INFLATION AND ECONOMIC GROWTH IN UGANDA (1995-2015)

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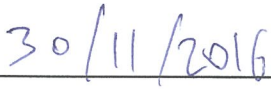OF KAMPALA INTERNATIONAL UNIVERSITY

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DECLARATION

I IDIRIS ADAM YUSUF registration number BEAS/42388/141/DF do declare that this research report is original and it has never been submitted to any institution of higher learning.

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APPROVAL

This research report has been submitted for the award of a Bachelor degree in Economics and Applied Statistics of Kampala International University with my approval as a supervisor.

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Date: _30/11/2018_

DEDICATION

I dedicate this work to my family for their endless effort towards my education.

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ABBREVIATION AND ACRONYMS

BOU	Bank of Uganda
COMESA	Community of Eastern and Southern Africa
EU	European Union
FDI	Foreign Direct Investment
GDP	Gross Domestic Product
GNP	Gross National Product
GWP	Gross World Product
IFS	International Financial Statistic
IMF	International Monitory finance
NBS	National Bureau of Statistics
OECD	Organization for Economic and Development cooperation
R &D	Research Development
SADC	South Africa Development Cooperation
USD	United States Dollar
WB	World Bank
WTO	World Trade Organization

ABSTRACT

This study set out to investigate the relationship between inflation rate and economic growth rate (% annual GDP) in Uganda (1995-2015), the study employed time series survey data since examined data for a short time ,its objectives were; to establish the trend of import in Tanzania (1995-2015), to establish the trend of GDP growth of Uganda (1995-2015), to investigate the relationship between Inflation rate and GDP growth rate in Uganda (1995-2015), the hypothesis of the study was there is no significant relationship between inflation rate and GDP growth rate in Uganda time series analysis such Correlation analysis, regression analysis mechanisms were used. The trend of inflation rate has shown a general decrease over the period under study and GDP growth rate has shown a general increase for the period under study. Using the correlation, regression approach, there was a strong negative correlation between inflation rate and GDP growth(r=-0.805), there was a relationship between inflation rate and GDP growth at 0.05 level of significance, stationarity was tested and found that both inflation rate and GDP has trend by using ACF and PACF. There is relationship between Inflation Rate and growth Rate in Uganda which agreed with Khan (1992), Tobi (1994), Cooley (1990) study on inflation rate and GDP growth rate. The study has also supported the theory of aggregate demand stated by Keynes (1883-1946) which that there is a negative relationship between Inflation and Economic growth.

CHAPTER ONE
PROBLEM AND ITS SCOPE

1.1 Background

The word inflation rings a bell in the market economics of the world. It is a monster that threatens all economics because undesirable effects (imobigle; 2012; Adenuga et al. 2012). Even though some evidence suggests that moderate inflation in economic growth, the overall weight of evidence so far clearly indicated that inflation is inimical to growth (Bawa and Abdullahi, 2012). The plan of inflation surely is not a new phenomenon. It has been a major problem in the country over the years". Inflation is household word in many market oriented economics. Although several people, producers, consumers, professionals, non-professionals, trade unionists, workers and the like, talk frequently about inflation particularly if the malady has assumed a chronic character, yet only selected few knows or even bother to know about the mechanics and consequences of inflation. In 1970s, countries with high inflation especially the Latin American countries begun to experience a decrease in growth rates and thus caused the emergence of the views stating that inflation has negative effects on the economic growth instead of the positive effects. Evidence showing relationship between inflation and economic growth from some of the Asian countries such as India showed that the growth rate of Gross Domestic Product (GDP) in India increased from 3.5 percent in the 1970s to 5.5 percent in the 1980s while the inflation rate accelerated steadily from an annual average of 1.7percent during the 1950s to 6.4 percent in the 1960s and further to 9.0 percent in the 1970s before easing marginally to 8.0 percent in the 1980s (Prasanna and Gopakumar, 2010). Likely, for the case of China, Xiao (2009) revealed that from 1961 to 1977, China's real GDP growth and real GDP per capita growth averaged at 4.84 percent and 2.68 percent respectively. Since 1978, China's economy grew steadily although growth rate fluctuated among the years. From 1978 to 2007, the growth rate of China's real GDP and real GDP per capita were recorded at 9.992 percent and 8.69 percent respectively.

The Nigeria economy witnessed some anxious moment in late 1970s to mid 1980s. Several pressures built up the economy mainly because of the expansionary fiscal policy of the federal government during these years. This was accomplished by rapid growth in domestic money supply, exacerbated by monetization of the earnings from oil (Kumapayi, et al 2012) and high monetary expansion as the huge government deficit was financed largely by the central bank of Nigeria. This was exacerbated by the transfer of government sector deposits banks and the resultant increase in their free reserves with adverse consequences on the general price level. The inflation pressure was further aggravated by high demand for inflation rate of both intermediate inputs and consumer goods due to over valuation of the naira which made inflation rate relatively cheaper than locally manufactured goods. In this case, the impediment development may be refered to as cost. The experiences from East African countries, for example showed that Kenya had 5 years of very positive economic development with four consecutive years of growth above 4 percent. But average annual inflation of Kenya increased from 18.5 percent in June 2008 to 27.2 percent in March 2009, before falling marginally to 24.3 percent in July 2009. Tanzania was one of the faster growing economies in Africa with sustained growth averaging 7.8 percent since 2000 with the annual inflation rate decreasing from5.1 percent in 2006 to 3.5 percent in 2009. The average annual real GDP growth rate for Rwanda from 1990-1999 was -0.1 but from 2006 to 2009, Rwanda had an annual average growth rate of 7.3 percent (Stein, 2010).

Uganda showed steady price stability in the 1950s and 1960s. Annual average rates of inflation were low, in a single digit, at about 4.5percent and 9.3 percent during 1950s and 1960s respectively. But the rates rose to 10.5percent in 1973, before it reached 26.5percent in 1975. During 1980-1985 the average highest rate of inflation, 27.3percent was coupled with the lowest rate of economic growth of 0.9percent. Moreover, studies revealed that, as the economy recovered during 1986-1990, the average rate of inflation decreased to 23.9percent in turn average growth rate rose to 3.7 percent (Shitundu and Luvanda, 2000).

Uganda economy experienced many internal and external shocks. All sectors of the economy were affected by shocks, whose manifestations were, among others, large budget deficits and an imbalance between productive and non-productive activities. The signs closely associated with these were high rates of inflation, large balance of payments (BOP) deficits, declining domestic savings, growing government expenditure, falling agricultural produce and decreased utilization of industrial capacity which in turn hindered economic growth (Kilindo, 1997).

Inflation

Inflation is defined as a generalized increase in the level of price sustained over a long period in an economy (L and Chrystal, 1995), According to Umaru and Zubaine, (2012). The concept of inflation can be defined as a persistence rise in general price level of broad spectrum of goods and services in a country over a long period of time.

Economic growth

According to Martin et al (1991) defined economic growth as the increase in the level of productivity of goods and services of a country within a period of time, Michael Parkin (1993) defined economic growth as the expansion of our production possibilities. This will be measured as the in term of GDP growth

1.2 Statement of the Problem

There is almost a Universal consensus that macroeconomic stability, specifically defined as low inflation, is positive reliable economic growth. Over the years the question of the existence and nature of the link between inflation and growth has been subject of considerable interest and debate (Erbaykal and Okuyan, 2008). Although the debate about the precise relations between these two variables is still open; the continuing research on this issue has uncovered some important results. In particular, it is generally accepted that inflation has a negative effect on medium and long-term growth (Bruno and Easter 1998). Inflation impedes efficient resource allocation by obscuring the signally role of relative price changes, the most important guide to efficient

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economic decision making (Fisher, 1993). Kumapayi, et al (2012) reveals that over the last decades high inflation in Uganda has caused yield on investment to decline while government policy objectives has been adversely affected as the real size of its budget shrinks with rising inflation which has hampered economic growth.

If inflation is inimical to growth, it obviously follows that policy makers should aim at a low rate of inflation. But how low should inflation be? Should it be 10 percent, 5 percent, or for that matter, zero percent? Or put in other words, is there a level inflation at which the relationship between inflation and growth become negative? The empirical test of the impact of inflation on the Uganda economy which is the subject matter of this study shall provide precise answer to the relationship between inflation and growth and how the problem could be tackled.

1.3 Purpose of the Study

The purpose of the study was to investigate the relationship between inflation and economic growth within a period of seventeen years (1995 to 2011), to show the trend of inflation rate and economic growth rate and the theory stated was tested.

1.4 Research objectives

i) To establish the trend of inflation rate in Uganda (1995 to 2011)

ii) To show the trend of economic growth in Uganda (1995 to 2011)

iii) To investigate the relationship between inflation rate economic growth rate in Uganda   (1995 to 2011)

1.5 Research Questions

i) What is the level of trend of inflation in Uganda?

ii) What is the level of trend of economic growth in Uganda?

iii) What is the relationship between inflation and economic growth in Uganda?

1.6 Hypothesis of the study

Ho: There is no significance relationship between inflation and economic growth rate in Uganda (1995 to 2011)

1.7 Scope of the study

1.7.1 Content scope

The study will be focused on the establishment of the trend of inflation in Uganda (1995 to 2011), the trend of economic growth in Uganda (1995 to 2011) and to investigate the relationship between Inflation and economic growth rate in Uganda, this shall be investigated empirically the data spanning from 1995 to 2011.

1.7.2 Geographical Scope

The study was conducted in Uganda (from 6th March, 2016 to 15th October 2016)

1.7.3 The theoretical scope

The study was guided by the aggregate demand theory

The aggregate demand theory shows that the negatively relationship between inflation rate (price level) and output/income (national product) .aggregate demand theory was developed by English economist Maynard Keynes (1883-1946) .term of aggregate was also use as aggregate spending and aggregate expenditure(Case and fair 1992).

