THE IMPACT OF INFLATION ON ECONOMIC GROWTH IN BURUNDI (1980-2014)

Yüksek Lisans/Master

Thibault MBONIMPA

Eskişehir 2019

THE IMPACT OF INFLATION ON ECONOMIC GROWTH IN BURUNDI (1980-2014)

Thibault MBONIMPA

Graduate School of Social Sciences

Master of Arts (MA) Degree

Supervisor: Dr. Öğr. Üyesi B. Tuğberk TOSUNOĞLU

Eskişehir

University of Anadolu

June 2019

FINAL APPROVAL FOR THESIS

This thesis titled "**The Impact of Inflation on Economic Growth In Burundi (1980-2014)**" has been prepared and submitted by **Thibault MBONIMPA** in partial fullfillment of the requirements in "**Anadolu University Directive on Graduate Education and Examination**" for the Master of Arts in **Department of Economics** has been examined and approved on **28/06/2019.**

Committee Members		**Signature**
Member (Supervisor)	: Assist.Prof.Dr.B.Tuğberk TOSUNOĞLU	.....
Member	: Assoc.Prof.Dr.B.Gülümser KAYTANCI	.....
Member	: Assoc.Prof.Dr.Oytun MECİK	.....

28/06/2019
Date

Assist.Prof.Dr.B.Tuğberk TOSUNOĞLU
Director Deputy
Graduate School of Social Sciences

ÖZET

THE IMPACT OF INFLATION ON ECONOMIC GROWTH IN BURUNDI (1980-2014)

Thibault MBONIMPA

Iktisat Anabilim Dalı (Tezli) (YL)

Anadolu Üniversitesi, Sosyal Bilimler Enstitüsü, Haziran 2019

Danışman: Dr. Öğr. Üyesi B. Tuğberk TOSUNOĞLU

Günümüzde ekonomistler yüksek enflasyonun sadece bireyler ve firmalar için değil genel ekonomik yapı açısından da sorun yarattığı konusunda hemfikir görünmektedir. Ancak enflasyon ile iktisadi büyüme arasındaki ilişkiyi ve enflasyonun ekonomik faaliyetleri etkileme mekanizmasını inceleyen teorik ve ampirik çalışmalarda bir fikir birliği de bulunmamaktadır.

Bu çalışmada Burundi'de enflasyonun ekonomik büyüme üzerindeki etkisinin incelenmesi amaçlanmıştır. Bu araştırmada, sürekli dalgalanan enflasyonun Burundi'nin ekonomik büyüme sürecini önemli bir şekilde etkilediği görülmüştür.

Çalışmada, tüketici fiyat endeksinin (TÜFE) ve para arzının (M2) Burundi ekonomisinin büyümesinde oynadığı rolün belirlenmesi amacıyla (1980-2014) yıllık veriler kullanılmıştır. Analiz için Eş-bütünleşme, Sıradan En Küçük Kareler Yöntemi (OLS), Hata Düzeltme Modeli ve Granger Nedensellik testleri kullanılmıştır. Sonuçta Burundi'de enflasyon ile ekonomik büyüme arasında uzun dönemli bir ilişki olmadığı görülmüştür. Ayrıca çalışma Burundi'de ekonomik büyümenin enflasyondaki değişikliklere negatif yanıt verdiğini de göstermiştir.

Anahtar Kelimeler: Enflasyon, Ekonomik büyüme, Eş-bütünleşme, Burundi.

ABSTRACT

THE IMPACT OF INFLATION ON ECONOMIC GROWTH IN BURUNDI (1980-2014)

Thibault MBONIMPA

Department of Economics
Programme in Master of Arts (MA) Degree
Anadolu University, Graduate School of Social Sciences, June 2019

Supervisor: Dr. Öğr. Üyesi B. Tuğberk TOSUNOĞLU

Currently, economists seem to agree that high rates of inflation cause problem not just for some individuals; but for overall economic performance. However, there is no consensus on the relationship between inflation, economic growth and the mechanism by which inflation affects economic activity both in theoretical and empirical studies.

