**THE IMPACT OF GOVERNMENT EXPENDITURE, MONEY SUPPLY AND INFLATION ON ECONOMIC GROWTH IN TANZANIA**

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**A DISSERTATION SUBMITTED IN PARTIAL FULFILMENT OF THE REQUREMENTS FOR THE DEGREE OF MASTER OF SCIENCE IN ECONOMICS OF OPEN UNIVERSITY OF TANZANIA**

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# **CERTIFICATION**

The undersigned certifies that he has read and here by recommends for acceptance by the Open University a dissertation entitled; Impact of Government Expenditure, Money Supply and Inflation on Economic Growth in Tanzania” in partial fulfilment of the requirement for the degree of Masters of Science in Economics.

……………………………………

Dr. Raphael Gwahula

Supervisor

……………………………

Date

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…………………………………..

Signature

……………………………….

Date

# **DEDICATION**

This work is dedicated to my beloved parents; Mr. & Mrs. Charles Makwandi and Guardians Mr. & Mrs. Ephraim Kwesigabo.

# **ACKNOWLEDGEMENT**

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# **ABSTRACT**

This study examines the impact of government expenditure, money supply and inflation no economic growth in Tanzania. Like the case in other countries both developed and developing countries, one of the fundamental objectives of macroeconomic policies in Tanzania is to promote economic growth and to make general price at a low level. Majority of researchers have been entered on substantial debate on whether inflation promotes or harms economic growth. Motivated by this debate, the study conducted a study covering the period 1970 to 2011. An Augmented Dickey fuller (ADF) used to test for stationarity of data and the existence of co integration were tested by an ARDL bounds tests. The ARDL model was employed to estimate the impact of government expenditure, money supply, inflation and its relationship to economic growth of Tanzania. Results suggest that inflation has a negative impact on economic growth and also government expenditure and money supply have significant impact to economic growth both in short run and long run though they differ in magnitude. The study suggest the government to maintain a single digit inflation which is less than 3% to avoid its harmful to economic growth and to be carefulin implementation of monetary policy and fiscal policy because inflation seems to be a major macroeconomic variable in the economy. In addition, the study proposes to upcoming researchers to add or remove other variable (s) either government expenditure or money supply in the model to observe further effect of inflation to economic growth.

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# **LIST OF ABBRIVIATIONS**

ADF Augmented Dickey Fuller

ARDL Auto Regressive Distributive Lag

BOP Balance of Payments

BOT Bank of Tanzania

CPI Consumer Price Index

ECM Error Correction Model

FEM Fixed Effect Model

GDP Gross Domestic Product

NBS National Bureau of Statistics

OLS Ordinary Least Squires

REM Random Effect Model

RGDP Real Gross Domestic Product

UNCTAD United Nations Conference of Trade and Development

VAR Vector Autoregressive

VECM Vector Autoregressive Error Correction Model

**CHAPTER ONE**

# **1.0 INTRODUCTION**

# **Background of the Study**

According to the fundamental concept of economics, inflation, money supply and government expenditure have a close relationship and impact to economic growth whereas, inflation has been caused primarily by an excess of money supply and increase of credit (Kweka and Morrissey, 2000). Monetary and fiscal policies initiated usually keeps rising inflation. These increases are dominant because when people are allowed to offer more money for goods or the supply of goods cannot be balanced with supply of money automatically raises the price of goods.

The price of goods rises, not only because the goods are scarce than before, but because money is more abundant and less valued (Al-Fawwaz, 2015). Al-Fawwaz says that in the early years, various governments applied the tradition method of clipping and debasing the coinage by grinding more money on a printing press. Today, the approach is slightly different and acts in the indirect way. Currently, governments sell bonds to banks; in turn banks create deposit on books, which can be drawn by the state. On the other hand, some economists believe that a low and stable inflation rate of 3 percent has a small cost in the economy (Mankiw, 2008).

The need to understand the cause and cure of inflation usually lead researchers to different opinions about the appropriate measures to be taken to stabilize inflation. Those advocating on monetary terms have been advising the government to stabilize the budget deficit and restrain credit to public enterprises. Although this approach is viable, but the economic stability cannot exist in the market mechanisms with the dramatic change of inflation. The simple and reliable solution is to control the government expenditures, which causes a deficit in the process of economic development.

According to Mankiw, (2008) when the supply of money is very high, the inflation has effects on the following; the value of the monetary unit depreciates very quickly, raises everybody's living costs, wipes out the value of the past savings, discourages the future savings and redistribute wealth and income wantonly, in return reduces the economic growth. Although the economic growth of Tanzania has many problems but this study focuses on examining the effects of government expenditure, money supply and inflation in the country. It is an undeniable fact that money supply, inflation and government expenditure, imbalances of economic structures, international motivations and sometimes all factors together have attributed to disturb economic growth. Tanzania located within the East Africa boundaries is not exempted from this drama.

## **1.1.1 Inflation and Economic Growth**

The reaction on the negativity of inflation to economic growth started in 1970s, countries, particularly the Latin American nations started to experience a decrease in growth rates because of high inflation and in this manner brought about the ascent of the perspectives stating that inflation effects affects the economic growth rather than the positive impacts. The sign of negative relationship amongst inflation and economic growth appeared from a portion of the Asian nations, for example, India demonstrated that the growth rate of Gross Domestic Product (GDP) in expanded from 3.5% in the 1970s to 5.5% in the 1980s while the inflation rate optimized consistently from a yearly normal of 1.7% amid the 1950s to 6.4% in the 1960s and further to 9.0% in the 1970s preceding facilitating barely to 8.0% in the 1980s the economic growth diminished (Prasanna and Gopakumar, 2010).

Likely, in China, it was demonstrated that from 1961 to 1977, China's real GDP growth and real GDP per capita growth be around at 4.84% and 2.68% individually. Since 1978, China's economy became bit by bit though the growth rate varied among the years because of inflation changes. Again from 1978 to 2007, the growth rate of China's genuine GDP and genuine GDP per capita were reported as 9.992% and 8.69% individually, the overtime variances were uncovered that is because of changes in general price level of goods and services (Xiao, 2009).

From the perspective from the East African Countries experience, demonstrates that Kenya had 5 years of positive economic improvement or more 4% of economic growth for four continuous years. Be that as it may, a normal yearly inflation of Kenya broadened from 18.5% in June 2008 to 27.2% in March 2009, previously sinking marginally to 24.3% in July 2009. The experience demonstrates that; Uganda was one of the snappier developing economies in Africa with consistent growth averaging 7.8% since 2000 with the yearly inflation rate diminishing from 5.1% in 2006 to 3.5% in 2009. In Rwanda the normal yearly genuine GDP growth rate from 1990-1999 was - 0.1 yet from 2006 to 2009, Rwanda had a yearly normal growth rate of 7.3% (Stein, 2010).

**1.1.2 Government Expenditure, Supply of Money and Inflation to Economic Growth in Tanzania**

Thusly late 1970s, Tanzanian economy experienced both interior and outside stuns. All segments of the economy were influenced by stuns, because of vast government budget deficits and non-correlation amongst beneficial and non-profitable exercises. The indicators merely connected with these were high inflation rates, tremendous balance of payments (BOP) deficits, falling in residential savings, developing in government expenditure, declining agricultural production and underutilization of modern limit which lead to decrease in economic growth (Kilindo, 1997).

From Tanzanian economy perspective, Ndyeshobola (1983) indicated that somewhere around 1964 and 1969 there was low inflation comparable to 0.3% and 3.2%) on the mediocre at the National Consumer Cost Index (NCPI) and National Food Price Index (NFPI) separately. Later 1972, the NCPI ascended by a normal of 16% up to 1975, noticing that 19% for 1974 and 25.9% for 1975 were anomalies which were brought on by the serious sustenance problems commanded amid the second 50% of 1973 while NFPI achieved top purpose of 35.0% in 1974 and 30.6% in 1975. In this way, Tanzania's economic growth in general has demonstrated a flight pattern as it noticed a normal GDP growth rate of around 3% somewhere around 1991 and 2000, the GDP growth rate in 1992 was just 0.584%, while the rates in 1996 and 2000 were 4.6% and 5.1% separately (Odhiambo, 2011).

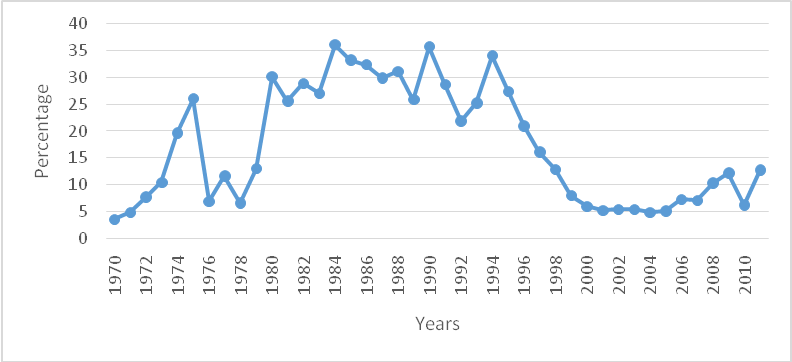
In the midst of 1952 to 1970 economic growth rate of 5.2 percent was connected with single digit rates of inflation rate, with excellent of the period of 1966-70 in which the rate of inflation was 11.7 percent. After 1965 to 1985 the economic growth continually diminished with roundabout corresponding with increment in the rate of inflation while Tanzania indicated consistent price stability in the 1950s and 1960s. In this, Annual normal rates of inflation were low, in a solitary digit, at around 4.5% and 9.3 % amid 1950s and 1960s separately. In any case, the rates rose to 10.5% in 1973, preceding it achieved 26.5% in 1975. Amid 1980-1985 the normal highest rate of inflation, 27.3% was combined with the most minimal rate of economic growth of 0.9%. Moreover, thinks about found that, as the economy enhanced amid 1986-1990, the normal rate of inflation decreased to 23.9% thus normal growth rate rose to 3.7 % (Shitundu and Luvanda, 2000).