1.7. 4 Time scope

The study was conducted for five month and it was used to review the seven-year time series data that is, from 1995 to 2011 in Uganda since this will be enough to review all the literature on inflation and economic growth.

1.8 Significance of the Study

A vital component of any move towards macroeconomic stability and growth is integrated effort toward price stability. In order to identify the macroeconomic effect of

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inflation Uganda .this study would investigate the impact of macroeconomic variable such as productivity, investment and consumption.

1. It would have a direct effect in the efficiency and the effectiveness of the use of policy instrument in the stabilities of macroeconomic variable to stimulate production.

2. It would reveal the remote and immediate causes of inflation in Uganda with due consideration to theoretical function.

3. It would also provide an explanation for Uganda's stunted growth.

1.9 Operational definitions

Economic growth

Economic growth is the increase in the level on goods and services of a country within a fixed period of time, in this case economic growth will be measured in term of Gross Domestic Product therefore GDP is defined as Jeff Holt (2007) defined Gross domestic product as the total market value of all final goods and services produced annually within the boundaries of the country whether by national or foreigner-supplied resources. This study adopted Jeff Holt definition and the GDP growth will be measured in billion of US$ dollars.

Inflation

Inflation is defined as a generalized increase in the level of price sustained over a long period in an economy (Chrystal et al, 1995. This study will go by Chrystal definition and it will be measured by consumers price index (CPI).the type of inflation will be moderate since it is common and ranges from 5 percent to 25 percent.

CHAPTER TWO

LITREATURE REVIEW

2.1 Introduction

Inflation is defined as a generalized increase in the level of price sustained over a long period in an economy (L and Chrystal, 1995), According to Umaru and Zubaine, (2012). The concept of inflation can be defined as a persistence rise in general price level of broad spectrum of goods and services in a country over a long period of time.

With regard to Uganda economy, Ndyeshobola (1983) indicated that between 1964 and 1969 there was very low inflation (0.3 percent and 3.2 percent) on the average for the National Consumer Price Index (NCPI) and National Food Price Index (NFPI) respectively. After 1972, the NCPI rose by an average of 16 percent until 1975, (with peaks of 19 percent in 1974 and 25.9 percent in 1975). The NCPI in 1974 and 1975 seems to have been caused by the severe food problems prevailing during the second half of 1973. The NFPI reached as high as 35.0 percent in 1974 and 30.6 percent in 1975. Uganda's economic growth has shown an erratic trend as it recorded an average GDP growth rate of about 3 percent between 1991 and 2000, the GDP growth rate in 1992 was only 0.584 percent, while the rates in 1996 and 2000 were 4.6 percent and 5.1 percent respectively (Odhiambo, 2011)

When the cost of each coin is lowered in this way, the government profits from an increase in seigniorage, (World Bank Annual Report, 2006). This practice would increase the money supply but at the same time the relative value of each coin would be lowered. As the relative value of the coins becomes lower, consumers would need to give more coins in exchange for the same goods and services as before. These goods and services would experience a price increase as the value of each coin is reduced, (Frank, 2009).

Historically, infusions of gold or silver into an economy also led to inflation. From the second half of the 15th century to the first half of the 17th, Western Europe experienced a major inflationary cycle referred to as the "price revolution, (John, 2003) with prices on average rising perhaps six fold over 150 years. This was largely caused by the sudden influx of gold and silver from the New World into Habsburg Spain, (Walton, 1994). The silver spread throughout a previously cash-starved Europe and caused widespread inflation, (Peter, 2007; Tracy, 1994). Demographic factors also contributed to upward pressure on prices, with European population growth after depopulation caused by the Black Death pandemic.

Types of Inflation

Inflation can be categorized by its causes or by the level of inflation rate. Categorized by causes, there are three aspects of inflation: demand-pull, cost-push and built-in inflation, which will be discussed later. Classified by the rate of inflation, there are four levels of inflation:

Low inflation

Inflation is considered as low when the inflation rate fluctuates from 1 percent to 5 percent when the rate is around zero, there is no inflation or so-called price stability. If the inflation rate falls below zero, the country faces deflation (Piana, 2011). Within the limit of this research, the deflation is not mentioned. The governments always attempt to maintain a low inflation, since it has positive effect on the economic growth (Nguyen, 2011).

Moderate inflation

Because of differences in inflation history, there are various definitions of moderate inflation around the world. In general, one is considered as moderate inflation when its rate ranges from 5 to 25 percent. However, the higher part of this range could already be categorized as high inflation in some countries. (Piana, 2011)

High inflation

High inflation is regarded as inflation with high rate, from 30 to 50 percent. When the rate passes over 50 but below 100 percent, the extremely high inflation occurs. Since the stability of both kinds is unsure, the acceleration to hyperinflation could be expected. (Piana, 2011).

Hyper inflation

Hyper inflation is the most extreme type of inflation, with the annual prices increase to three-digit percentage points (Piana, 2011). For example, the price of a newspaper in Germany was 0.30 marks in January 1921. It increased to 70,000,000 marks in November 1922, less than a couple of years later. The prices of all other commodities in the market increased with approximately the same rate. (Mankiw 2011).

2.2 Economic Growth.

Economic growth is the increase in the level on goods and services of a country within a fixed period of time, in this case economic growth will be measured in term of Gross Domestic Product therefore GDP is defined as Jeff Holt (2007) defined Gross domestic product as the total market value of all final goods and services produced annually within the boundaries of the country whether by national or foreigner-supplied resources. This study adopted Jeff Holt definition and the GDP growth will be measured in billion of US$ dollars

Uganda's economy has been resilient to shocks and is expected to remain buoyant with a GDP growth forecast of 6.8 percent in 2012 and 7.1percent in 2013 – well above the regional averages. Services, industry and construction continue to be the driving forces. However, frequent power outages continue to hurt potential output. Exports, which received a boost during the crisis as demand for gold in world markets continued to rise, are expected to perform well with growth forecast at 10.9percent and 9.7percent in 2012 and 2013 respectively. Overall recurrent spending has outpaced revenues and grant financing, contributing to growing fiscal deficits and higher public debt stock. It is

expected to approach 42 percent of GDP in 2011. The budget deficit, at 6.6 percent of GDP in 2011, has improved from 7.1 percent in 2010 and is expected to remain at around that level for the next two years. The current account deficit, on the other hand, is expected to decline from 7.8 percent in 2010 to 6.4 percent in 2011 and further to 4.9 percent in 2012. Meanwhile, Uganda's inflation rate for 2011, at 12.7 percent, jumped well above the target of 5 percent or less. This rate, up from 6.5 percent in 2010, comes on the back of higher food prices. Inflation is expected to ease to single digits in 2012 (9 percent) and 2013 (8.3 percent). The shilling has been under pressure since the start of 2010, falling by 10.6 percent in 2011 and making inflation rate more expensive. With the expected fall in the inflation rate, the exchange rate should stabilize in 2012 and 2013. Increased oil inflation rate for power generation are driving strong demand for foreign currency.

Unemployment is becoming a concern with nearly 2.4 million unemployed people – most of them young –representing 10.7 percent of the population. Indeed, the situation of the youth population, particularly those in urban areas, is critical in terms of unemployment. Lack of sufficient employment opportunities for young women, who have increasingly participated in the labor market, further complicates the situation. The effects of the current global crisis, though not yet showing up in the statistics, could create additional challenges, in particular with respect to the tourism industry and export-oriented sectors.

Since the 1990s, per capita GDP in Uganda has been on the rise. Yet in 2004 the level of per capita GDP, at 295 USD, remains well below the average of 407 USD for low-income countries of sub-Saharan Africa (hereafter, LIC-Africa). The income disparity is even more striking when measured in purchasing power parity (PPP) dollars. While Uganda's per capita GDP in 2004 was 673 PPP dollars, the average for LIC-Africa was twice as high, at 1,267 PPP dollars; for low-income countries globally the figure is even higher, at 1,560 PPP dollars. On the other hand, Uganda's growth trend has been impressive; annual GDP growth has averaged 6.4 percent over the last five years,

exceeding seven percent in 2002 and 2003 .Uganda's growth rate of 6.3 percent in 2004 is well above the rate achieved in Kenya (3.1 percent) and in South Africa (3.7 percent).2 It is also higher than the regression benchmark for countries with Uganda's characteristics (5.2 percent).3 This strong growth performance reflects the fruits of responsible monetary and fiscal policy, concerted reforms, rapid export growth, and significant debt relief.

2.3 The relationship between inflation and economic growth.

Inflation Dynamics and Economic Growth in Uganda

Low inflation has been at the heart of Uganda's monetary authorities since the country attained independence in the 1960s. In fact, the primary mission of the Bank of Uganda (Uganda central bank) is to maintain domestic price stability that is conducive to the attainment of macroeconomic stability and the achievement of sustainable growth. The Bank of Uganda has the responsibility of ensuring that monetary conditions that there consistent with low and suitable inflation are established (SADC, 2011).

Unlike some countries, Tanzanian inflation rate excludes food prices. This is because food prices are very volatile and are in most cases driven by short lived supply-side factors rather than the demand-side factors. According to the Bank of Uganda, food prices are sometimes affected by non-monetary factors, like drought and floods, which may aggravate the overall inflation rate – irrespective of monetary policy. This was evidenced in December 2010, when the food inflation was 6.3percent, while the non-food inflation was 4.7percent. In Uganda, inflation is considered to be a monetary phenomenon. Hence, it is controlled by influencing the growth of broad money supply i.e. (M2) – which includes currency in circulation outside banks, the total deposits held by commercial banks, excluding foreign currency deposits.