This study aims to review the impact of inflation on economic growth in Burundi. In this research, it was seen that the continuous fluctuating inflation had a significant impact on the economic growth process of Burundi.

This study employed time series annual data for a specified period (1980-2014) with an objective of ascertaining the role that consumer price index (CPI) and money supply (M2) play in growing the Burundian economy (GDP). In this study we used Co-integration, Ordinary Least Square (OLS) Method, Error Correction Model and Granger Causality Test as multiple regression of the analysis. The study established that there is no long-run relationship between inflation and economic growth in Burundi. The results of the study also showed that economic growth in Burundi is negatively response to changes in inflation.

Keywords: İnflation, Economic growth, Co-integration, Burundi.

ACKNOWLEDGMENTS

I give all glory to the God almighty for without him this project work will not have been successful.

I wish to extend my sincere gratitude to all those who have assisted me in completing this thesis materially, logistically and through word of advice or otherwise.

I am deeply indebted to my supervisor Dr. Öğr. Üyesi B. Tuğberk TOSUNOĞLU whose help, stimulating suggestions and encouragement assisted me throughout the research and the writing of this study. I also would like to thank Doç.Dr. Bengül Gülümser Kaytancı for her recommandations and advices.

Finally, I would like to thank everyone who directly or indirectly supported me until the finish line of my research. May God richly bless you.

28/06/2019

STATEMENT OF COMPLIANCE WITH ETHICAL PRINCIPLES AND RULES

I hereby truthfully declare that this thesis is an original work prepared by me; that I have behaved in accordance with the scientific ethical principles and rules throughout the stages of preparation, data collection, analysis, and presentation of my work; that I have cited the sources of all the data and information that could be obtained within the scope of this study, and included these sources in the references section; and that this study has been scanned for plagiarism with "scientific plagiarism detection program" used by Anadolu University, and that "it does not have any plagiarism" whatsoever. I also declare that, if a case contrary to my declaration is detected in my work at any time, I hereby express my consent to all the ethical and legal consequences that are involved.

Thibault MBONIMPA

TABLE OF CONTENTS

LIST OF ABBREVIATIONS

AD : Aggregate Demand

ADF : Augmented Dickey-Fuller

AS : Aggregate Supply

BRB : Bank of Republic of Burundi

CPI : Consumer Price Index

DF : Dickey-Fuller

DRC : Democratic Republic of Congo

EAC : East African Community

ECM : Error Correction Model

ECT : Error Correction Term

EIU : Economic Intelligence Unit

FDI : Foreign Direct Investment

GDP : Gross Domestic Product

IMF : International Monetary Fund

LSTR : Logistic Smooth Transition Regression

LTS : Least Trimmed Squares

OBR : Office Burundais des Recettes

OLS : Ordinary Least Squares

PP : Phillips Perron

PPI : Producer Price Index

QTM : Quantity Theory of Money

RGDP : Real Gross Domestic Product

SSA : Sub-Sahara Africa

TAR : Threshold Autoregressive

UNDP : United Nations Development Programme

VECM : Vector Error Correction Model

LIST OF TABLES

LIST OF FIGURES

CHAPTER ONE

INTRODUCTION

1.1. Background of Study

Maintaining price stability and growth together in an economy is one of the central macroeconomic policy objectives of most developing countries in the world today. Among others, the emphasis given to price stability in conduct of monetary policy is with a view to promoting sustainable economic growth as well as strengthening the purchasing power of the domestic currency (Umaru and Zubairu, 2012). Past studies have mainly focused on the effect inflation has on the economic growth with respect to macroeconomics, this is due to the level of impact inflation has on the economy. Inflation has thus been a bone of contention with regards to being beneficial or harmful to economic growth. The relationship between economic growth and inflation is one of the biggest problems macroeconomic. World economic growth and inflation rates have been fluctuating. Likewise, inflation rates have been dominating to compare with growth rates in virtually many years (Madhukar and Nagarjuna, 2011). This relationship was discussed during the science literature and these discussions have shown differences in relations between states. With the economic crisis of 1929, Keynesian policies were put forward in several countries. According to these policies, increases in demand caused non-incremental increases only products but also inflation. However, inflation has not been considered as a problem at this time. Instead, the views of this era considered that inflation had a positive impact on economic growth. This is shown in the empirical study of Phillips (1958) which was quickly adopted by Keynesians in the 1950's. Amid these views, Phillips first introduced hypothesizes that high inflation positively affects economic growth by lowering unemployment rates.