The primary target of macro-economic policies in Tanzania is to advance economic growth and keep up inflation rate in low rate or a solitary digit. By and by, as of late there has been broad discourse on the relationship amongst inflation and economic growth. In that verbal confrontation there are two risen gatherings, firstly is a gathering of researchers, who are supportive of the Structural and Keynesian contemplations who trust that inflation is not unsafe to economic growth whilst the second gathering is who for monetarist thoughts, contending that inflation is destructive to economic growth.

Besides, different researchers found that there is significant short-run relationship amongst inflation and economic growth yet not over the long haul (Datta and Kumar, 2011). Inspired by this economic questionable, this study investigated the effect of inflation on economic growth in Tanzania to think of discoveries on whether inflation is hurtful to economic growth in Tanzania or not.

**1.2 Trend of Inflation and Economic Growth in Tanzania**

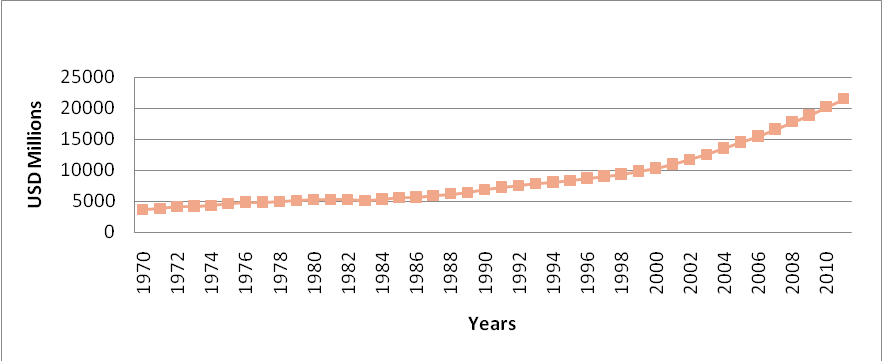
In general, the Tanzanian inflation levels have recorded to be volatile since 1970s. Reaching the high level of 26% in 1975, single digits were recorded in 1970 (3%), 1971 (4%) and in 1978 the annual inflation rate was 7%. Furthermore, the overall period of 1980s was characterized by relatively high inflation rates. The rates accelerated to as high as 36% in 1984 and maintained levels above 25% throughout the period (World Data Bank 2012). It was noted that the high inflation rates of this period were mainly generated from both the output and monetary side. Therefore, from the beginning of the second half of 1980s, the government has been concentrating both on tight monetary policy and deliberate strategy to foster production as one of the strategies of combating high inflation in Tanzania (Solomoni and Wet 2004).



**Figure 1.1: Trend of Inflation in Tanzania from 1970 to 2011**

From the Figure 1.1, even though in 1990s, the country continued to suffer from high inflation rates, the positive results of the government’s efforts began to show some signs in 1995. During which the rates started to go down, recording a drop of 7% from 1995 to 1996 and towards the end of 1990s the government managed to reduce inflation to 7%. This achievement could as well be explained by the BOT strategy of adopting price stability as a primary objective of the bank in 1995 BOT act. However, it was noted that between 1994 and 1998 the central bank had managed to reduce the growth of money supply from 33% to 7.7% (Solomoni and Wet 2004). The single digit inflation rates were maintained until 2008 when inflation rose again to double digit (10%). The double-digit inflation persisted continuously until 2010, when it fell to 6%, followed by a sharp increase to almost 20% in 2011 (Adam et al., 2012).

From Figure 1.2, it is evidence that it quite difficult to say that inflation has a positive impact to economic growth in Tanzania.



**Figure 1.2: Trend of Gross Domestic Product 1970 To 2011**

# **Statement of the Problem**

The relationship between government expenditure, money supply, inflation and growth of economy is especially important for developing countries, most of which have experienced increasing levels of public expenditure and inflation over time (Kweka and Morrissey, 2000). This has tended to be associated with rising fiscal deficits and inflation, suggesting their limited ability to raise sufficient revenue to finance higher levels of expenditure. Rising deficits and money supply increases inflation and tend to have had an adverse effect on growth in country (Mbongo et al, 2014). This study is concerned with the composition of expenditures by the government on final consumption, broad money supply and inflation in percentages outsourced from UNCTAD data base.

Therefore, this study intends to examine government expenditure, money supply and inflation effects to economic growth in Tanzania using the Autoregressive Distributive Lag Model (ARDL). The study uses secondary data collected from 1970 to 2011. The Autoregressive Distributive Lag Model corrects the lapses using the OLS. An ARDL Model results are used in addressing the relationship of economic growth and other variables in the short and long run measurements.

# **1.4 Significance of the Study**

This study will add to market analysts, financial expert, academicians, policy makers and national investor's officials keen of how the GDP change because of progress in inflation so they can bring great policies to hold an inflation rate valuable for production in the economy (non-harmful inflation rate). From the importance of policy makers to clear vulnerability on relationship amongst inflation and economic growth on either inflation has positive or negative relationship to economic growth, this study analyzed the effect of inflation on economic growth in Tanzania by demonstrating the level of responsiveness of progress in GDP because of progress in general price levels in Tanzania, disposition and their relationship in general and along these lines filling the current learning crevice.

# **1.5 Objectives of the Study**

# **1.5.1 General and Specific Objectives**

Generally, this study intended to examine the impact of government expenditure, money supply and inflation on economic growth in Tanzania.

Specifically, the study aimed at achieving the following objectives:

1. To examine the impact of government expenditure, money supply and inflation on economic growth in Tanzania over the period 1970 to 2011
2. To assess the trend and relationship of government expenditure, money supply and inflation and economic growth (GDP) in Tanzania for 1970to 2011
3. To measure the sensitivity of economic growth due to change ofgovernment expenditure, money supply and inflation in Tanzania from 1970 to 2011

# **1.6 Research Questions**

For achieving adequate research results, the following research questions are stated:

1. What is the impact of government expenditure, money supply and inflation on economic growth in Tanzania over the period 1970 to 2011?
2. What is the trend and relationship of government expenditure, money supply and inflation to economic growth rate in Tanzania?
3. How does economic growth change due change in government expenditure, money supply and inflation rate in Tanzania?

# **1.7 Scope and Limitation of the Study**

The study bounds three independent macro-economic variables in particular inflation, money supply and government expenditure while inflation is a noteworthy centered variable where other variables are money supply and government expenditure.

# **1.8 Organization of the Study**

The study contains of five chapters. The section that takes after presents the talks of applicable theories, empirical studies and theoretical system and advancement of speculations. Chapter three talks about the research methodology which incorporates the areas in particular, research design, sources and sorts of information, estimation systems as to be utilized as a part of the analysis. Chapter four, while the last parts have been utilized for rundown conclusions, policy suggestions and impediments of the study.

# **CHAPTER TWO**

# **2.0 LITERATURE REVIEW**

# **2.1 Overview**

The section investigates the audit of different written works identifying with the study. The survey considered different economic study perspectives from various nations. The writing caught the relationship of different macro-economic variables to economic growth in various economies and Tanzania's economy specifically from different hypothetical perspective. Moreover, it encouraged to comprehend the beginning and the knowledge of the research problem. The part includes the hypothetical survey, empirical audit and in conclusion, applied system of study, the speculations improvement and the entire review of inflation pattern in the economy of Tanzania.

# **2.2 Conceptual Definitions**

Gross domestic product (GDP): is the aggregate income got by all divisions of an economy inside a state. Various researchers, for example, genuine GDP, have utilized distinctive measures of GDP. Hossain (2012) in his study Economic Growth was measured by Real Gross Domestic Product, consequently this concentrate likewise utilized the genuine Gross Domestic Product of Tanzania as a measure of Economic Growth.

Inflation (INF): The idea of inflation has been characterizing similar to the expansion of general price level of goods and services in a particular nation over a period of time (Mamo, 2012). Masawe (2001) inflation has been generally depicted where the cash supply is increment speedier than the goods and administration in the economy. Piana (2001) the market analysts always recognize the inflation from economic phenomenon of a previous rise in prices or when there rises of price in a gathering of goods or services.

Agreeing, Ayyoub et al. (2011) inflation rate can be measured by different methods such as the change of percentage in the price index (consumer price index, wholesale price index, maker price index and so on). Chimob (2010) said that, the consumer price index (CPI) determine the level of inflation by measuring the price which speak to the basket of goods and services obtained by the consumer and figured on the premise of periodic review of consumer prices. Aside from that the measurement of inflation is CPI it has got a few weaknesses in particular.

To begin with, it rejects goods and services purchased by organizations and/or open establishment, for occasion apparatus, besides, it neglects the nature of goods which may have happened overtime, thirdly, it is hard to catch the price of substitute goods and finally, CPI basket for the most part does not clear change. Yet, in spite of these impediments, the CPI is still prevailing utilized as a measurement of the general price level since it is utilized for indexation wages and compensation workers (counting public employees). Along these lines same to this study inflation has been measured by a consumer price index in view of year 2005.

Government Expenditure (GEXP): Government expenditure contains more than one major components; expenditure on definite goods and services and expenditure on wage and pay rates collections (Cavallo, 2005). This study used to measure the government expenditure by the government last utilization expenditure in goods and services in US Dollar at current prices and current trade rates in Millions as received from the investigation of Kibet (2014).

# **2.3 Theoretical Review**

# **2.3.1 Theories on economic growth and inflation**

A large portion of financial analysts have been broke down about effect of inflation on economic growth since passageway of classical economic theory to neo-classical economic theories. This managed withgrowth a theory, that is classical, Neo classical, Keynesian, Monetarist, and Endogenous theories of economic growth on the relationship between inflation.

# **2.3.2 Classical Growth Theory**

The Classicalists, supported by the works of Adam Smith, David Ricardo, and Karl Marx among others as referred to in Sindano (2014), talked about and expected on supply side driven growth model. They indicated supply as a component of area, work, and capital. Along these lines they expected that, yield growth is driven by populace growth, investment growth, and area growth, and in addition the expansion in the general profitability. Smith accepted that there is a self-strengthening economic develop as in wherever there is an expanding come back to scale and savings which thusly makes investment, the economic growth will happen too.