Since the 1980s, the Uganda monetary authorities have made significant progress in containing inflation. Although Uganda's average inflation rate remained at a double-digit level between 1980 and 1998; the rate later declined phenomenally between 1996 and

2000, with the lowest inflation rate recorded in 2000. In 2001, the rate increased slightly, but between 2001 and 2004, the rate systematically declined, with the lowest rate since the 1980s being recorded in 2004. Although the rate remained at a single-digit level between 2005 and 2007, it later increased to a double-digit level between 2008 and 2009, before it again decreased to a single digit in 2010.

As in the case of inflation, Uganda's economic growth has shown an erratic trend. Although the country recorded an average GDP growth rate of about 3 percent between 1991 and 2000, the GDP growth rate in 1992 was only 0.584percent, while the rates in 1996 and 2000 were 4.6 percent and 5.1percent, respectively. Figure 1 shows the trends of inflation and per capita GDP growth in Uganda between 1990 and 2005(World Bank, 2010).

Low levels of inflation and economic growth are often linked for several reasons. First, the existence of inflation allows central banks to maintain tighter control over interest rates. If a recession or depression has caused a central bank to reduce the interest rate to zero, they are unable to further adjust if the situation worsens. A low level of inflation guarantees that interest rates will remain above zero, giving the central bank the option to reduce interest as a means of counteracting an economic slowdown (NBT, 2005).

Another way that low inflation and economic growth are linked is through the maintenance of price stability. When inflation levels are low, they also tend to be more stable, meaning that fast, destabilizing shifts in either purchasing power or prices are less likely. Price stability generally encourages investments, since investors feel more confident about the future of the market (Baro, 1995).

High levels of inflation, by contrast, can sometimes wreak havoc on economic growth. When inflation levels are high, people may hoard goods for fear of shortages, causing market transactions to slow down and spurring the real possibility of shortages on

essential goods. High inflation levels can also reduce the buying power of the dollar faster than labor markets can respond with wage increases, causing many workers with previously sufficient income to suddenly be unable to make ends meet.

Another potential danger of high inflation and economic growth is an increasing risk of market instability. Rapid or high inflation can destabilize price levels, making it far more difficult to accurately predict future market behavior. Price destabilization can be extremely dangerous, as investors may become discouraged, thus slowing the growth of new business investments and stock trading. Furthermore, the unpredictability of high inflation can make it difficult for economists, central banks, and governments to come up with viable plans to control or reduce inflation rates (Buredkin, 2000).

2.3 Conceptual Frame Work

Independent variable		Dependent variable
Economic Growth Increased savings • Increased income • Increased investment	→	**Inflation** Financial Intermediaries • Level of Investment (Capital Accumulation) • Efficiency of Investment

Intervening variable

Loss of confidence in the economy
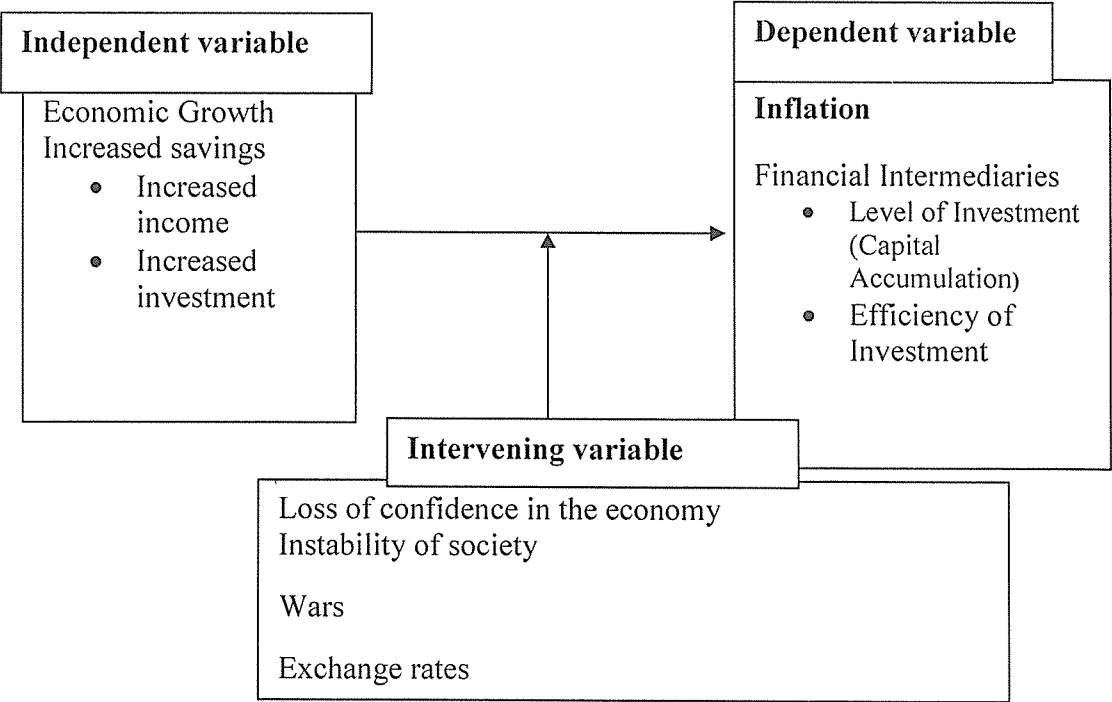Instability of society

Wars

Exchange rates

Figure 1: This depicts transmission inflation to economic growth.

Source: Researcher (2016)

As Figure 1 reveals, inflation can affect economic growth through financial intermediaries and has a direct effect on growth as well. Since the direct effect of

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inflation on growth is trivial and difficult to model, most theoretical studies have focused on the main channel, which is shown by the bold lines with arrows in Figure 1,the inflation-finance nexus, the finance-investment nexus, and the investment-growth nexus, which are represented in Figure 1

2.4 Review of Related Literature

2.4.1 Theoretical Review

The aggregate demand theory shows that the negatively relationship between inflation rate (price level) and output/income (national product) .aggregate demand theory was developed by English economist Maynard Keynes (1883-1946) .term of aggregate was also use as aggregate spending and aggregate expenditure(Case and fair 1992).

Mundell (1963) was the first to show that expected inflation has a real economic effect using the IS-LM curves. He argues that the money rate of interest rises by less than the rate of inflation and therefore that the real rate of interest falls during inflation. He assumes that real investment depends on the real interest rate and real saving on real balances and also inflation decreases real money balances. This creates decline in wealth which in turn stimulates increased saving. He claims that the advantages and disadvantages of inflation are not only due to the failure of the community to anticipate it. Expectation of fluctuations in the rate of inflation has real effects on economic activity. When prices are expected to increase, the money rate of interest rises by less than the rate of inflation giving impetus to an investment boom and an acceleration of growth and vice versa.

Tobin (1965) assumed money as a store value in the economy and shows that inflation has positive effect on economic growth. Money serves no useful role other than as a financial capital asset like physical capital. Tobin effect suggests that inflation causes individuals to acquire more capital than holding money because money and capital ratio depends negatively on the inflation rate, which leads to greater capital intensity and promotes economic growth. Tobin's framework shows that a higher inflation rate raises

the level of output. However, the effect on output growth is temporary, occurring during the transition from one steady state capital stock to another steady state capital. Output and consumption therefore rise in the steady state. He also argues that, because of the downward rigidity of prices, the adjustment in relative prices during economic growth could be better achieved by the upward price movement of some individual prices.

Gillman, Harris and Matyas (2001) used a theoretical model with endogenous growth strengthens Stockman's result of negative relation between inflation and economic growth. They also specify an econometric model which is consistent with the result obtained in the theoretical model. Haslag (1995) also shows that in an economy in which money and capital are complimentary goods, banks pool all savers but are asked to hold money as a deposit to satisfy a reserve requirement. Hence, an increase in inflation rate decreases the return on deposits because return on deposit is an average of return on money and capital. If saving goes down due to less return on deposits, there is less amount of capital accumulation which in turn impedes economic growth.

Manuelli and Jones (1995) considered models of endogenous growth with formulation of supply of effective labor to show the effect of money growth on welfare and economic growth. They assume that demand for money is generated for transaction purpose. If nominal depreciation is included in the tax code, real marginal tax rate on investment income is altered by inflation rate. As inflation rate rises, the discounted value of depreciation tax credits decreases, and therefore the effective tax on capital income gets higher. People slow their rate of capital accumulation due lower after tax return on capital. This decreases the rate of economic growth recently many economists started to believe that the relationship between inflation and economic growth is not linearly related.

Espinosa and Yip (1999) reviewed the interaction between inflation and growth using model of endogenous growth with explicit financial intermediation. They use risk preference as their basis for identifying the effect of one variable on another which

means the relation depends on the relative risk aversion of agents. If agents are fairly risk averse, higher rate of inflation decreases economic growth. If agents relative risk aversion low enough, there is positive relationship between the two variables which is in line with convectional claims of Philips curve

In general from the theoretical models discussed above, it is clear that the results depend on the assumption about the economy identified and also depend on the set up of the models. All the models try to make their conclusion in line with economic theories. Accordingly, inflation may have positive, negative, neutral or non linear relationship on economic growth in these theoretical models.