In the 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.

Denis Clerg, (1984) defines inflation as "the general and cumulative rise in nominal prices". As such, it is important to note that a price increase limited to one class of goods or limited in time is not qualified as inflationary. Inflation is an economic situation and it occurs where an increase in

the supply of money is greater than the amount of goods and services produced in a country, (Piana V, 2002).

When inflation is high and unstable, it undermines the ability of the economy to maintain conditions conducive to sustained expansion for job creation. It gives rise to uncertainties among consumers and investors and can lead to cycles of overheating and contraction, which in turn causes difficulties for many households. High inflation erodes the value of income and savings. It penalizes everything especially households that have a fixed income. Thus, during the aftermath of exorbitant inflation, individuals with fixed income or assets with fixed interest rates will experience a significant decline in value (Dornbusch, 1977). Conversely, a low inflation rate helps to create a favorable climate for low-interest rates and productive investments, which stimulates economic growth and job creation. This will lead to an increase in productivity and mass production of goods and services thus boosting economic growth. Inflation at a low level is necessary for economic growth, (Hossain E, Ghosh B.C, & K. Islam, 2012). Irrespective of such notions, monetary authorities must have applied stabilization policies to bring inflation into controllable subjection. The nature of stabilization, however, differs with the magnitude and impact of inflation that is being experienced in that country.

Burundi's economic policies evolved in three different periods. The period from 1981 to 1992 saw the expansion of the basis for economic rents to cater to the needs of young members of the elite. Per capita GDP increased but the cost was massive borrowing and alarming inefficiencies, this period was characterized by the stability of the rate of inflation with rates that are in the most years less than 10%. The second period (1993-2009) is characterized by war and an unprecedented economic crisis, Burundi experienced a volatile political and economic environment which leads to the volatility of the inflation rate. Over the years of this period, the inflation rate is greater than 10%. The third period (2010-2014) is distinguished by a series of exogenous shocks (a rise in world oil prices and food prices and a decline in revenue) struck economic activity in 2013. Growth in GDP accelerated slightly from 4.2% in 2012 to 4.6%, inflation dropped from 18.2% to 7.8%, the fiscal deficit narrowed from 9.1% to 2% and the Burundian franc (BIF) depreciated by 5% against the US dollar (USD) from January to December (Ngaruko, 2005).

Different studies have been carried out on inflation and economic growth and results generated from conducted research state different views and opinions to the relationship existing

between inflation and growth. A study undertaken by (Fischer, 1993) showed that a negative relationship existed between economic growth and inflation and budget deficits,(Mallik and Chowdhury, 2001) who examined the relationship between inflation and short and long-term growth for four Asian countries using series chronologies, found a positive effect of inflation on growth, (Sidrauski M, 1967) believes that there is no relationship whatsoever between inflation and growth.

1.2. Statement of The Problem

The impact of inflation on economic growth is one of the most important points of macroeconomic issues that need to be resolved. There are many studies examining the relationship between inflation and economic growth.