In this manner, he watched that income distribution is a standout amongst the most important factors and device of how quick or moderate a countryshould grow economically. The declinesof Profit, is not inexorably on account of decay of minimal result of work, yet rivalry for work pushwages up. Surely, the classical growth theory hypothesis proposes a negative relationship between inflation and growth through higher wage cost.

# **2.3.3 Neo-Classical Growth Theory**

Solow 1956 and Swan 1956 is the one of the most punctual proposed neo-classical models. The model accepted the unavoidable losses to work and capital particularly and consistent comes back to both component corresponding. The progress innovative substituted the investment that is, growth of K as the fundamental factor explaining long haul growth, and its level was assumed by Solow and other growth scholars to be determined exogenously, that is, independently of every other factor, including inflation (Mamo, 2012). Mundell in 1965 was one of the first to clarify a mechanism relating inflation and yield growth separate from the overabundance demand for commodities (Barro and Sala-i-Martin, 2004). As per Mundell's model, the expansion of inflation influence individuals' riches. This applies on the confirmation that the rate of profit for individual's genuine money strong qualities drops. With a specific end goal to gather a more riches, individuals spare more by changing to assets, expanding their price, therefore driving down the genuine loan cost. In this manner, more prominent savings implies more noteworthy capital gathering and along these lines accelerates yield growth (Mamo, 2012).

# **2.3.4 Keynesian Theory**

The Keynesian considerations say that, the expansion of money in the dissemination influence inflation through loan fee developments (Snowdon and Vane, 1997). In this thought, money is thought to be a nearby substitute for a set number of financial assets, that is, securities and in this manner an expansion in money supply causes abundance demand for these assets, prompting an expansion in their prices and ensuing fall in the loan fee. As indicated by Romer (1996) it has been depicted that the decrease in the last prompts an expansion in investment relying upon the financing cost sense to the investment.

Thereafter, expanded investment prompts expanded aggregate demand, along these lines bringing about inflationary weights in the economy. This hypothetical perspective may, just apply in the short run. A fall in the loan fee may prompt increment in investment, aggregate demand and expanded inflation in the short run, be that as it may, over the long haul, expanded inflation may make yield contract, prompting the fall in demand for cash in the economy. In this manner as indicated by the cash demand relationship the decreased demand for money would prompt an ascent in the ostensible loan cost over the long haul.

As referred to from Sindano (2014) Keynesians tend to ascribe inflation more to demand weights inside an economy. Keynesians' clarification of the long run economic growth way is verifiably caught in the business cycle idea (a short run phenomenon) created inside the aggregate demand (AD) and aggregate supply (AS) system. As indicated by this model, AS is thought to be upward inclining in the short run, and changes in the demand side of the economy influence both prices and yield, emerging from changes in desires, work power, fiscal and monetary policy, among others.

In this manner, Keynesians advocate that there is a positive relationship amongst inflation and yield, with the end goal that regardless of the possibility that there is an increment in prices of goods in the economy, yield would not decay since makers need to fulfill the demand necessities of consumers. Dornbusch, et al (1996) additionally contends that AD and AS yields a conformity way. It demonstrates an underlying positive relationship amongst inflation and economic growth yet in the long run turns negative towards the last part of the conformity way.

The underlying positive relationship amongst inflation and economic growth is because of the time irregularity problem. Makers feel that lone the prices of their items have expanded while alternate makers are operating at the same price level. Be that as it may, as a general rule general prices have expanded. In this manner, the maker proceeds with more output1. In addition, Blanchard and Fischer (1989) said inflation and economic growth are positively related in light of the understanding of firms to supply on concurred price. So the firm needs to deliver even at expanded price. Later on the relationship gets to be negative. This portrays wonders of stagflation that is yield reductions or continues as before then.

# **2.3.5 Monetarism Theory**

Monetarists supported by Milton Friedman as referred to in Mamo, (2012), tend to concentrate on the significance of national or universal supply of money on policies to control money supply growth. They guarantee that money is a nearby supernumerary for genuine assets that is area, houses, and financial assets, which is bank deposits, treasury bills, securities and any additional money balances acknowledged from expanded cash supply will be spent on those assets instead of held as inactive cash balances. Subsequently it will give increase to abundance demand of assets, which will impact prices to increment, in this way at last prompting ascent of inflation.

As indicated by Romer (1996) in his book entitled 'Propelled Macroeconomics' Friedman likewise criticizes the idea of the Phillips Curve. His challenge depended on the confirmation of an economy where the cost of everything duplicates. Individuals need to pay twice as much for goods and services, however they don’t much think, in light of the fact that their wages are likewise twice as extensive. Individuals expect the rate of future inflation and incorporate its belongings into their conduct. All things considered, livelihood and yield is not influenced. Financial experts call this idea the impartiality of cash.

Lack of bias holds if the balance estimations of genuine variables including the level of GDP are self-representing of the level of cash supply over the long haul. Super lack of bias holds when genuine variables including the rate of growth of GDP are independent of the rate of growth in the cash supply over the long haul. On the off chance that inflation worked thusly, then it would be innocuous. Through its effect on capital aggregation, investment and exports, inflation can unfavorably affect a nation's growth rate. In summary, Monetarism proposes that over the long haul, prices are for the most part influenced by the growth rate in money, while having no genuine impact on growth. In the event that the growth in the cash supply is higher than the economic growth rate, inflation will come about.

# **2.3.6 Endogenous Growth Theory**

The Theories of endogenous growth championed by the works of Paul Romer as referred to in Mamo (2012) and Sindano (2014), characterizes economic improvement which is brought about by factors inside the manufacture of procedure, for instance; economies of scale, expanding returns or prompted innovative change; rather than outside (exogenous) elements, for example, the rises in populace. In the theory of endogenous growth, the growth rate determined by one variable the rate of profit for capital. One element financial records for the first contrast between the endogenous growth models and the neo-classical economies is that in the neo-classical economies, the arrival on capital decays as more capital is collected. In the least complex forms of the endogenous growth models, per capita yield keeps on expanding in light of the fact that the arrival on capital does not fall beneath a positive lower bound. The fundamental instinct is that exclusive if the arrival on capital is adequately high, individuals will be incited to keep aggregating it.

Blanchard and Fischer (1989) communicates that models of endogenous growth likewise permit expanding comes back to scale in aggregate productions, furthermore center on the part of externalities in determining the rate of profit for capital. Endogenous models that clarify growth further with human capitalcreate growth theory by inferring that the growth rate additionally relies on upon the rate of come back to human capital, and in addition physical capital. The rate of profit for all types of capital must be equivalent in the balanced growth equilibrium. A tax on either type of capital incites a lower return.

A few renditions the endogenous growth economies find that the inflation rate consequences for growth are little. Efficient portions fulfill the condition that the peripheral estimation of the last unit of today's utilization breaks even with the minimal cost of the last unit of work (Gomme, 1983) refered to (Sindano 2014). An ascent in inflation diminishes the minor estimation of today's last unit of utilization, subsequently initiating individuals to work less. With less work, the negligible result of capital is permanent decreased, bringing about a slower rate of capital collection. Gomme found that in this economy, dispensing with a moderate inflation rate (for instance, 10 per penny) brings about just a little (under 0.01 percentage point) pick up in the growth of yield.

# **2.4 Empirical Literature**

This part includes diverse studies that indicate the relationship between economic growth and inflation. The stress of the studies was discovering the relationship concerning economic growth and inflation as well as discovering whether the affiliation holds over the long haul or only a short run phenomenon, causal bearing of the affiliation, whether the affiliation is straight or nonlinear and so forth.

Kasidi and Mwakanemela (2012) inspected the inflation effect of on economic growth and perceived the presence of inflation growth affiliation. The information for the period 1990 - 2011 was utilized to dissect the inflation sway on the economic growth. The coefficient Association and co-integration strategy built up the association among of GDP versus inflation and Coefficient of elasticity were utilized to discover the level of affectability of progress in GDP to changes price levels. Results propose there is a negative effect on economic growth brought about by inflation. Also the study demonstrates the nonappearance of co-integration amongst inflation and economic growth in the period of study. No relationship in long-run among economic growth and inflation in Tanzania.

Ayyoub (2011) discovers the nearness correlation of inflation growth in the economy of Pakistan and investigated the effect of inflation on GDP growth of the economy. It investigates further, whether it stimulates ordiscourages the growth of economy consistently or it carries on distinctively under various levels. The time-series information for the year of 1972-73 to 2009-10 has been used and analysis is ade by utilizing the Ordinary Least Squares (OLS) method. The outcome found the negative and significant relationship in inflation growth for the economy of Pakistan.

The study comes about watch that inflation is risky to the GDP of the economy after a specific edge level. The researcher recommends to the policy producers and the State Bank of Pakistan to constrain the inflation under the 7 percent level and to keep it stable. With the goal, that it might apply its positive consequences for growth of the economy. Mamo (2012) analyses the relationship amongst inflation and economic growth. The study utilized board information which incorporates 13 Sub-Saharan African nations from 1969 to 2009. The model was shaped amid the analysis by taking the dependent variable as economic growth and different variables which are inflation, investment, populace and beginning GDPk, are independent.

The study obtains negative relationship between economic growth and inflation that there is a. The Granger causality test and comes about found the causality relationship between economic growth and inflation by utilizing board. Board granger causality test observes that inflation can be utilized as a part of request to estimate growth for all nations in the example, while the inverse it is valid for Congo, Dep. Rep and Zimbabwe.

Idalu, (2015) investigate the effect of inflation on economic growth of Nigeria. Regularly, this relationship has been examined utilizing straightforward correlations and deterministic models. In the analysis, a tri-variate vector autoregressive (VAR) model was utilized. In the wake of checking the series for unit root, uncovered that every one of the variables were stationary at first distinction, that is I(1). In the model, one co integrating vector that depicts the long run collaboration of these variables is additional estimated. What's more, estimation of the vector error correction model was done and the outcome showed there is convergence among the variables over the long haul and that takes around 5 back to back years.