Cooley and Hansen (1989) extended the cash in advance constraint model to consider capital accumulation. They assume that marginal product of capital is positively related to the quantity of labor. Thus, when the quantity of labor declines in response to a rise in inflation, the return to capital falls and the steady-state quantities of capital and output declines. Employment decreases because individuals substitute leisure for work due to inflation tax on consumption. They show that the level of output permanently falls as the inflation rate increases. Gillman, Harris and Matyas (2001) using a theoretical model with endogenous growth strengthens Stockman's result of negative relation between inflation and economic growth

2.5 Related studies

Khan and Senhadji (2000), Sarel (1995), Barro (1995) and Fischer (1993), found a non-linear effect in the harmful influences of inflation on growth, i.e., at lower rates of inflation, the relationship between growth and inflation is positive or not significant, but when inflation reaches higher levels it has a significant negative effect on growth. However, the link between inflation variability and growth is far from clear, even in theory.

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Mundell (1963) was one of the first to articulate a mechanism relating inflation and output growth separate from the excess demand for commodities. According to Mundell's model, an increase in inflation or inflation expectations immediately reduces people's wealth. This works on the premise that the rate of return on individual's real money balances falls. To accumulate the desired wealth, people save more by switching to assets, increasing their price, thus driving down the real interest rate. Greater savings means greater capital accumulation and thus faster output growth.

Wai (1959) argued that there was no relationship between inflation and economic growth noting that growth has been possible without inflation in some countries while in others; there have been inflation without growth. Similarly, Johanson (1967) posited that there is no convincing evidence of any clear association, positive or negative, between the rate of inflation and the rate of economic growth. He argues that it is not inflation that determines economic growth but the application of knowledge, through technical and managerial change and the improvement of human capacities.

Also, in a study on Nigeria, Chimobi (2010) investigated the existence of a relationship between inflation and economic growth using annual data for the period 1970 – 2005. The study finds no co-integrating relationship between the two variables. Using Granger causality test, however, the study established unidirectional causality running from inflation to economic growth.

Mubarik (2005) used annual data from 1973 to 2000 to investigate the relationship between inflation and growth in Pakistan.. Also, Hussain and Malik (2011) used granger causality test to determine the direction of causality between inflation and economic growth in Pakistan and the error correction model to explore the nature of relationship between the variables. Employing annual data from 1960 to 2006, they found that inflation granger causes growth and not vice versa. In addition, they established a positive relationship between inflation and economic growth.

Mohanty *et al.* (2011) explored possible nonlinear relationship between inflation and growth in India using quarterly series and inferred that the inflation rate of 4 to 5.5 per cent may be considered as an inflation on model. Though their empirical investigation do not find conclusive evidence of the existence of an inflation threshold, they opine that inflation rate less than 5.5 per cent impact positively on Indian economic growth, while the relationship changes once the 5.5 per cent level is exceeded.

Salami and Kelikume (2010) used annual data for the period 1970 to 2008 and 1980 to 2008 to estimate an inflation model for Nigeria. For the period 1970 to 2008, an inflation threshold of 8 per cent was detected, while for 1980 to 2008 an insignificant threshold of 7 per cent is established. In a similar study for Nigeria using annual data from 1970 to 2006, Bassey and Onwioduokit (2011) used the framework of Li (2005) to investigate the relationship between inflation and economic growth as well detected an appropriate model. Having established the presence of a negative relationship, they identified a statistically insignificant threshold level of 18 per cent and established that inflation rates below the threshold are growth propelling.

Khan and Senhadji (2001) on a mixture of quasi and actual quarterly data spanning 1981 to 2009, Bawa and Abdullahi (2012) estimated a higher threshold inflation level of 13 per cent when compared with Salami and Kelikume's point estimate, but a lower threshold when compared with the point estimate suggested by Bassey and Onwioduokit.

In Fiji's case, studies by Dewan et al (1999) and Dewan & Hussei (2001) revealed some insights into the inflation growth relationship. Dewan et al (1999) found that changes in the difference between actual GDP and potential GDP (output gap) had a bearing on Fiji's inflation outcome. In another study, Dewan & Hussein (2001) found in a sample of 41 middle-income developing countries including Fiji, that inflation was negatively correlated to growth.

In pooled cross-section time series regressions for a large set of countries, Fischer (1993) and De Gregorio (1993) found evidence for a negative link between inflation and growth. This was also confirmed by Barro (1995, 1996). Barro's studies also found that the relationship may not be linear. Studies by Levine &Zervos (1993) and Sala-i-Martin (1997) suggested that inflation was not a robust determinant of economic growth.

Eckstein and Leiderman (1992), Gillman (1993), Smyth (1992, 1994, and 1995) and DeGregorio (1993). By analyzing the data for Brazil, the authors found that inflation does not impact growth in the long-run, but in the short-run there exists a significant negative effect from inflation on output. The authors imposed minimal structure and made use of the idea that inflation shocks can be broken down into permanent and temporary components.

Christoffersen and Doyle adopted a similar approach to Sarel (1995), modelling the linked relationship between inflation and output. Export market growth is strongly associated with output transition unlike previous studies, which omitted export market growth and therefore overstated the output costs of inflation, as well as the short-run costs of structural reform and its long-run benefits. They also found no evidence of countries closer to the inflation-output threshold simply aiming to stay there without proceeding further towards industrial country inflation rates.

Sidrauski's (1967) super neutrality of money in the long-run, in that inflation does not affect long-run growth. However, in the short-run, it did provide contradictory evidence against Sidrauski's model. In estimating a short-run model for changes in output against changes in inflation, the authors found that the test statistics were satisfactory and significant. The results indicated that in the short-run, there is a negative impact of inflation on output.

Barro and Sala-i-Martin (1995) studies effect of inflation on economic. The results indicated with significance that inflation had a negative effect on growth, with a

coefficient of −0.024. The bottom line from the empirical analysis is that the estimated effects of inflation on growth are negative when some plausible instruments are used in the statistical procedures. Thus, there is some reason to believe that the relations reflect causation from higher long term inflation to reduced growth

Paul et al (1997) used annual data spanning the period 1960-1989 on 48 developing countries and 22 developed ones to examine the inflation-growth nexus. They found mixed evidences as the relationship was negative in some countries and positive in others. In a study of eleven African economies, CBN (1974) examined the relationship between inflation and output growth and found that in six of the countries (Egypt, Gabon, Ghana, Ivory Coast, Kenya and Sudan) the sign of the price coefficient in the growth regressions was negative. However, for the other four countries (Morocco, Nigeria, Tunisia, and Zambia) the price coefficient suggested a positive relationship between inflation and growth. The regression coefficients for both the individual countries and the group estimates were not statistically significant and therefore could not provide basis for firm conclusion. This study was however deficient in the sense that the relationships specified assumed that price was the only important variable influencing output, thus, ignoring other crucial control variables.

Barro (1995) used data for 100 countries from 1960 to 1990 to investigate the effects of inflation on economic performance by using the instrumental variable estimation method. He found that a 10 percentage point increase in average inflation per year yielded a reduction in growth rate of real per capita GDP of between 0.2 and 0.3 percentage points. He further noted that the inclusion of high inflation experiences in the growth regressions yielded more statistically significant results and stated that the direction of causation runs from higher inflation to reduced growth. Malla (1997) used a small sample of eleven OECD countries in a pooled time series and cross-section fashion to examine the relationship between inflation and growth. He concluded that the negative effects of inflation on economic growth more than outweigh its positive effects.

Bruno and Easterly (1998) investigated possible relationship between inflation and economic growth using cross country data. They found that inflation has negative effect on medium to long term economic growth and showed that the relationship is influenced by countries with extreme values (either very high or very low inflation). They argued that inflation rates in excess of a critical value of 40 per cent are inimical to growth and went ahead to investigating only cases of discrete high-inflation (40 per cent and above) crises. This yielded very robust empirical result that growth falls sharply during high-inflation episodes and recovers rapidly as inflation falls to moderate levels.

Mallik and Chowdhury (2001) empirically examined the relationship between inflation and GDP growth for four South Asian countries (Bangladesh, India, Pakistan and Sri Lanka) using co-integration and error correction models. They found evidence of a long-run positive relationship between GDP growth and inflation. They also discovered significant feedbacks between inflation and economic growth and concluded that the sensitivity of inflation to changes in growth rates is larger than that of growth to changes in inflation rates. This study puts the countries on a knife edge as they struggle to achieve non-inflationary growth. The challenge for them, therefore, is to find a growth rate that is consistent with a stable inflation rate, rather than beat inflation first to take them to a path of faster economic growth.

Khan and Senhadji (2001) estimated a panel regression with data from 140 countries and spanning about 40 years to investigate the nonlinear relationship between inflation and economic growth. Having established the presence of nonlinearity, they found a threshold range of 1-3 per cent for industrial economies and 11 – 12 per cent for developing economies. The estimated relationships were found to be robust to different estimation procedures, alternative specifications, changes in threshold levels and different data frequency.

Drukker *et al.* (2005) used data from a sample of 138 countries from 1950 to 2000 to investigate the threshold effects in the relationship between inflation and economic growth. The panel regression results revealed that there is one threshold with an estimated value of 19.16 per cent that is well identified by the full sample. For the industrialized sample, the results indicated that there are two threshold points at 2.57 per cent and 12.61 per cent.

Li (2005) used data for 90 developing countries and 28 developed countries over the period 1961 – 2004 and found evidence of a nonlinear relationship between inflation and economic growth. He further showed that the form of nonlinearity in the inflation-growth relationship for developed countries differ from that of the developing ones. While two thresholds were found for the latter, only one threshold was detected for the former. He also studied the transmission channel through which inflation affects economic growth in a nonlinear manner. Based on theory and empirical findings, he identified two major transmission channels, which are the capital accumulation channel and the total factor productivity channel. He noted that inflation has been documented to affect economic growth either directly or via the behavior of the financial intermediaries. He opined that high and unstable prices affect the financial market and developments in the financial markets in turn affect the level and efficiency of investment and ultimately output growth. He concluded, through his empirical work, that for both developing and developed countries, the total factor productivity is the channel through which inflation adversely and nonlinearly affects economic growth.