In the Burundian economy, we are witnessing in recent days a phenomenon of the widespread and continuous price increase: inflation. Since 1993, ethnic tensions and ongoing violence have severely disrupted the economy, bringing the government's economic reforms to a halt. International sanctions in 1996 exacerbated the poor economic situation, causing further food shortages, and high inflation. Although the Arusha Peace Accords had been signed in 2000, violence continued into 2003, as one million people fled their homes. Sanctions imposed by neighboring countries on Burundi have stunted the economy, although a regional trade embargo was lifted in 1999. However, by the end of 2005 fighting had stopped in most the country, and greater internal stability and donor-financed capital expenditure are hoped to aid growth throughout the economy during 2006 and in coming years. This can be seen in the gross domestic product (GDP) growth for the period 2000-2004. In 2000 GDP grew at a negative growth rate of 0.9% but bounced back in 2001 and 2002 to 3.2% and 3.6% respectively. It declined to 1.3% in 2003 but strongly bounced back to 5.5% in 2004. However, noticed that over this period the inflation rate was volatile and high greater than 10% (Worldmark Encyclopedia of Nations). This entails that economic growth has been exhibiting different responses to changes in inflation.

This situation seems at first sight worrying, but it should be noted that currently, economists maintain a debate contradictory around this notion of inflation. Some consider it a problem to be solved when others find in it, something normal can even be a source of economic growth.

Thereby, inflation does not have the only drawback. In the case of Japan and France, it has certainly helped finance the accumulation of capital, thus accelerating the rate of growth, at least until the beginning of the seventies. In fact, all countries have agreed on the idea of living with inflation. Their only problem is to contain it, to prevent it from skidding beyond a certain level (Denis Clerg, 1984).

What we only need to know today is that the issues of inflation itself and its impact on the economic growth of underdeveloped countries such as Burundi are becoming increasingly important. Accordingly, this research aims to establish the impact of inflation on the economic growth of the Burundian economy.

1.3. Research Objectives

The purpose is to measure the impact of inflation on economic growth in Burundi. A study of this nature is paramount especially in an economy where the price level is unstable. Proceeding objectives will strive to attain the following:

- To analyze the responsiveness of economic growth to changes in inflation.
- To investigate the existence of a long run relationship between economic growth and inflation
- To ascertain the causal relationship between economic growth and inflation

1.4. Research Questions

For achieving the research objectives stated above, the following research questions are given:

- What is the impact of inflation on economic growth in Burundi?
- İs there a long run relationship between economic growth and inflation in Burundi?
- What is the causal relationship between economic growth and inflation in Burundi?
- What is the responsiveness relationship between economic growth and inflation in Burundi?

1.5. Significance of The Study

Significant importance can be attached to this study in identifying the impact of inflation on economic growth in Burundi. Issues relating both to inflation and to its impact on economic growth will decrease if the cause and source of inflation in Burundi are identified and elaborated. Therefore, it will lead to an increase in investment, productivity, purchasing power, and employment opportunities. As such will position economic policymakers and scholars in a good position to understand the interlinkages between inflation and economic growth. It is in this regard that the study would serve as a tool and a guide towards the orientation of economic policies by proposing major lines to stimulate Burundian economic growth and help to curb the problem of inflation in the country.

1.6. Scope and Limitation of The Study

The undertaking of this study focuses on the relationship between inflation and economic growth in a specific country, Burundi. The scope of this study is to analyze the impacts that are posed by inflation on economic growth. This will be aided by using time series data which runs from 1980-2014 because of the scarcity and lack of availability of data of my country.

1.7. Organization of The Study

This study is organized into six chapters. Chapter one is an outline of the problem and its settings. Chapter two presents the review of the theoretical literature while chapter three gives an overview of the Burundian economy environment and inflation trends. The methodology issue and econometric modeling are dealt with in chapter four. In this chapter, econometric techniques that are used in this study are discussed in detail. Chapter five looks at the analysis and presentation of results findings whereas chapter six concludes the study and provides policy recommendations and suggestions for future researches.

CHAPTER TWO

THEORETICAL AND EMPIRICAL LITERATURE REVIEW

2.1. Theoretical Literature Review

Different studies have been carried out about the impacts of inflation on economic growth since the appearance of classical economic theory to modern economic theories. This section outlines theories about growth and inflation such as classical, Keynesian, monetarism, neoclassical, and endogenous on the association between inflation and economic growth.