The dynamics of the relationship inside the framework propose that there is a one-period temporary stun to consumer price level, which demonstrates that there is a moderate positive short run contemporaneous effect on the genuine GDP of Nigeria. In any case, this disperses into a negative and permanent stun after 5-6years. This complies with the neo-classical theory of sticky prices and short run economic disequilibrium. Chimodi (2010) determined the nearness (or not) of a relationship among inflation and economic growth in Nigeria. The test used was the co integration and Granger causality. Consumer price index (CPI) was utilized as a substitute for Inflation and the GDP as a perfect intermediary for economic growth to find the relationship. The degree spread over from 1970 to 2005.

The Johansen-Juselius co-integration strategy ended up being superior to the Engle and Granger (1987) system in determining the co-incorporating properties of variables, particularly in a multivariate setting. The study watches that for the periods, 1970-2005, there was no co-coordinating relationship among economic growth and Inflation for Nigeria information. Further technique was done to check the causality association exists among the two variables by applying the VAR-Granger causality at two diverse lag periods. The outcome showed the same at various lags. The principal trial was done by using two (2) lag and in the result unidirectional causality was seen running from Inflation to economic growth. More trial at four (4) lag was done and it just upheld the first by likewise demonstrating a unidirectional causality running from Inflation to economic growth. Thus, the study through the empirical results maintains the way that the causality that runs from inflation to economic growth means that association showing that Inflation truly affects growth.

Hossain (2012) finds that there is a long run relationship among inflation and economic growth in Bangladesh amid the period of 1978 to 2010. The Augmented Dickey-Fuller (ADF) and Phillip-Perron (PP) were connected to discover stationary) and the outcomes discovered stationary at the first contrast at 1% and 5% level of significance. The Co-integration test result observe that for the periods, 1978-2010, no co-incorporating relationship observed among inflation and economic growth for Bangladeshi information. In additional more exertion was made to check the causality association that exists among the two variables by applying the VAR-Granger causality at two distinctive lag periods of time.

The study observes the same at various lags. The main trial was generated using two (2) lag and the result unidirectional causality was seen running from Inflation to economic growth. Extra trail at four (4) lag was done and it bolstered the first by additionally demonstrating a unidirectional causality running from inflation to economic growth. In this way, the study through the empirical discoveries keep up the way that the causality that run from inflation to economic growth means that association showing inflation affects growth.

Jha and Dang (2011) finds theimpact of inflation variability and economic growth the information utilized is yearly verifiable on both nations creating and built up The information spread 182 creating nations and 31 created nations for the period 1961-2009. Proxying inflation variability by the five-year coefficient of variety of inflation. The accompanying results were gotten: (1) for creating nations, there is significant confirmation to recommend that when the rate of inflation surpasses 10 percent inflation variability negatively affects economic growth. (2) For created nations, there is no significant confirmation that inflation variability is impeding to growth.

Umaru and Zubairu (2012) investigates the effect of inflation on economic growth and advancement in Nigeria between 1970-2010 through the utilization of Augmented Dickey-Fuller method in testing the unit root property of the series and Granger causality test of causation amongst GDP and inflation. The aftereffects of unit root recommend that every one of the variables in the model are stationary and the consequences of Causality propose that GDP causes inflation and not inflation bringing about GDP. The outcomes likewise uncovered that inflation had a positive effect on economic growth through empowering efficiency and yield level and on advancement of aggregate factor profitability.

A decent performance of an economy in terms of per capita growth may hence be ascribed to the rate of inflation in the nation. A noteworthy policy ramification of this outcome is that purposeful exertion ought to be made by policy creators to expand the level of yield in Nigeria by enhancing profitability/supply keeping in mind the end goal to diminish the prices of goods and services (inflation) to support the growth of the economy. Inflation must be decreased to the barest least by expanding yield level (GDP).

Hossin (2015) empirically investigates the present relationship amongst inflation and economic growth with regards to Bangladesh. Utilizing yearly information set on genuine GDP and Gross Domestic Product Deflator (GDPD) for the period of 1961 to 2013, an appraisal of empirical proof has been gained through the co-integration test, error correction models and Granger Causality test. The empirical proof demonstrates that there exists a statistically significant long-run negative relationship amongst inflation and economic growth for the nation as showed by a statistically significant long-run negative relationship running from Gross Domestic Product Deflator (GDPD) to GDP. Again the empirical proof demonstrates likewise that there exists a statistically significant long-run positive causality running from GDP to Gross Domestic Product Deflator (GDPD). What's more, economic growth influences inflation positively. In any case, when increment in the rate of inflation goes past the edge inflation level then inflation influences economic growth negatively. The paper talks about the important policy ramifications of the outcomes.

Tolo (2011) utilizes a board of 23 developing markets for the period 1965–2008 to analyse about the determinants of per capita GDP growth in the Philippines. The Philippines is an exception in terms of agricultural exports, investment, research and improvement, populace growth, and political vulnerability. Board relapses uncover that these factors, alongside the deficit, inflation, exchange openness, the present record balance and the recurrence of crisis scenes are significant determinants of growth. A growth index confirms that these determinants likewise catch the supreme and relative performance of every nation after some time and proposes that the Philippines has did not have a maintained period of generally solid economic changes.

Barro (1997) concentrates on 100 nations for a period of 30 years 1960-1990. He concocted different determinants of economic growth extra to inflation while examining the relationship amongst inflation and growth. He investigated information utilizing the arrangement of relapse condition technique. The consequences of the relapse demonstrated that as inflation expanded on the normal by 10% per year, growth rate of genuine total national output declined from 0.2% to 0.3% every year, likewise a decrease in investment from 0.4% to 0.6%. In the example, utilizing high inflation as an extra variable, the outcome turns out to be statistically significant.

Al-Fawwaz (2015) measure the impact of government expenditures on economic growth in Jordan during the period of 1980 to 2013. To achieve the goal of this study, the multiple linear regression model, linking the study variables was used. Then, the model was analyzed using the OLS model. The results indicated that there is a positive impact for both total government expenditure and current government expenditure on economic growth. This result supports the Keynesian model. Based on the findings of the empirical analysis, the study recommends that capital government expenditure should be directed mainly to current productive economic activities in order to stimulate activities in the economic sectors.

Kweka and Morrissey (2000) investigates the impact of public expenditures on economic growth using time series data on Tanzania (for 32 years). They formulated a simple growth accounting model, adapted from Ram (1986) in which total government expenditure is disaggregated into expenditure on (physical) investment, consumption spending and human capital investment. The study found that, increased productive expenditure (physical investment) appears to have a negative impact on growth. Consumption expenditure relates positively to growth, and in particular appears to be associated with increased private consumption. Expenditure on human capital investment was insignificant in the regressions, probably because any effects would have very long lags. The results confirm the view that public investment in Tanzania has not been productive, but counter the widely held view that government consumption spending is growth reducing.

Denbel et al, (2016) examines the existing causal relationship between inflation and money supply and inflation and economic growth in Ethiopia for the period 1970/71-2010/11.The Johansen co integration test indicated the presence of one co integrating vector and the VECM demonstrate that the existence of long run bi-directional causality between inflation and money supply and uni-directional causality from economic growth to inflation. In the short run one way causality were found from money supply and economic growth to inflation.

Therefore, the key findings of the study are inflation is a monetary phenomenon in Ethiopia and inflation is negatively and significantly affected by economic growth. Thus, based on the results of the study, monetary policy should be planned to maintain price stability by controlling the growth of money supply in the economy. Also combined efforts should be made by policy maker to increase the supply of output so as to reduce the prices of goods and services and boost the growth of the economy.

# **2.5 Discussions of the Literatures**

The writing is loaded with those factors that could influence the level of inflation. These factors can be gathered into institutional, fiscal, monetary and balance of payments. A few concentrates, for example, Cukierman, Webb and Neyapti (1992); Grilli, et al (1991); Alesina and Summers (1993); Posen (1993); Pollard (1993); and Debelle and Fisher (1995) have demonstrated that the level of freedom (legitimate, authoritative, and instrument) of the monetary power is an important institutional factor determines inflation, particularly, in industrialized nations, while rate of turnover of national bank governors in creating nations was seen as an important factor impacting inflation, refered to (Idalu, 2015). Nonetheless, alert ought to be practiced in the understanding of these discoveries, given the trouble in measuring the genuine level of freedom of a national bank.

The fiscal factors identify with the financing of budget deficits, to a great extent through money creation process. Under this perspective, inflation is said to be brought about by extensive fiscal imbalances, emerging from inefficient income accumulation systems and constrained advancement of the financial markets, which tends to build the dependence on seiniorage as a wellspring of deficit financing (Hossin, 2015 and Sindano, 2014).

**Table 2.1: Summary of Literature Review**



**Source:** researcher, 2017

The monetary factors what's more, demand side determinants incorporate increments in the level of cash supply in overabundance of household *Table* demand, adaptation of oil receipts, loan fees, genuine income and swapping scale (Chimob, 2010). Hossain (2012) judicious monetary administration was additionally found to help the decrease in the level and variability in inflation. The balance of payments or supply side factors identify with the impacts of conversion standard developments on the price level. Tolo (2011) opined that conversion scale cheapening or devaluation incorporates higher import prices, outer stuns and complements inflationary desires.

## **2.6 Research Gap**

Many studies on inflation and/or money supply to economic growth have been carried out in the country, but there are limited literature linking the effects of government expenditure, money supply and inflation to economic growth. For example, the following empirical studies excluded government expenditure and money supply in studying the impact of inflation and or money supply to economic growth in the country (Mamo, 2012; Idalu, 2015; Chimodi 2010; Hossain 2012; Jha and Dang 2011; Umaru and Zubaini 2012 and Hossin 2015). Although their works have pointed out some important areas to be evaluated, particularly the mismatch between the economic growth and money supply and inflation and the target inflation, but unfilled gap remains in literatures for relating government expenditure, money supply, inflation and economic growth in the country.

# **2.7 Conceptual Framework**

From the conceptual system, money supply, government expenditure and inflation are independent variables while economic growth is a dependent variable. Noticing that, one of the real determinants of inflation is money supply and government expenditure. Consequently, economic growth can be influenced direct with cash supply and government expenditure or through inflation as appeared underneath in figure 2.3.