Motivated by the global inflation episode of 2007/2008 and concern that high level of inflation could undermine growth, Espinoza et al (2010) employed the smooth transition model to examine the rate at which inflation levels in excess of threshold impede economic growth. They used a panel of 165 countries and found an inflation threshold of 10 per cent based on data for the period 1960 – 2007 and suggesting the need for a prompt policy response to inflation at or above the threshold

Levin and Zervos (1993) showed that the cross-section correlation between inflation and growth depends on extreme inflation observations with high-frequency data. Bruno and Easterly (1998) and Bullard and Keating (1995) found support for the notion that this negative relationship emerges only when rates of inflation exceed some threshold. Levine and Renelt (1992) and Clark (1997) also questioned whether a uniformly negative relationship exists between inflation and real activity independently of the prevailing rate of inflation.

Boyd et al. (2001) examined five-year average data on bank credit extension to the private sector, the volume of bank liabilities outstanding, stock market capitalization and trading volume (all as ratios to GDP), and inflation for a cross-sectional sample over 1960-1995. Boyd et al. (2001) found that, at low-to-moderate rates of inflation, increases in the rate of inflation lead to markedly lower volumes of bank lending to the private sector, lower levels of bank liabilities outstanding, and significantly reduced levels of stock market capitalization and trading volume.

Khan et al. (2001) examined an unbalanced panel including 168 countries and generally covering the period 1960-1999. Using NLLS estimation both with and without instrumental variables, Khan et al. (2001) found another threshold level of inflation, beyond which inflation had powerful negative effects on all measures of financial depth and below which inflation had insignificant or even positive effects on financial depth. This threshold was estimated to be in the range of 3 to 6 percent.

Barro (1995) suggested that a likely channel by which inflation decreases growth is through a reduction in the propensity to investment. A further estimation showed that the impact effects from an increase in average inflation by 10 percentage points per year are a decrease in the ratio of investment to GDP by 0.4-0.6 percentage points and a reduction of real per capita GDP by 0.2-0.3 percentage points per year.

McClain and Nichols (1994) used newly developed time series techniques to test for a long-run relationship between inflation and investment by using U.S. time series data from 1929 to 1987. Surprisingly, these authors found that investment and inflation are positively correlated to each other.

Getachew (1996) in his study of inflation in Ethiopia used monthly data from July 1990 to February 1995 found that in the short run money stock has been significant determinant of inflation in Ethiopia. In the long run he founds that inflation in Ethiopia is determined by supply factors. He recommends that in the short run controlling money supply is important to control inflation while in the long run he suggests that removing the bottlenecks of the supply side of the economy should be policy priority.

Desta (2009) argued that using the full-employment model, it is possible to assume that if a nation achieves full employment, economic growth is likely to precipitate an inflationary situation. Since the 10 percent increase in nominal GDP cannot keep pace with a 40 percent inflation rate, the acceleration of economic growth seems to be overstated. In fact, it is possible to assert that double digit inflation in Ethiopia is nothing but a clear sign of an unhealthy economy. The inflationary situation in a country could have a negative-structural-break effect on economic growth, if the sustained increase in prices is more than 15 percent. Hung (2001) studied the relationship between inflation and economic growth based on a model with adverse selection 13 and costly state verification problems. He showed that if banking costs shows no externality, there is positive relationship between inflation and economic growth. However, if banking cost shows economies of scale, the relationship between the two variables depends on initial inflation rates. If initial inflation rate is high, an increase in inflation rate decreases economic growth and vice versa.

CHAPTER THREE
RESEARCH METHODOLGY

3.1 Research Design

A time series analysis was adopted and the use of quantitative techniques to analyze secondary data scientifically to critically conclude the research objectives, secondary data was collected from different ministries, some quantification were necessary because of the need to tabulate data and use of statistical techniques to arrive at a dependable conclusion. Also inferences was drawn by fitting the regression model and testing for its significance using the t-statistic statistic The research also correlate the two variables and test for significance of the Pearson's correlation coefficient of determination and finally time series analysis will be done to test for stationarity between inflation and economic Uganda for twenty one years (1992-2012).

3.2 Research Population

The research took for twenty one year's time series of study that is, from 1995 to 2015.

3.3 Sampling Technique

The sampling technique was judgment sampling for data collection for twenty one years (1995-2015).the choice of the period of reference is significant because inflation constitute the matter of serious policy consideration. This period witnessed a steady and a positive growth in the money supply .this period encompasses the major landmarks in our economy.

3.4 Research Instrument

The Record sheet was used to enter the yearly data on inflation rate and GDP growth rate in Tanzania for twenty one years that is from 1995 to 2015.

3.5 Data Gathering Procedure and Source

After the proposal was approved, the researcher got an introductory letter from the Department of Economic and Applied Statistics of Kampala International University,

which introduced him to the respective ministries and they were informed by the researcher on area of interest of data to be collected. Data collection was to be done by skilled research assistants under close supervision of the researcher to ensure that all the information required were collected.

The domestic sources are the annual and quarterly bulletin of the National Bank of Uganda, IMF's, International Financial Statistics, World Bank and United Bank of Africa. The data will entered into the record sheet and compiled; this will used to analyze the relationship between m inflation and economic growth in Uganda (1995-2015) with the help of computer -statistical package

3.6 Data Analysis

This was analyzed with the help of, STATA package. Descriptive analysis was conducted to describe the behaviors of the individual variable over the duration of the study by plotting each variable against time, testing for significant, correlation and stationarity between the economic growth and inflation.

Data analysis involved time series analysis to test for trend or stationary using the Autocorrelation Function and Partial Autocorrelation Function with the hypothesis.

$$H_0: The\ reisstationarity$$

The following formulae and computational equations were used.

The correlation is given by

$$r = \frac{n\sum xy - \sum x \sum y}{\sqrt{(n\sum x2 - (\sum x)^2)\{n\sum y^2 - (\sum y)^2\}}}$$

The t_c compute will be

$$t_c = \frac{r\sqrt{?-2}}{\sqrt{1-r^2}}$$

Reject H_0 if $t_c \geq t\alpha$ at 0.05 level of significance

The Simple Linear Regression Model.

GDP growth rate=a+ β₀ (Inflation)

$$Y = \alpha + \beta_0 X_0 + ei$$

Where y: Real GDP growth rate

α:The GDP growth rate without inflation

β_0: The rate of change GDP growth to inflation

x_0: Inflation

The test for statistical significance of $\alpha \ and \ \beta_0$, we see the following null hypothesis,

Ho:$\alpha = o,$ **Ho :**$\beta_0 = o$

3.7 Limitations of the Study

In Uganda, evaluating the quality of data, there is no adequate, consistent data in domestic sources. For example, there is a discrepancy of GDP data reported by IFS yearbook and the National Bank of Uganda. One of problems in data collection is that different sources use different calendar year. Since it is difficult to compare different calendar year data effort was made to convert data from different calendar years into the same calendar year.

The limitations of model used here are that it assumes the rate of inflation was determined by an explicit optimization problem. Furthermore, it assumes that the long run level of international reserves is positively related to the long inflation; it also assumes that the current level of foreign exchange receipts is a proxy for the long run level. Therefore, the data collected was representative enough to enable the researcher to draw general conclusions.

CHAPTER FOUR

PRESENTATION, ANALYSIS AND INTERPRETATION OF DATA

Data was presented using figure, graphs based on the research objectives and the corresponding research questions, testing the hypothesis and for implication of the findings. (i) To establish the trend of inflation rate in Uganda (1995 to 2015),(ii) to show the trend of GDP growth in Uganda (1995 to 2015),(iii)To investigate the relationship between Inflation rate and GDP growth rate in Uganda (1995 to 2015).

4.1 The Trend of the Inflation of Uganda (1995-2015)

Objective one was to show the trend of Inflation rate in Uganda (1995-2015).Under this; the researcher used the line graph as can be seen below.
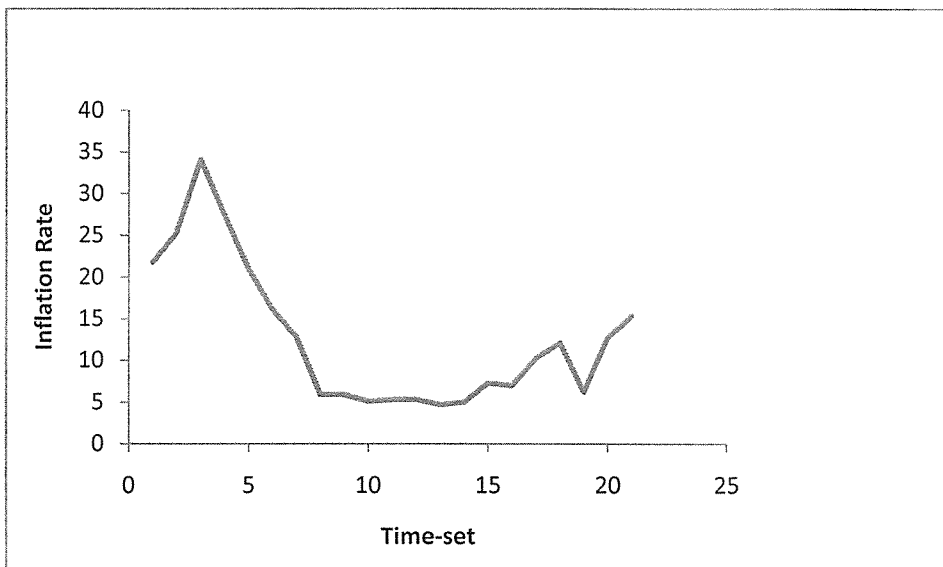

Figure 2: Trend of the Inflation rate of Uganda (1995-2015)

Source: Researcher (2016)

There is a general decrease in inflation level in Uganda over the period under studies, from figure 2 above, in 2011 and 2012 it tried to show some kind of increase, this might be due to uncertainties such as exchange rates, wars.

