable prices should enable improvement in per capita income and GDP when complimented with private consumption demand.

Subsequently, further research should be conducted on an extensive scale on the causality foreign direct and private investment of unemployment. Hence, this research study proposes a broader range for further research in the next discussion.

10.5   RECOMMENDATIONS FOR FURTHER RESEARCH

- An examination on the impact of both government consumption and investment expenditure to unemployment should be conducted over a long period.

- An extensive study on the contribution of structural policies and Millennium Development Goals (MDGs) to Uganda's macro economy.

- A comprehensive study on the impact of the real exchange rate on the private sector in Uganda should be conducted.

- A comparative evaluation on the contribution of Small and Medium Micro Enterprises (SMMEs) in the economy should be undertaken.

- A comprehensive analytical research study on the impact of donor aid on the macroeconomic landscape in Uganda should be conducted.

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Annexure 1: Letter from the language editor

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TO WHOM IT MAY CONCERN

I, Jill von der Marwitz, declare that I have done the language editing for the thesis of:

SEBULIBA NANTUMBWE AMINAH (214365905)

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Submitted in fulfilment of the requirements for the degree of Doctor of Philosophy in Economics in the Faculty of Business and Economic Sciences at the Nelson Mandela Metropolitan University.

I cannot guarantee that the changes that I have suggested have been implemented nor do I take responsibility for any other changes or additions that may have been made subsequently.

Any other queries related to the language and technical editing of this treatise may be directed to me at 076 481 8341.

Dated at Port Elizabeth on 28 July 2017

Dr. Jill von der Marwitz