Government Expenditure

Money Supply

Inflation

Economic Growth

**Figure 2.1: Interaction among Independent Variables to Economic Growth**

From Figure 2.3, inflation is among of independent variable which may influence economic growth immediate or through the performance of monetary and fiscal policy. However, when we are examining about monetary policy and fiscal policy connects direct with money supply and government expenditure. Along these lines, they can influence direct economic growth or through the impact of inflation. In extra to that or at the end of the day the effect of inflation to economic growth could conceivably rely on upon both money supply and government expenditure in the economy.

From writing perspective, inflation was measured by consumer price index (CPI), money supply measured by broad meaning of cash (M3), government expenditure measured by government utilization on conclusive goods and services where by economic growth measured by real gross domestic product (RGDP), embraced to (Kasidi and Mwakanemela, 2012; Umaru and Zubairu, 2012)). In this study inflation in anticipated to have negative effect to economic growth while money supply and government expenditure anticipated that would have positive effect to economic growth in Tanzania.

# **CHAPTER THREE**

# **3.0 METHODOLOGY**

# **3.1 Overview**

The research methodology constitutes a consistent grouping on how the research done experimentally. This part harps on, research design and testing methodology, sorts and wellsprings of information, information gathering techniques and information analysis strategies utilized in directing the study.

# **3.2 Types and Sources of Data**

The study utilized auxiliary information, yearly series from 1970 to 2011. The information was gotten from the International Financial Statistics (IFS), the Bank of Tanzania (BoT) and United Nations Conference on Trade and Development (UNCTAD).

# **3.3 Data Analysis**

To examine the effect of inflation to economic growth of Tanzania, co integration analysis was utilized. The Error Correction mechanism was utilized to give the short run dynamic and the change term after the presence of co integration. The time series period secured the years from 1970 to 2011, which was moderately long series with the upside of getting sufficient degrees of opportunity and additionally having the ability to incorporate different variables as opposed to inflation just into the model and henceforth to yield fair estimates. In this study, an as of late technique known as ARDL bounds test methodology was utilized as depicted beneath embraced from (Karbo, 2012).

# **3.3.1 Stationary Test**

Since the vast majority of macro-economic variables are described with non-stationary or they are integrated at request 1 after some time (Green, 2003; Verbeek, 2004; Gujarat and Porter, 2009), econometric analysis requires differencing of any non-stationary variables before doing the essential estimations. In stationary time series, stuns will be temporary and over the time their belongings will rot as the series return to their long run mean qualities. Non stationary series will contain permanent segments and may indicate false relationship.

Granger and Newbold (1974) and Philips (1986) demonstrated that high R2 and low Durbin Watson statistic (DW) are ordinary attributes of spurious relapses and a large portion of economic variables are observed to be non-stationary (Verbeek, 2004). The study utilized the Augmented Dickey Fuller (ADF) Test to test for unit roots (non-stationarity) of the individual series. The ADF incorporates additional lagged terms keeping in mind the end goal to take out the problem of autocorrelation. Karbo (2012) proposes that the cost of such practice had included the loss of long run information on the variables and consequently condemned just like a standard model.

# **3.3.2 Selection of Lag Length**

The analysis required with the choice of requests of the ARDL (p, q) model utilizing Schwartz Bayesian Criterion (SBIC). The ARDL strategy estimated (p+1)k number of relapses to get ideal lag length for every variable, where P is the maximum number of lag utilized and k is various variables in a condition. The lag length for time series is regularly chosen utilizing the model determination criteria like Schwartz-Bayesian Criteria (SBIC) and Akaike's Information Criteria (AIC). In any case, as indicated by the econometricians, for example, Giles, SBIC is known as the tightfisted model by selecting the littlest conceivable lag length, while AIC is known for selecting the maximum pertinent lag length, (Giles, 2014).

# **3.3.3 Co integration Analysis**

Hence, to manage this problem of non-stationary later studies have progressively utilized the standard strategy of co integration and error correction mechanism (ECM) to estimate time series relationship (Giles, 2014; Shrestha, 2004 and Verbeek, 2004). Generally, co integration will build up the presence of long run relationship among the variables. The same to this study, which included the utilization of economic variables, which especially were non-stationary, along these lines keeping in, mind the end goal to give vigorous results, the co-integration amongst inflation and economic growth was built up. The utilization of ADF test was considered to test if there are variables I (2) in which is not helpful for ARDL approach (Giles, 2014).

Diverse writings have been looked into and three noteworthy techniques for co integration have been generally utilized as a part of different studies, which are Angle-Granger two stage strategies, the Johnsen likelihood approach and the later ARDL bounds test way to deal with co integration as created by Pesaran and Shin (1999). The Angle and Granger two stage methodology is constrained to bivariate model and won't be connected in this study in which the models constitute more than two variables. In this study, ARDL was utilized (an ARDL bounds test methodology) to estimate the relationship amongst inflation and economic growth in Tanzania, which is an as of late and pertinent to multivariate relapse analysis. In spite of the fact that there are different methodologies, the prioritization falls under ARDL approach. The ARDL was given a first need because of remarkable power of its estimates of being efficient and dependable in little examples than those structure partner estimators, for example, the Johansen system (Karbo, 2012).

The decision of the ARDL system in the analysis depended on a few contemplations. To begin with, the ARDL approach keeps away from the problem of request of co integration. In this way it is adaptable in which it can be connected regardless to whether the variables are of various request of integration, I(1) or I(0); second, the estimates from ARDL are much solid regardless of the fact that the dynamic structure is over determined the same to t-tests from an estimator that uses an ARDL methodology and third it is appealing when completing co integration in little specimens in this manner it is more efficient than other VAR techniques (Giles, 2014 and Karbo, 2012).

Pesaran Shin and Smith (2001) demonstrated that the ARDL model outperforms elective methodologies like the Philip and Hansen's Full Modified OLS (FMOLS) when the example size is little. At last Karbo demonstrated that by suitably altering the requirements of the ARDL model is satisfactory to simultaneously redress for leftover serial correlation and the problem of endogenous regressors, in this way giving ARDL preference over different ways to deal with co integration. Thusly, the study embraced an altered ARDL approach (Pesaran and Shin, 1999) as utilized by Karbo (2012). In this way, an ARDL Model was employed in the accompanying structure;

(1)



Where,

***Θs*** are parameters of the long run relationship variables, and are matrices of parameters



**LRGDP** **=** Natural Logarithm of Real Gross Domestic Product (Economic Growth)

**LM3** **=** Natural Logarithm of Money Supply

**LINF**  = Natural Logarithm of Inflation

**LGEXP** = Natural Logarithm of Government Expenditure

= Is vector of constants/trend, represents maximum lags. Thus the first part of the equation with and represents the short run dynamics of the model whereas the parameters and represents the long run relationship. The hypotheses of the model were;



1. H0: there is no long run relationship against



H1: there is a long run relationship.



1. H0: the trend of inflation has no impact to economic growth



H1: the trend of inflation has an impact to economic growth



1. H0: there is high degree of responsiveness of change in economic growth to inflation



H1: there is low degree of responsiveness of change in economic growth to inflation



The decision on the null hypothesis (H0) on the first hypothesis is done by comparing the calculated F-statistic. The calculated F statistic was 8.9816 greater than the value of both lower bound I(0) and the upper boundI(1), which are 3.5399 and 4.8222 respectively as shown in table 4.2 from Microfit 5.0 output while the rest was done by looking the computed coefficients of inflation in the model. In the second step, it was shown that there was a long run relationship (co integration) among the variables, and hence the following long run model was estimated to find which variables has a significant long run relationship to economic growth in Tanzania, in which all variables are prior defined above.

(2)



In the third step the short run dynamic parameters were estimated by an un-restricted error correction model associated with the long run estimates. The short run estimated model was as follows;

(3)



Where and are the short-run dynamic coefficients of the model convergence to equilibrium, is the speed of adjustment parameter and ECM is the error correction term that is derived from the estimated equilibrium relationship of the long run model.



Finally, to ascertain goodness of fit of the ARDL model, the diagnostic and stability tests were conducted. The diagnostic test was examined the serial correlation, function form, normality and heteroscedasticity associated to the time series data as well as the model. This is because the ARDL is the OLS and so the need to satisfy the classical assumptions of least squares is obvious for adequate model and reliable estimates for inference. The results revealed that there is no existence of serial correlation, function form and bit elements of heteroscedasticity in the error term as shown by Tables 4.5 in chapter four.

# **3.4 Summary of the Methodology**

The study dealt inflation analysis in the part of economic growth in Tanzania particularly in exchange balance. Hence, the research techniques were picked basing on time series study conditions. In general, the information were dissected by Microfit 5.0 software, the best as of late designed for ARDL model estimations by Pesaran and Pesaran in 2000s from the Oxford University, to concoct statistical study yield. An ARDL model is an extremely late strategy which has been picked because of handiness and favorable circumstances contrasted with other model, for example, VECM or VAR as talked about in past segments.

The ADF test was directed to test for the unit root of the time series information to make them stationary in which the ideal length determination was utilized by SBIC. The study utilized an ARDL bound tests to test for co integration of Inflation (INF), cash supply (M3) and government expenditure (GEXP) independent variables running to dependent variable (RGDP). Both ARDL short run and long run Model were estimated in which pre estimation analysis occurred for confirmation of ARDL model pre requirements met and present estimations were gone up against check for the model stability and henceforth best and significant results for statistical employments.

# **CHAPTER FOUR**

# **4.0 PRESENTATION OF ESTIMATION RESULTS**

# **4.1 Overview**

This chapter is used to express the empirical output obtained from the Microfit 5.0 software and interpretation of results. The first part is concerned with the findings of the unit roots test of the data before and after differencing and selection of specification order of integration to variables. The fore sections indicate an ARDL model estimates for bounds tests, short run and long run results as well as the diagnostic test for stability of the model.

# **4.2 Test of Stationarity of Data Series**

Table 4.1 shows the results of the ADF tests. The results show that LRGD, LINF and LM3 are non-stationary at levels with or /and trend, whereas LGXP appear to be stationary at level I(0). Therefore, LRGD LINF and LM3 are stationary at first difference I(1). This means, the study contains the variables of both I(0) and I(1). Thus, the situation makes ARDL approach more appropriate in this study.