The reduction in inflation rate is as a result of government fiscal policy to control money supply, price stability among others in the economy-Uganda.the regression model is

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Inflation=21.914-0.838 time. This implies that inflation is 21.914 percent when the time is zero and a unit change in time in a year lead to reduction in inflation by 0.838

4.2 The trend of the GDP growth rate in Uganda (1995-2015)

Objective two was to show the level of trend of GDP growth in Uganda. Under this, the researcher used line graph as can be seen below.
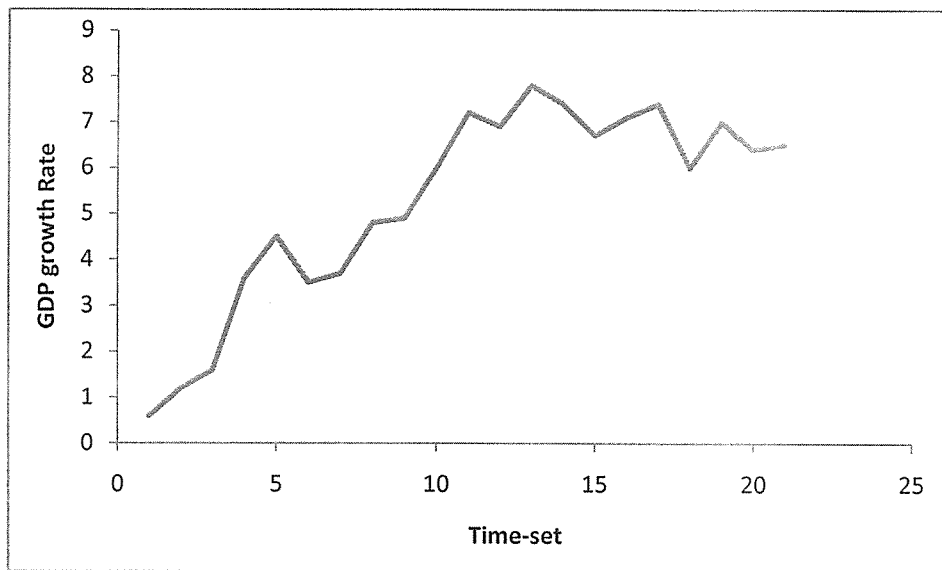

Figure 3: Trend of GDP growth rate in Uganda (1995-2015)
Source: Researcher (2016)

There is a general increase in GDP growth rate for the period under studied, in 2011 and 2012 it shows fluctuation this might be as a result of increase in inflation, reduction in export, high importation of goods. The increase in GDP growth rates in Uganda is as a result of increase in the level of technology, industrialization, high level of exportation of goods among others. The regression model is GDP growth Rate=2.023+0.295 Time. This indicates that GDP growth rate without time is 2.023percent and a unit change in time in year lead to 0.295 percent changes in inflation.

4.3 The relationship between import and GDP growth rate in Uganda (1995-2015)

Objective three was to investigate the relationship between inflation rate and GDP growth rate in Uganda, the researcher used scatter plot graph, correlation analysis, regression analysis and non parametric test to establish this relationship as can be observed.

A scatter plot of Inflation rate against GDP growth in Uganda (1995-2015)

TO show the relationship between Inflation Rate and GDP growth Rate, the researcher used a scatter plot as can be seen below.
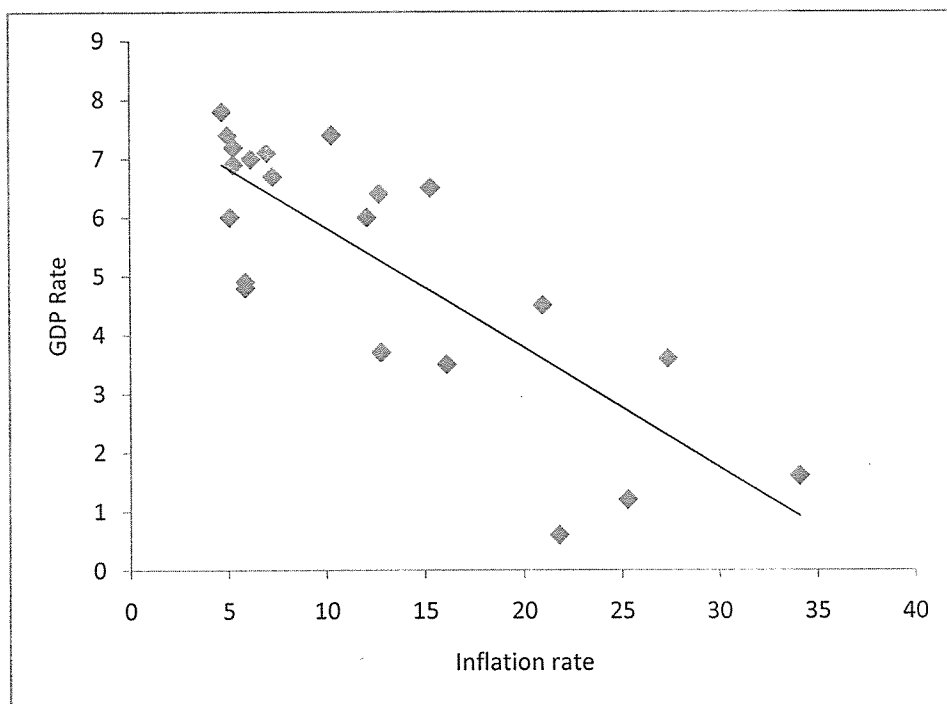

Figure 4: A scatter plot of Inflation rate and Gross Domestic Product (GDP) rate.

Source: Researcher (2016)

Inflation rate is inversely related to GDP growth rate, most of the points are closed to the fitted trend. This inverse relationship is as a result of high inflation which leads to high cost of living hence reducing people's welfare.

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The reduction in GDP growth rate is as a result of reduction in investment level which is being affected by inflation. Other factors which might have lead to the reduction in GDP growth are high importation of goods, low exportation of goods, low level of technology among others.

The regression model is GDP growth rate=7.856-0.203 inflation rate. This implies that GDP growth rate without inflation is 7.856 percent and inflation lead to a reduction in GDP growth rate by 0.203.

4.4 Stationarity test

The test for trend in GDP growth rate and inflation rate in Uganda

The researcher use Autocorrelation function (ACF), Partial Autocorrelation function (PACF) test to test for stationarity between Inflation rate and GDP growth rate. And the hypothesis stated can see below;

H_0: There is stationarityBetween Inflation Rate and GDP growth rate

From Appendix 2

For lag (1) ,ACF = $\int_{k=}0.797$and the lag prob=0.000 for GDP growth rate. Since **(sig=0.000<0.05),**

We reject the null hypothesis and conclude that there is a trend in and GDP growth rate in Uganda for the period under study.

From Appendix 4

For lag (1) ,ACF = $\int_{k=}0.849$and the lag prob=0.000 for inflation rate. Since **(sig=0.000<0.05),**

We reject the null hypothesis and conclude that there is a trend in inflation rate in Uganda for the period under study.

4.4.1 Autocorrelation Function and Partial Autocorrelation Function (ACF and d PACT)

The researcher also uses time series- Autocorrelation Function and Partial Autocorrelation Function for unvariate analysis. This look at the trend in Inflation Rate and GDP growth Rate in Tanzania

ACF is denoted by the formulae below

$$\int_k = \frac{(yk - yk-1)}{var(yk)}$$

$\int_k$ is the autocorrelation coefficient value.

The value of the correlation coefficient lies between -1and +1

The autoregressive of order on is denoted by formulae

$$\int_{k=}\mu + a_1(y_{t+k} - \mu) + e_t$$

e_{tis} the uncorrelated error term with zero mean and variance σ^2 it is also called the white noise.

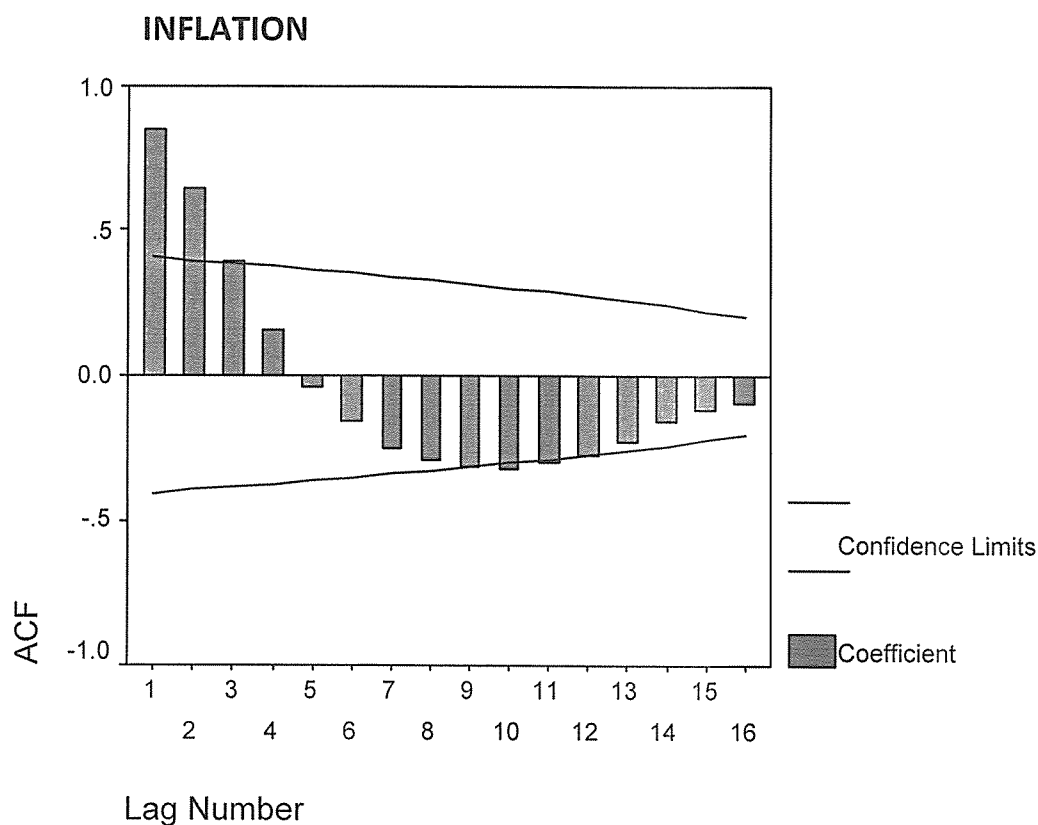In this research the value for ACF was got from the appendix 2 and 4, the PACF was from Appendix 3and 5.