2.1.1. Theories of Inflation

2.1.1.1. Classical Theory of Inflation

The classical theory of inflation attributes sustained price inflation to excessive growth in the quantity of money in circulation. For this reason, the classical theory is sometimes named the 'quantity theory of money, 'even though it is a theory of inflation, not a theory of money. The quantity theory of money is one of the earliest surviving economic doctrines which associated the general level of prices to changes in the quantity of money in circulation. More specifically, the classical theory of inflation explains how the aggregate price level gets determined through the interaction between money supply and money demand. As a matter of fact, because it shows the behavior of an important economy-wide variable inflation back to the most basic forces of supply and demand, the quantity theory of money must qualify as one of the central core of 19th century classical monetary analysis, oldest micro-founded models in all of macroeconomics.

2.1.1.2. Keynesian Theory of Inflation

In 1936, "The General Theory of Employment, Interest and Money" of Keynes was on the basis of all the Keynesian growth theories. Keynesians believe that the government should intervene by implementing macroeconomic, namely, fiscal policy, and using measures such as tax cuts or increases in government spending to push investment and boost demand to reach full production. The model used to analyze the association between inflation and economic growth is based on Aggregate demand (AD) and Aggregate supply (AS) curves. In the short run AS curve

is upward sloping and hence changes in the demand side, as well as shifts of AS, will affect both prices and output this holds with the fact that many factors drive the inflation rate and the level of output in the short run (Dornbusch, and al, 1996). A key factor in the Keynesian model is the effective demand, especially that the expansion aggregate demand should contribute to economic growth. Moreover, Dornbusch and al, (1996) argue that initially AD and AS curves yield to a positive association between inflation and economic growth due to the time inconsistency problem but later the relationship turns negative after the adjustment path. Producers feel that only the prices of their products have increased while the other producers are operating at the same price level. However, overall prices have increased. Therefore, the producer produces more and more outputs (Gokal, V. and Hanif, S. 2004). A positive relationship occurs between inflation and economic growth when firms agreed to supply goods at a consensus price. Thus, the changes in prices of goods don't affect the production (Blanchard and Kiyotaki, 1987). The Keynesian theory can be demonstrated by means of aggregate demand and supply analysis in the figure below as follow:

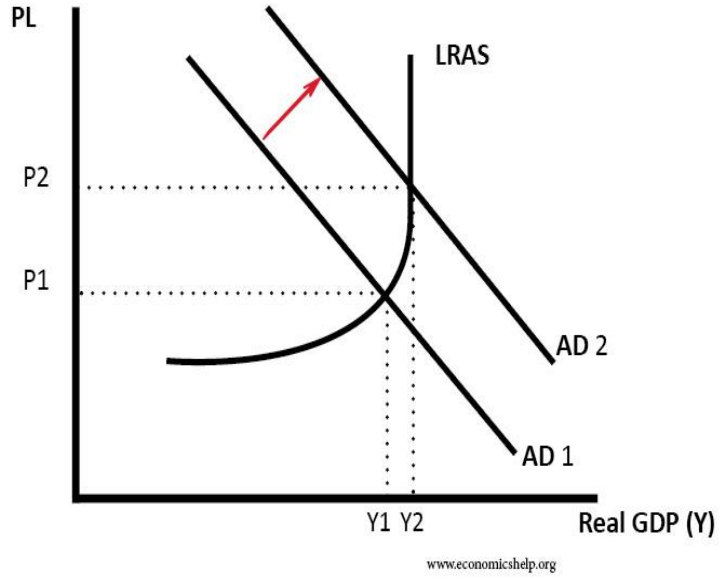

Fig 2.1. *Keynesian Theory in terms of aggregate-demand and aggregate-supply curves.*

As shown in the figure at aggregate demand (AD1) the real output is (Y1) which is below full production capacity and produced at price level P1. If the authorities drive aggregate demand to rise and shift to AD2, then this will push real output to increase to Y2 and the price level will rise to P2. At this higher price level, the real wage rate of the economy has decreased, which

conducts to rise in employment. Such boosting of real economic activity can go on until the economy is producing at full production capacity. Hence, aggregate-supply takes a vertical slope, and any further increases in aggregate demand only push prices to increase and do not affect the real economic activity.