**Table 4.1: ADF Unit Roots Test Results**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **LEVEL** | | | **DIFFERENCED** | | **ORDER** |
| VARIABLE | SBIC Lag | t-statistics | SBIC Lag | t-statistics | I(d) |
| LRGDP | 2 | -1.917  (0.6459) | 1 | -3.698\*\*\*  (0.0041) | I(1) |
| LINF | 1 | -2.361  (0.1530) | 1 | -6.952\*\*\*  (0.0000) | I(1) |
| LGEXP | 1 | -1.745\*\*  (0.0448) | - | - | I(0) |
| LM3 | 2 | -2.260  (0.4562) | 1 | -3.165\*\*  (0.0221) | I(1) |
| Note: \*\*\*, \*\* and \* indicate significance level at 1%, 5% and 10% respectively. Values in parenthesis are probability values. | | | | | |

**Source:** Data Analyses

# **4.2 ARDL Estimates and Bounds Test Results**

Table 4.2 shows the output of an ARDL model estimates, where the F-statistic obtained was 8.9816. The calculated F statistic was used to test the bounds test if they are significant or not (presence of long run relationship). However it indicated that the F-statistic was greater compared to both I(0) (3.5579) and I(1) (4.8222) limits at 5% significance level, meaning that the null hypothesis of bounds equal to zero or no co integration was rejected at 5 percent of significance level. Thus, there is long run relationship running from independent variables to dependent variable.

**Table 4.2: ARDL Estimates and Bounds Test Results**

|  |  |  |  |
| --- | --- | --- | --- |
| **Regressor** | **Coefficient** | **Standard error** | **T-Ratio** |
|  | 1.0748 | 0.019245 | 55.8496\*\*\* |
|  | -0.046858 | 0.011385 | -4.1159\*\*\* |
|  | 0.3342E-3 | 0.0046075 | 0.072525 |
|  | -0.029420 | 0.012668 | -2.3224\*\* |
|  | 0.0066715 | 0.0024906 | 2.6786\*\* |
| Testing for existence of a level relationship among the variables in the ARDL model | | | |
| **F-statistic** | **95% Lower bound** | **95% Upper bound** |  |
| 8.9816 | 3.5579 | 4.8222 |  |
| R2 = 0.99916 DW-Statistic 2.0372 Adjusted R2 = 0.99906 | | | |

Note: \*\*\* Significant at 1%, \*\* Significant at 5%

**Source:** Data Analyses

# **4.3 Long run Results**

Table 4.3 shows the results of the estimated long run coefficients with economic growth as a dependent variable. Money supply and government expenditure have a long run causality running to trade balance in Tanzania. The coefficient of LGEXP is 0.626, which is significant at the 1% percent level (p<0.01) meaning that 1% increase in GEX leads to 62.6% improvement in economic growth. On the other hand the coefficient of the LM3 shows a significant (at the 1% level, p<0.01) positive relationship with economic growth. A change in LM3 by 1% will change economic growth by 39.3%. Finally, the estimates indicate that inflation do not have significant relationships with economic growth in the long run.

**Table 4.3: ARDL (1,0,0,0) Model long run results**

|  |  |  |  |
| --- | --- | --- | --- |
| **Regressor** | **Coefficient** | **Standard Error** | **T-Ratio** |
|  | 0.62630 | 0.073049 | 8.5737\*\*\* |
|  | -0.0044664 | 0.060897 | -0.073343 |
|  | 0.39323 | 0.090050 | 4.3668\*\*\* |
|  | -0.089171 | 0.015983 | -5.5791\*\*\* |

\*\*\* Significant at 1%

**Source:** Data Analyses

# **4.4 Short Run Results**

Table 4.4 shows the results of short run dynamic coefficients obtained from an ARDL (1,0,0,0) with ECM. The optimal lag length were determined by the SBIC. The results revealed that the economic growth has been influenced by the government expenditure in negative way in the short run, significance at 1% (p<0.01) the same to money supply which has negative relation to economic growth in the short run at 1% (p<0.01) significant levels. On the other hand inflation tends to have positive insignificant effect to economic growth of Tanzania in the short run.

The Error Correction Term (ECT) is negative, significant at 1% (p<0.01) and less than unity (-0.0748). This means that the degree of adjustment to equilibrium is about 7.5% after each 1 month caused by other macroeconomic variable to violet the equilibrium of economic growth and inflation. The Trend is significant at the 5 percent level, which implies that they can be explained with trend of among variables explained in the model and any exogenous variables. When all variables used in this model are zero, there will be an economic growth of 0.00667%. The small percent is economically attributed to the fact that any economic growth depends on major variables included in the model.

**Table 4.4: ARDL (1,0,0,0) Model Short Run Results**

|  |  |  |  |
| --- | --- | --- | --- |
| **Regressor** | **Coefficient** | **Standard Error** | **T-Ratio** |
|  | -0.046858 | 0.011385 | -4.1159\*\*\* |
|  | 0.3342E-3 | 0.0046075 | 0.072525 |
|  | -0.029420 | 0.012668 | -2.3224\*\* |
|  | 0.0066715 | 0.0024906 | 2.6786\*\* |
|  | -0.074817 | 0.019245 | 3.8876\*\*\* |
| R2 = 0.60385 DW-Statistic 2.0372Adjusted R2 = 0.55984 | | | |

\*\*\* Significant at 1%, \*\* Significant at 5%

**Source:** Data Analyses

# **4.5 Discussion of Findings**

# **4.5.1 Impact of Inflation in Economic Growth**

It has been defined that inflation is a general and persistent in the prices of goods and services in an economy. Inflation has been measured in various methods such as consumer price index, whole sale price index, producer price index and in percentage. To examine the impact of inflation to economic growth, a growth model was formulated by including other two variables (i.e government expenditure and money supply) in addition to inflation. In this study the inflation was measured in percentage form from 1970 to 2011. To determine the impact of inflation to economic growth in Tanzania was among of the important objective of this study regarding that inflation is affected by many factors such as institutions, fiscal and monetary policy and balance of payments.

This study found that, there is a negative impact of inflation to economic growth in Tanzania both in the short run and long run period, though it is not significant for the case of long run results meaning that there are other macroeconomic variables which influence economic growth excluded in the model but have direct relationship with inflation. The short run significant results show that an increase of 1% of inflation leads to decline of economic growth of Tanzania by 34%. According to Mamo (2012), the fiscal factors relate to financing of budget deficits, largely through money creation process. Under this view, inflation is said to be caused by large fiscal imbalances, arising from inefficient revenue collection procedures and limited development of financial markets which lead to slow down economic growth.

The results are consistent by the study of Barro (1997); who found that inflation has negative and significant relationship to economic growth, meaning that inflation has an adverse effect on economic growth. Also the results are strongly agree with the study of Kasidi (2012); Ayyoub *et al.* (2011) and Mamo (2012) concerning to impact of inflation to economic growth of Tanzania where he found that 1% increase in inflation results to 38% slowdown of economic growth of Tanzania. Nevertheless, inflation found to have insignificant to economic growth in Tanzania, the study collaborates with study of Jha and Dang (2011), they found that most developing countries, inflation is no significant in determining economic growth.

However, this study is supported by Monetarism and Classical Theories of inflation. According to Milton Friedman as cited in Mamo (2012) the Monetarists arguing that, super neutrality holds when real variables including the rate of growth of GDP are independent of the rate of growth in the money supply in the long-run. If inflation worked this way, then it would be harmless. In reality however, inflation does have real consequences for other macroeconomic variables. Through its impact on capital accumulation, investment and exports, inflation can adversely impact a country’s growth rate.

In summary, Monetarism suggests that in the long-run, prices are mainly affected by the growth rate in money, while having no real effect on growth. If the growth in the money supply is higher than the economic growth rate, inflation will result. Where in classical theory of inflation as cited from Sindano (2014) said that, output growth is driven by population growth, investment growth, and land growth, as well as the increase in the overall productivity. Smith assumed a self-reinforcing growth (increasing return to scale) and that savings creates investment, hence growth, therefore, he saw income distribution as being one of the most important determinants of how fast (or slow) a nation should grow. Profit declines, not necessarily because of decreasing marginal product of labor, but because competition for labor drives wages up. Implicitly, the classical growth theory postulates a negative relationship between inflation and growth through higher wage cost.

# **4.5.2 Trend and Relationship of Inflation and Economic Growth**

The study also intended to investigate the trend of inflation to economic growth in Tanzania from 1970s to 2011. The results show that, holding government expenditure, inflation and money supply constant the trend of inflation sought to have a less significant negative relationship in the short run relationship, in which 1% rise in inflation trend leads to decrease in economic growth by 0.66% and high significant effect in the long run, in which 1% rise in inflation trend leads to decrease in economic growth by 8%. The findings of this study are supported by the study of Mamo (2012) who said that in Sub Saharan African countries, high inflation is the consequence of the country’s’ economic growth leads to an increase in inflation and that decrease growth reduces inflation (PARADOX).

# **4.5.3 Responsiveness of Economic Growth due to Change of Inflation, Inflation Acceleration and Change of CPI in Tanzania**

One of the specific objectives of this study was to measure the degree of responsiveness of economic growth due to change in general price in Tanzania. The coefficient of inflation from the model used to measure the degree of responsiveness by employing the natural logarithm to inflation factor in which was an approach of measuring the degree of sensitivity of real gross domestic product to changes of inflation. The approach was adopted from Kasidi (2014) who used elasticity with non-linear regression equation, that is, **+…**Kasidi interpreted as elasticity. Kasidi argued that in the normal regression without logs dependent variable tends to change by coefficient of independent variables by a one unit of that variable. Meaning that instead of worrying about units of measurements, the results of regression used logged variables are always interpreted as elasticity.