INFLATION

Figure 5: Autocorrelation Function (ACF) of inflation.

Source: Researcher (2016)

There is a normal distribution of inflation ,this because it has a constant mean and the variance are small as can be observed from Appendix 4 .and the (**sig=0.00**)<(**sig=0.05**) there for we reject the null hypothesis and conclude that there is no stationarity in Inflation Rate of Tanzania
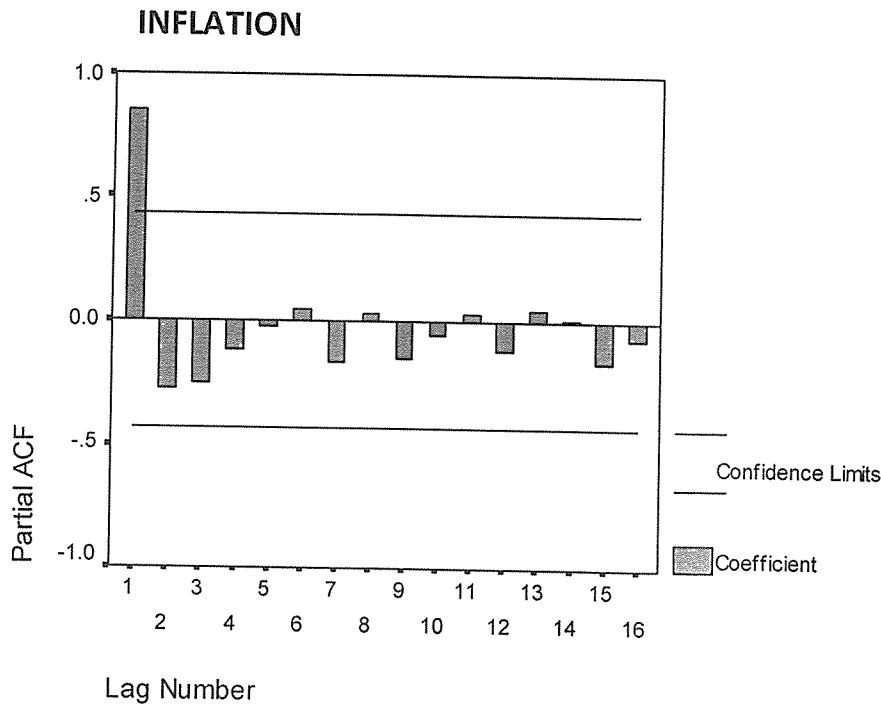
INFLATION

Figure 6:   Partial Autocorrelation Function (PACF) of Gross inflation rate
Source: Researcher (2016)

PACF of import has not shown some kind of normal distribution this might be some other variable which may affect import like exchange rate ,inflation among others, but still from **Appendix 7 (sig=0.00)<(sig=0.05)** we reject the null hypothesis and conclude that there is no stationarity in GDP growth rate in Tanzania for the period under study.

GDPRATE
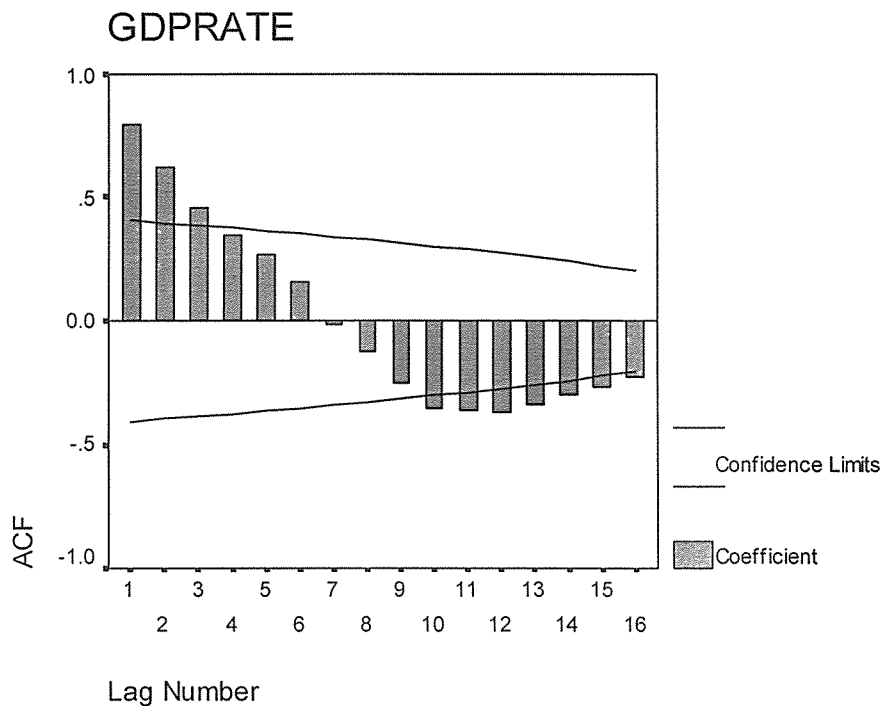
Figure 7: Autocorrelation Function (ACF) of Gross Domestic

Source: Researcher (2016)

There is a normal distribution of GDP growth rate ,this because it has a constant mean and the variance are small as can be observed from **Appendix 2** .and the (**sig=0.00**)<(**sig=0.05**) there for we reject the null hypothesis and conclude that there is no stationarity in GDP growth rate of Uganda.
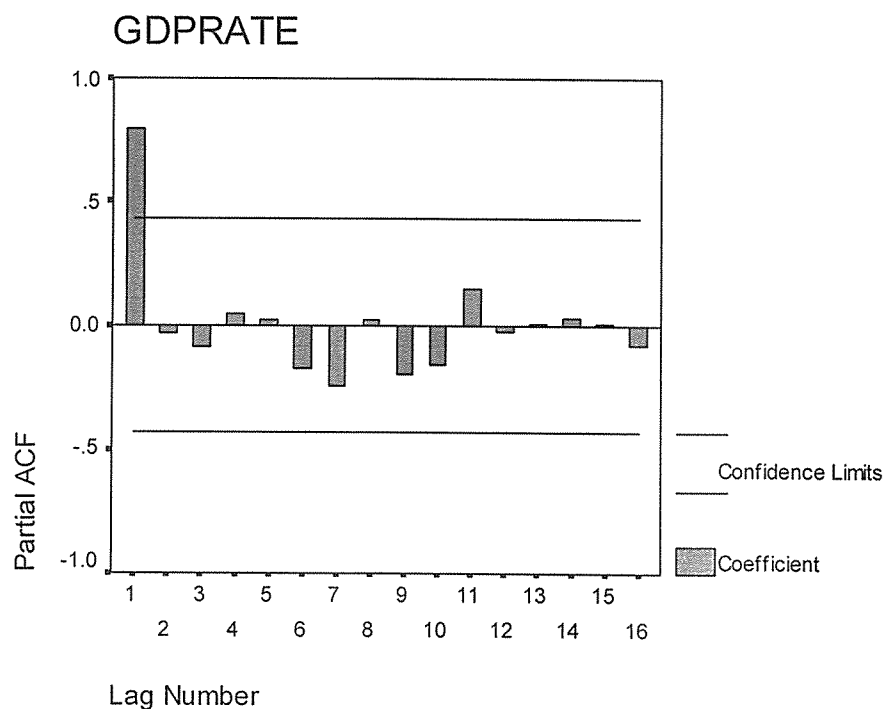
Figure 8: Partial Autocorrelation Function (PACF) of Gross Domestic Product

Source: Researcher (2016)

PACF has not shown some kind of normal distribution this might be due to some other variables which affect GDP growth, but still **(sig=0.00)<(sig=0.05)** we reject the null hypothesis and conclude that there is no stationarity in GDP growth rate in Uganda for the period under study.

4.5 Correlations analysis of Inflation rate and GDP growth rate in Uganda.

The researcher used Pearson's correlation coefficient to establish the strength of relationship between Inflation rate and GDP growth rate in Uganda.

Table 1: Correlation of Inflation rate and GDP growth rate

Variable correlate	R-Value	Sign-value	Interpretation	Decision
Inflation rate verse GDP growth rate	-0.805	0.000	There is a relationship	Reject the null hypothesis

There is a strong negative correlation between inflation rate and GDP growth rate as can be seen from the above table (**r=-0.805**) the strength of relationship between inflation rate and GDP growth is determined by the coefficient of determination (**r^2=0.648**). This implies that the variation in GDP growth is explained by inflation rate by **64.8** percent mean while other percentages is explained by other variables, this reveal that the relationship between these two variables is too weak. Since (**sig=0.000 <sig=0.05**), we reject the null hypothesis and conclude the there is relationship between inflation rate and GDP growth in Uganda (1995-2015)

4.5.1 Regression analysis of Inflation rate and GDP growth

To establish this relationship the researcher used bivariate linear regression analysis as can be seen in the table below.