2.1.1.3. Monetarist Theory of Inflation

Monetarism refers to the followers of M. Friedman (1912-2006) who hold that "only money matters", and as such monetary policy is a more potent instrument than fiscal policy in economic stabilization. According to the monetarists, the money supply is the dominant, though not exclusive determinant of both the level of output and prices in the short run and of the level of prices in the long run. The long-run level of output is not influenced by the money supply (M. Friedman and A.J. Schwartz, 1963). Regarding the relationship between inflation and economic growth the monetarist emphasized the role of the money with the quantity theory of money (QTM) led by Milton Friedman. The monetarists employed the familiar identity of the exchange equation of Fisher:

$$MV=PQ$$

Where:

M= Money Supply in an economy

V= Velocity of Money in Circulation

Q= Volume of transactions

P= General Price Level

Milton Friedman argues that inflation is always and everywhere a monetary phenomenon that arises from a quick expansion in the quantity of money than in total output. Furthermore, he added that the wage of inflation shouldn't be explained only by unemployment but also by inflation expectations as well (Leeson, 1994).

In summary, Monetarism proposes that in the long run, prices are generally affected by the growth rate of money, while do not really have no impact on income growth. Higher the gap between the growth in the money supply and the income growth rate, inflation will result. Whenever a country's inflation rate is very high for a sustained period, its rate of the money supply is also extendedly high (Dornbusch et al., 1996).

2.1.2. Theories of Economic Growth

2.1.2.1 Classical Growth Theory

The foundation for the classical Growth Model was laid by Adam Smith in his book, an inquiry into the nature and causes of the wealth of nations (1789). Adam Smith is the father of the classical economist; he came up with a supply-side model of growth where he pointed out three important production factors, which are technology, labor and capital and expressed in the form of a production function and it assumes the following nature;

$$Y = f(K, L, T)$$

Where K is capital, L is labor and T is technology. This total output produced is determined by capital, labor and technology. According to this explanation in order to achieve economic growth either the labor force or capital accumulation must rise. The rise in the level of technology also helps to postpone the diminishing returns of growth caused by the rise in capital or labor force (Snowdon and Vane, 2005).

This model further asserts that output (Y) is primarily influenced by investment (Ik), changes in productivity (α), land growth (Lt) and population growth (PL). As a result

,

$$Y = f(Ik, Lt, PL, \alpha)$$

Adam Smith argued that savings lead to investment which leads to economic growth. He stated that growth in output is as a result of investment growth, population increase, land, and increase in overall productivity; that growth was self-reinforcing as it showed increasing returns to scale. Moreover, Smith considered that investments ascertained by the amount of savings and hence growth. The theory further posits that how fast or slow a nation would grow is related to income distribution.

This theory does not clearly give a detailed description of the nature of the association between economic growth and inflation but specified that increase in taxes and high wage and salaries lead to inflation which in return inhibit profits level. It, therefore, claims that the nature of the relationship between economic growth and inflation is bilateral.

2.1.2.2. Neo-classical Growth Theory

The first neoclassical growth theories emerged in 1950s-1960s when attention to the problems of dynamic equilibrium weakened and to the fore came the problem of achieving potential growth not so much due to unused capacity, as through the introduction of new technology, improving productivity and improving the organization of production. The basic neoclassical growth model was developed by Solow-Swan.

The fundamental feature of the Solow-Swan neoclassical growth model, also known as the exogenous growth model, is its special specification, according to which the neoclassical production function assumes of constant return to scale, diminishing returns to each input and some positive and smooth elasticity of substitution between the inputs. Due to the assumption of diminishing return to capital the Solow-Swan growth model predicts that in the absence of continuing improvements in technology, per capita growth must eventually come to the end (The International Journal of Applied Economics and Finance, 2011).