Therefore, this study employed a regression equation to determine the degree of responsiveness of Real Gross Domestic Product to changes in inflation. Recall from the table 3 and 4 showing the short run and long run coefficients (0.33LINF and -0.0044LINF). Both short run and long run coefficients of inflation are less than one, perhaps were not significant. This means that degree of responsiveness of economic growth due to change of inflation is inelastic in Tanzania due to the economic reason, meaning that inflation is one of the most important macroeconomic variable in the economy of Tanzania to changes of economic growth. Therefore, the results concluded that the sensitivity/responsiveness of change in economic growth due to change in inflation in Tanzania is inelastic to extent of 0.33 and –0.0044 in short run and long run respectively, in which R squared was 56%, meaning that almost that percent the model indicates how economic growth respond on inflation changes.

# **4.5.4 Government Expenditure and Economic Growth**

According to Cavallo (2005) the government consumption expenditure consists of two main components: expenditure on final goods and expenditure on wage and salaries accruals. This study is used to measure the government expenditure on final goods and expected a positive relationship to economic growth of Tanzania. The theory says that, an increase in government expenditure of final goods is accommodated through higher imports; an increase in government wage and salaries accruals is accommodated by an expansion in domestic labor supply. In the former case, there is a corresponding deterioration in the economy, whereas, in the latter, there are no direct consequences on National Income.

However, the results of this study found government expenditure to have positive significant impact to economic growth in Tanzania both in long run (Table 4.5) and short run period (Table 4.6). That is, change in a unit of government expenditure in a long run leads to improve economic growth by 62.6% and 33.4% in short run. This implies that when government expenditure in the economy increases, by the budget constraint, lump-sum taxes also increase by the same magnitude. As a consequence, domestic households observe a decrease in their after-tax labor income and demand for highly imported commodities fall. The second economic mean is the presence of good and controlled of import restrictions on un-necessary commodities from other countries Tanzania to control the problem of import duty inflation in the economy. The findings are supported by the study of Kibet (2014) who discovered in his study that the government expenditure has positive impact to economic growth. However, Cavallo (2005) insists that, in developed countries fiscal deficit generated by an increase in government expenditure on salaries and wages has a substantially small impact on economic growth than a fiscal deficit generated by rise in government expenditure on final goods. This means, the government expenditure on final goods in developing countries has a small impact on the economic growth.

# **4.5.5 Money Supply and Economic Growth**

Money supply can lead to both positive and negative effect in the economy. Theoretically, the study is based on negative side of money supply influence in the economy of Tanzania. An increase in money supply has possible negative effects in a way that, it causes the value of domestic currency to decrease, making foreign goods expensive and domestic goods cheaper. Thus, important goods can increase leading to higher prices and lowering the purchasing power of individuals.

Also, Mankiw (2001) argued that, an increase in money supply gives rise to the level of real balance; thus, individuals forecast their wealth to rise, causing the level of expenditure to increase relative to income and decline in economic growth. Thus from that theoretical views, in this study, the effect of money supply to economic growth was expected to be negative. The findings of the study are equivalent to the predetermined hypothesis, that the money supply has negative impact to economic growth of Tanzania. The negative sign in money supply (M3) coefficient in the short run implies that an increase of a unity of money in circulation in Tanzania economy deteriorate the economy by 2.9%% (Table 4.6). These results mean that increase of money supply, the price of commodities will rise, by considering the adverse side of currency devaluation (Tanzania shillings) effect which is inflation will deteriorate the economy of Tanzania. On that way, the same results were provided by the study of Duasa (2007) who found that, money supply has negative impact in the economy. The significance of the money supply coefficient implies that the monetary theory in Tanzania can be used to model a good measure of money supply to reduce the negative effect in economic growth of Tanzania.

# **4.6 Diagnostic Tests Results**

Table 4.4 shows the ARDL Model diagnostic test results. The results show that, there is no serial correlation because LM test statistic 0.046 is not significant, meaning that the null hypothesis of no serial correlation was accepted. The results of testing the function form shows that the model is correctly specified, it is verified by Ramsey RESET test in which statistic 1.774 is not significant at any level. This implies that the null hypothesis (H0: Model has no omitted variables) has been accepted against alternative.

The Breusch Pagan test for heteroscedasticity of the error term indicates a bit presence of variance of the error term since the statistic 8.856 is significant at 1%. This means that null hypothesis (H0: constant variance) was rejected, thus there is an element of heteroscedasticity problem. The results must be used with precaution on that.

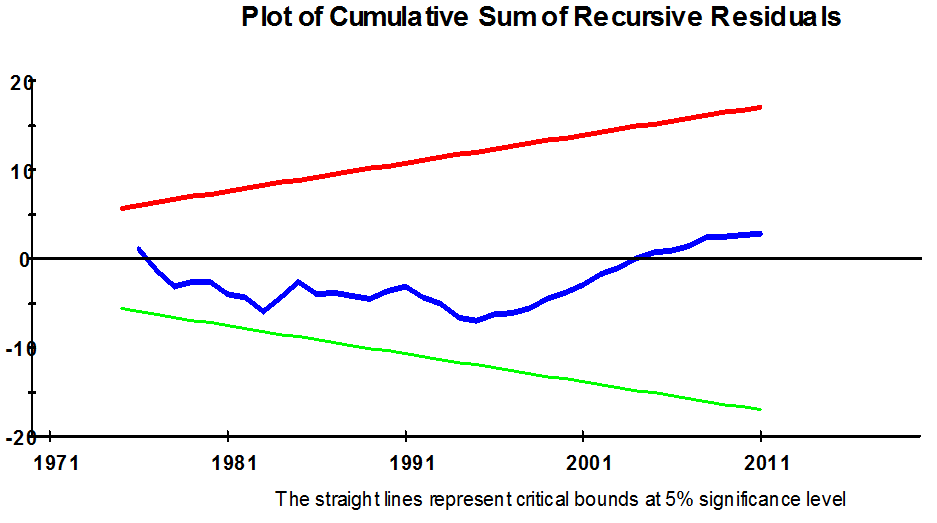
**Table 4.5: Diagnostic Tests**

|  |  |  |  |
| --- | --- | --- | --- |
| **Diagnostic test** | **Test** | **Statistic** | **P-value** |
| Heteroscedasticity | Breusch Pagan | 8.856 | 0.005 |
| Function form | Ramsey RESET | 1.774 | 0.197 |
| Serial correlation | LM test | 0.046 | 0.832 |
| Breusch Pagan Test | H0: Constant Variance |  |  |
| Ramsey RESET Test | H0: Model has no Omitted Variables |
| LM test | H0:No serial Correlation |

**Source:** Data Analyses

# **4.6.1 Examination of Parameter Constancy of the Co Integration Space**

Cumulative sum of recursive residuals (CUSUM) and cumulative sum of squares of recursive residuals (CUSUMSQ) are used to determine the stability of ARDL model. Thus, for testing stability of the estimated parameters, Pesaran and Pesaran (1997) suggest to apply the cumulative sum of recursive residuals (CUSUM) and the CUSUM of squared residuals (CUSUMSQ) as proposed by Brown et al. (1975) cited from (Shrestha, 2004). Therefore, the results indicated in figure 4.1 and 4.2 below indicate the stability in the coefficients as the plot of CUSUM and CUSUMSQ are limited well within the 5% bounds of parameter stability.



**YEAR**

**Percent**

**Lower Bound Line**

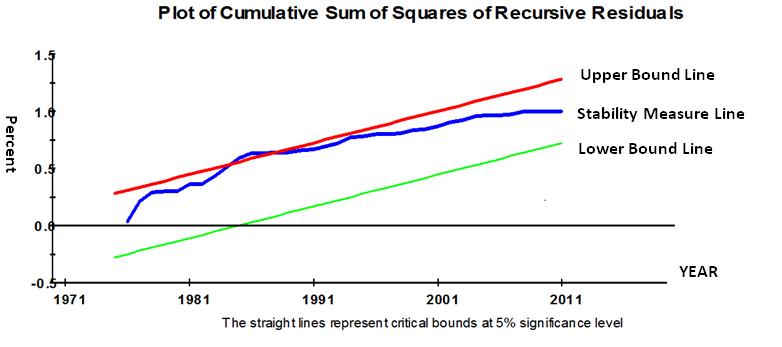
**Stability Measure Line**

**Upper Bound Line**

**Figure 4.1: Cumulative Sum of Recursive Residuals (CUSUM)**

**Source:** Data Analyses

**Figure 4.2: Cumulative Sum of Squares of Recursive Residuals (CUSUMSQ)**



**Source:** Data Analyses

# **CHAPTER FIVE**

# **5.0 CONCLUSIONS POLICY IMPLICATIONSAND**

# **RECOMMENDATIONS**

# **5.1 Conclusions**

This study intended to examine the impact of inflation to economic growth in Tanzania. Various literatures have reviewed on both theories and empirical to capture and narrowing the research gap and being aware on previous methodologies used by other researchers. The literature have been shown that, the impact of inflation on economic growth is still in debatable on whether has negative or positive impact to economic growth in various economies. For the case of Tanzania, it has been revealed that the fluctuation of inflation in Tanzania is due to elimination of fuel subsidy, floods and other seasonal effects.

Therefore, these factors tend to contribute more in rising prices in the country. In order to analyze the impact of inflation to economic growth in Tanzania, this study employed the time series data spanning 1970 to 2011 years. The study used an Augmented Dickey Fuller test (ADF) to test for stationarity (unit roots) and hence estimating the presence of co integration through bounds tests specifically, the study based on finding out. If there is an impact of inflation to economic growth of Tanzania; If there is relationship between inflation and economic growth of Tanzania; How economic growth respond/sense due to general price changes in Tanzania.

The stationarity tests were conducted and the results showed that all variables were not stationer at level except for a government expenditure variable. Thus other variables became stationary after first differencing. Testing for co integration was conducted by using an ARDL bounds tests and the results indicated that there is a long run relationship running from inflation, money supply and government expenditure to economic growth in Tanzania economy. From the long run relationship point of view, the study goes far away to observe the presence of short run relationship by estimating an Error Correction Model (ECM). The short run results indicated that, after short run dynamics running from money supply and government expenditure to economic growth the inflation become into equilibrium with economic growth after one month each year.