Table 2: Regression of inflation rate and GDP growth rate

Variable represented	Adj. R^2	F-Value	Sign-value	Interpretation	Decision
Inflation rate and GDP rate	0.6488	35.0	0.000	There is a relationship	Reject accept H_0
Coefficient	**Beta**	**t**	**Sign-value**	**Interpretation**	**Decision**
Constants	7.856	-5.92	0.000	There is a relationship	Reject H_0
Inflation rate	-0.203	15.01	0.000	There is a relationship	Reject the null hypothesis

The researcher fitted the regression model using the information from table 2 above and this is represented by;

GDP growth rate = α+ β (inflation rate)

Fitting the model becomes

Y=7.856-0.2032X+error term

This implies that GDP growth rate without inflation result into 7.856 percent and a unit change in inflation lead to a reduction of GDP growth rate by by 0.2032 percent.

$t_{\alpha/2}=0.025$

$t(0.025,19)=2.093$

The slope $t_1=15.01$ decision rule if $/t/ \leq t_\alpha$, accept H_0, $\alpha =0.05$ level of significance, since $t_1=15.01$ is greater than $t_\alpha =2.093$ .We reject H_0 which states that inflation is not part of the model and conclude that there is a relationship between Inflation Rate and GDP growth Rate and other factors remain constant.

Adj $R^2 =0.6299$ affect inflation rate and GDP growth rate by increase 63 percent

CHAPTER FIVE

DISCUSSION, CONCLUSIONS AND RECOMMENDATIONS

5.1 DICUSSION

Trend of inflation rate in Uganda (1995-2015)

There is a general decrease in inflation rate for the period under studied (1995-2015), this might be due to government fiscal policy to control the money supply, the control of exchange rates since when the foreign currency is stronger than a local currency it will lead to high circulation of money in the economy

Trend of GDP growth rate in Uganda (1995-2015)

GDP growth rate has shown a general increase over the period under studied (1995-2015) except for 2014 and 2015, this increase in GDP growth rate is due to favorable balance of payment, high level of technology among others.

The relationship between Inflation rate and GDP growth rate in Uganda (1995-2015)

There is weak negative relationship between inflation rate and GDP growth rate ($r=-0.805$) this because as the level of inflation rate decrease the level of GDP growth rate was increasing. At 0.05 level of significance the relationship between inflation rate and GDP growth rate has shown a significant relation **(sig=0.05) < (sig=0.05) for** the period under studied that is (1995-2015).the Adj $R^2=0.6299$ affects Inflation and GDP growth rate by 63 percent.

5.2 CONCLUSIONS

This study has established the trend of Inflation rate in Uganda (1995-2015) and found a general decrease with 64.18 percentage change over the period under studied, it has shown the trend of GDP growth rate in Uganda (1995-2015) and found a general increase due to other factors which determine GDP growth a parts from Inflation rate 63.47 percentage change, the study has also investigated relationship between Inflation rate and GDP growth rate in Uganda using correlation, regression analysis with the test

of hypothesis and found a positive relationship   and significant relationship respectively for Uganda's economy. It in line with Tobin (1985), Cooly (1988) and khan (1989) the study has rejected the theory of aggregate demand.

5.3 RECOMMENDATIONS.

The government should also embark on strong fiscal policy to reduce the unnecessary money supply which can lead to inflation which may reduce economic growth.

I would also recommend the government to embark on industrialization, and modern technique of agricultural production since this area can employ large population resulting into high productivity hence economic growth.

5.4 Suggestions for Further Research

The results presented in this report are very not conclusive and should be treated as being preliminary. Further analysis of the survey data (inflation rate and GDP growth rate) needs to be done to validate these findings and provide greater confidence in explaining the changes in inflation rate and GDP growth rate in Uganda.

1) A study should be carried to establish how the inflation affect inflation rate and exports of goods and services
2) How government expenditure and inflation.
3) The relationship between inflation and exchange rate.
4) The relationship between household investment and economic growth
5) Population and economic growth.

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APPENDICES

APPENDIX 1: The rate of GDP and inflation in Uganda (1995-2015)

YEAR	Inflation	GDP rate
1995	21.8	0.6
1996	25.3	1.2
1997	34.1	1.6
1998	27.4	3.6
1999	21	4.5
2000	16.1	3.5
2001	12.8	3.7
2002	5.9	4.8
2003	5.9	4.9
2004	5.1	6
2005	5.3	7.2
2006	5.3	6.9
2007	4.7	7.8
2008	5	7.4
2009	7.3	6.7
2010	7	7.1
2011	10.3	7.4
2012	12.1	6
2013	6.2	7
2014	12.7	6.4
2015	15.3	6.5

Source: World Bank, IMF, World factbook(2016)

APPENDIX 2: Autocorrelations Function of GDP growth rate in Uganda

Autocorrelations: GDPRATE

Auto- Stand.

Lag Corr. Err. -1 -.75 -.5 -.25 0 .25 .5 .75 1 Box-Ljung Prob.

....

Lag	Corr.	Err.	Plot	Box-Ljung	Prob.
1	.797	.203	.*******.********	15.330	.000
2	.623	.198	.*******.****	25.184	.000
3	.455	.193	.*******.*	30.734	.000
4	.346	.188	.*******.	34.132	.000
5	.272	.182	.*****.	36.359	.000
6	.154	.176	.***.	37.120	.000
7	-.015	.170	.*.	37.127	.000
8	-.125	.164	.**.	37.704	.000
9	-.256	.158	.*****.	40.337	.000
10	-.357	.151	*.*****.	45.918	.000
11	-.365	.144	*.*****.	52.348	.000
12	-.372	.137	**.****.	59.755	.000
13	-.336	.129	**.****.	66.555	.000
14	-.298	.120	*.****.	72.676	.000
15	-.271	.111	*.***.	78.570	.000
16	-.231	.102	*.***.	83.745	.000

Plot Symbols: Autocorrelations *   Two Standard Error Limits .

Total cases: 21   Computable first lags: 20

APPENDIX 3: Partial Autocorrelations Function of GDP growth rate in Uganda

Partial Autocorrelations: GDPRATE

Pr-Aut- Stand.

Lag Corr.   Err. -1 -.75 -.5 -.25 0 .25 .5 .75 1

. . . .

```
1   .797   .218              .·********·*******
2  -.033   .218          .       *·        .
3  -.086   .218          .      **·        .
4   .049   .218          .·*            .
5   .027   .218          .·*            .
6  -.177   .218          .     ****·         .
7  -.240   .218          .    *****·          .
8   .023   .218          .       *         .
9  -.194   .218          .     ****·          .
10 -.155   .218          .      ***·         .
11  .148   .218          .·***          .
12 -.023   .218          .       *         .
13  .008   .218          .       *         .
14  .029   .218          .·*            .
15  .012   .218          .       *         .
16 -.079   .218          .      **·          .
```

Plot Symbols: Autocorrelations *   Two Standard Error Limits .

Total cases: 21   Computable first lags: 20

Source: Researcher (2016)

APPENDIX 4: AutocorrelationsFunction of Inflation rate in Uganda

Autocorrelations: INFLATION

Auto- Stand.

Lag Corr. Err. -1 -.75 -.5 -.25 0 .25 .5 .75 1   Box-Ljung Prob.

....

Lag	Corr.	Err.	Plot	Box-Ljung	Prob.
1	.849	.203	.*******.*********	17.401	.000
2	.642	.198	.*******.*****	27.894	.000
3	.397	.193	.*******.****	32.115	.000
4	.157	.188	.*** .	32.818	.000
5	-.037	.182	. *. .	32.858	.000
6	-.158	.176	. ***. .	33.667	.000
7	-.256	.170	. *****. .	35.921	.000
8	-.288	.164	.******. .	39.008	.000
9	-.315	.158	******. .	42.994	.000
10	-.321	.151	******. .	47.522	.000
11	-.296	.144	******. .	51.765	.000
12	-.274	.137	*****. .	55.784	.000
13	-.227	.129	*****. .	58.902	.000
14	-.157	.120	. ***. .	60.598	.000
15	-.121	.111	. **. .	61.782	.000
16	-.098	.102	. **. .	62.710	.000

Plot Symbols: Autocorrelations *   Two Standard Error Limits .

Total cases: 21   Computable first lags: 20

Source: Researcher (2016)

APPENDIX 5: Partial Autocorrelations Function of Inflation rate in Uganda

Partial Autocorrelations: INFLATION

```
Pr-Aut- Stand.
Lag Corr.  Err. -1 -.75 -.5 -.25  0  .25 .5  .75  1
. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
1   .849  .218         .********.********
2  -.279  .218         .  ******.      .
3  -.248  .218         .  *****.       .
4  -.119  .218         .    **.        .
5  -.020  .218         .     *         .
6   .046  .218         .•*            .
7  -.162  .218         .   ***.        .
8   .035  .218         .•*            .
9  -.149  .218         .   ***.        .
10 -.051  .218         .     *.        .
11  .032  .218         .•*            .
12 -.117  .218         .    **.        .
13  .046  .218         .•*            .
14  .007  .218         .     *         .
15 -.163  .218         .   ***.        .
16 -.068  .218         .     *.        .
```

Plot Symbols: Autocorrelations *   Two Standard Error Limits.

Total cases: 21   Computable first lags: 20

Source: Researcher (2016)