In general the study found that short run results confirms the presumably expectation that there exist a negative relationship between inflation and economic activities in the long run and a positive relationship between government expenditure (GEXP), money supply (M3) and economic activities in the long run, while in the short run the result showed that there exist a positive relationship between inflation and economic growth as well as negative relationship between government expenditure, money supply and economic growth.

The study also found that the degree of responsiveness of economic growth due to change in inflation in Tanzania is inelastic to extent of 0.33 and –0.0044 in short run and long run respectively, meaning that inflation is an important macroeconomic variable in the economy to economic growth, in which R squared was 56%, meaning that almost that percent the model indicates how economic growth respond on inflation changes.

# **5.2 Policy Implications**

According to the results of this study, showing that inflation has got negative impact in the short run and positive impact on the long run, though it was not significant, implying that economic growth can be affected by inflation through either fiscal or monetary policy. However, the results indicated that money supply and government expenditure have strong relationship to economic growth in Tanzania. Although policy makers are supposed to be aware on general price fluctuations, it should be noted that in macroeconomics point of view, curing one problem may result to rise in one problem in the society in general. The government may apply a monetary policy of fiscal policy to control inflation which in turn may cause the rise of unemployment rate and slowing down the economic activities and domestic production in general. Thus should be aware on the long run multiplier effects of that policies employed in controlling inflation to eliminate their negative effect in the economy.

In the study results it is found that money supply and government expenditure have got strong short run effect to economic growth in which inflation has to become to equilibrium with economic growth after one month each year, thus the policy maker imposing the targeted inflation policy they should establish and analyze the multipurpose model that can have low the short run costs against the long run benefits in the economy. The short run dynamics demerits should not have too much effect to unemployment and government expenditure on importation to reduce the social costs in the economy. Therefore, the central bank should forecast the future situation of the economy domestically and internally in the sense that they can apply a targeted inflation policy which may bring a low rate of inflation. However, the current capacity of domestic production should be observed, the priorities of the government in allocating the budget in development project activities which as a result may bring a high capital formation so as to over weigh the effects of inflation in the long run.

The coefficient of inflation rate is significant negative both in the long meaning that there are other variables which have absorbed its impact directly to economic growth. According to the incorporated variables money supply and government expenditure are likely to be the ones. Therefore this implies that, the policy makers should be aware also to other macroeconomic and non-macro-economic factors which may influence the economic growth such as labor productivity, technology, financial structure in the economy, distance in international trade, rules and regulations, economic institutions etc. thus the aim of policy makers in the economy should be to keep inflation rate as much minimal level to attain economic growth (GDP) by not only focusing the monetary policy and fiscal policy but also other non-macroeconomic variable which if are well organized and controlled may reduce the harmful of inflation in the economy in both short run and long run period.

# **5.3 Limitations of the Study and Ares for Further Research**

The existing literatures have discussed more about the inflation and economic growth in Tanzania and other developing countries. Their results seem to contradict each other due to some reasons such as nature of economy and economic control theories applied to different countries. In this study, inflation has been examined by incorporating other macro-economic variables namely money supply and government expenditure basing on the researchers selection.

The study found inflation to have insignificant impact to economic growth and a correct sign in the long run model as predefined in the hypothesis while government expenditure and money supply seems to have significant impact to economic growth in Tanzania. Thus, there is a need for upcoming researchers to investigate the impact of inflation to economic growth of Tanzania by not or/ and incorporating with other macroeconomic variables rather than money supply and government expenditure because they are themselves influencing inflation to large extent in the economy. However, difficulties raised in obtaining all data for variables used in this study for year 2012, 2013 and 2014 as pre expected in this study.

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# **APPENDICES**

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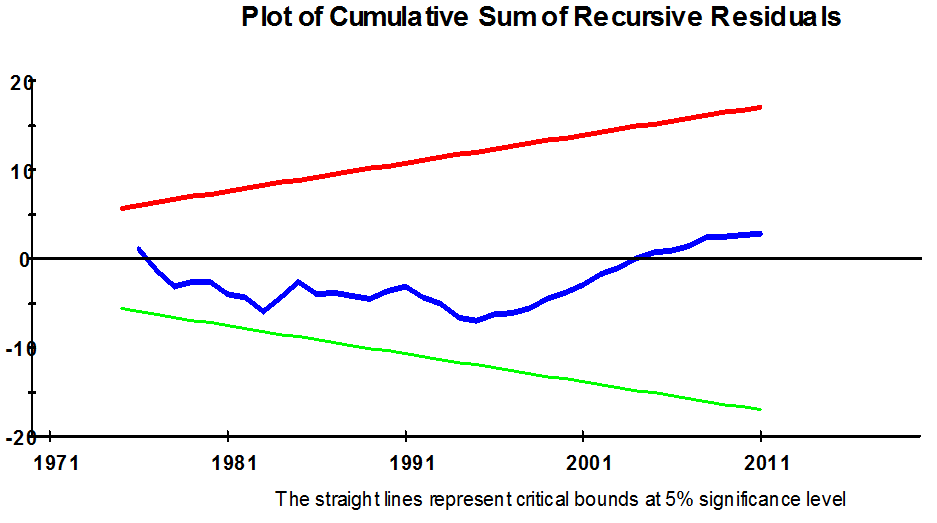
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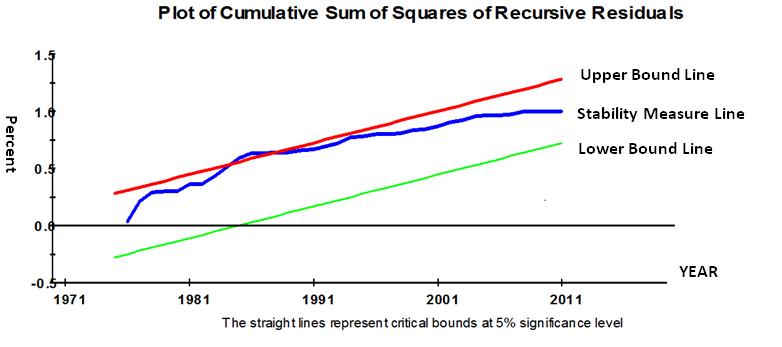
## **Appendix III: Stability of Model Tests**



**Percent**

**Cumulative Sum of Recursive Residuals (CUSUM)**

**Source:** Data Analyses



**Cumulative Sum of Squares of Recursive Residuals (CUSUMSQ)**

**Source:** Data Analyses

## **Appendix IV: Data Used**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **year** | **LGDP** | **LINF** | **LM3** | **LGEX** |
| 1970 | 8.20644 | 1.250728 | 7.705082 | 7.335902 |
| 1971 | 8.247387 | 1.563394 | 7.872608 | 7.392403 |
| 1972 | 8.312465 | 2.032797 | 8.03583 | 7.570234 |
| 1973 | 8.342572 | 2.341499 | 8.203304 | 7.742845 |
| 1974 | 8.367265 | 2.975448 | 8.403353 | 7.977106 |
| 1975 | 8.424676 | 3.260315 | 8.62204 | 8.134551 |
| 1976 | 8.486574 | 1.925613 | 8.846036 | 8.102528 |
| 1977 | 8.490584 | 2.451362 | 9.029621 | 8.253521 |
| 1978 | 8.50261 | 1.883275 | 9.148071 | 8.587189 |
| 1979 | 8.535558 | 2.56099 | 9.532902 | 8.606807 |
| 1980 | 8.565024 | 3.407753 | 9.771087 | 8.797813 |
| 1981 | 8.559973 | 3.244545 | 9.937633 | 8.914656 |
| 1982 | 8.565878 | 3.36496 | 10.11572 | 8.954475 |
| 1983 | 8.541827 | 3.297906 | 10.27943 | 9.021445 |
| 1984 | 8.575093 | 3.587565 | 10.3162 | 8.949875 |
| 1985 | 8.619979 | 3.50502 | 10.57057 | 9.032564 |
| 1986 | 8.638718 | 3.479152 | 10.82682 | 8.728333 |
| 1987 | 8.686846 | 3.399508 | 11.1041 | 8.404486 |
| 1988 | 8.726644 | 3.439992 | 11.44022 | 8.496556 |
| 1989 | 8.765792 | 3.252304 | 11.72642 | 8.520133 |
| 1990 | 8.832359 | 3.578695 | 12.08989 | 8.420401 |
| 1991 | 8.887809 | 3.356746 | 12.35837 | 8.713617 |
| 1992 | 8.922441 | 3.084057 | 12.77216 | 8.599979 |
| 1993 | 8.963737 | 3.229905 | 13.06477 | 8.490064 |
| 1994 | 8.992143 | 3.528809 | 13.5023 | 8.534788 |
| 1995 | 9.027181 | 3.311557 | 13.71583 | 8.668679 |
| 1996 | 9.073994 | 3.043439 | 13.61469 | 8.835052 |
| 1997 | 9.10917 | 2.778239 | 13.73978 | 8.98674 |
| 1998 | 9.145155 | 2.549426 | 13.84214 | 9.100822 |
| 1999 | 9.193012 | 2.065651 | 14.01241 | 9.127493 |
| 2000 | 9.240857 | 1.779005 | 14.15033 | 9.145881 |
| 2001 | 9.299856 | 1.638505 | 14.30101 | 9.130903 |
| 2002 | 9.369367 | 1.671066 | 14.53681 | 9.15033 |
| 2003 | 9.435731 | 1.668379 | 14.69636 | 9.225684 |
| 2004 | 9.510799 | 1.555151 | 14.93672 | 9.307356 |
| 2005 | 9.581329 | 1.616328 | 15.2626 | 9.405153 |
| 2006 | 9.646363 | 1.981136 | 15.45731 | 9.441591 |
| 2007 | 9.715292 | 1.949548 | 15.64386 | 9.621595 |
| 2008 | 9.786499 | 2.330044 | 15.8249 | 9.792329 |
| 2009 | 9.845127 | 2.496689 | 15.9938 | 9.813463 |
| 2010 | 9.913062 | 1.824574 | 16.21455 | 9.829021 |
| 2011 | 9.974848 | 2.540891 | 16.3821 | 9.91949 |