2.1.2.3. Endogenous Growth Theory

A new stage in the development of the theory of economic growth occurred in the 80-90s which allowed to talk about the "new growth theory". In the endogenous growth theory, the scientific and technical progress has been considered as an endogenous, growth factor generated by internal causes. This is contrary to the assumption of the neoclassical growth theory. According to this theory, because of the associated technical advancement of the capital accumulation rises; the capital will no diminishing on return. Thus, the main factor in generating economic growth still capital accumulation (Romer, 1994).

The human capital and physical capital which represent the rate of return on capital, are the determinants of the growth rate according to endogenous model theory. Haslag, (1995) argues that inflationary effects are identified through a decline in deposits which leads in falling of capital accumulation, savings and hence economic growth.

2.1.3. Relationship Between Inflation and Economic Growth

2.1.3.1. Phillips Curve Approach

This theory was developed by the British Economist William. H Phillips in 1958 to analyze the relationship between inflation and unemployment. The theoretical framework used to examine the dynamics in inflation over the short term is based on the Phillips curve, this curve showed the existence of an inverse relationship between wages and the rate of unemployment using data from the United Kingdom from 1862-1957. He associates growth in wages with the unemployment rate: the greater the underutilization of labor market resources (when the current unemployment rate is higher than the structural unemployment rate), the lower wage increases agreed between workers and companies. He sustained that wages and prices move in the opposite direction thus demonstrate that there is a relationship between the prices and unemployment.

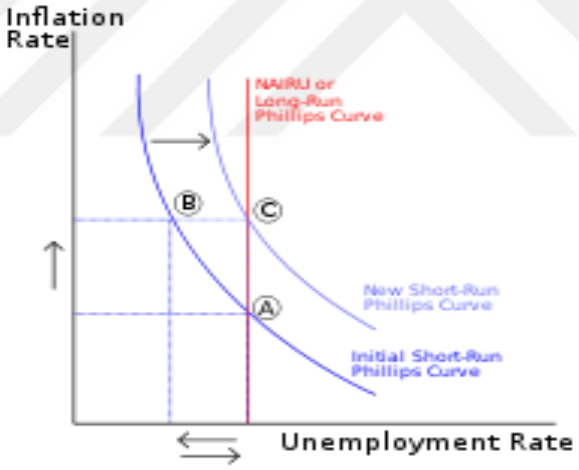

Fig 2.2. *A Phillips curve illustrated the tradeoff between inflation and unemployment*.

2.1.3.2. Neoclassical Theory Approach

The Solow-Swan growth model predicts that in the steady state-equilibrium the level of economic growth will be determined by the prevailing technology and the rates of saving, population growth and technical progress (Solow and Swan, 1956). Its main aim was to show that in the long run, an economy achieved sustainable growth. Then the growth rate of income per capita was equal to the rate of population growth. A key element of this model is the assumption

of substitution of factors of production, which in turn removed the assumption of a constant ratio of capital/production (Lukasz Pietak, 2014).

Robert Mundel, (1963) who pointed out that investment depends on real interest but money demand on nominal interest so that a change in the expected rate of inflation changes the level of output. Mundell posits that there is an increased in greater capital intensity which promotes economic growth causes people to convert their money to other assets which are a result of inflation; hence, Mundell assets that there is a linkage between economic growth and inflation. (Tobin, 1965) also supported Mundell's idea that inflation and economic growth are positively related.

Stockman, (1981) outlines that inflation negatively impacts economic growth. He argued that a decline of the steady state level of output results to a rising of the inflation rate.

Sidrauski, (1967) argued that inflation has no relationship with economic growth in the long run. Moreover, he testifies the super-neutrality of money in his model.

The neoclassical growth theory in his theoretical review shows mixed results about the association between inflation and economic growth.

2.1.3.3. Endogenous Theory Approach

Endogenous growth model contends that economic growth is generated by factors within the production process such as economies of scale, increasing capital return or induced technological changes, wages and salaries; as opposed to exogenous factors such as increase in population. When endogenous growth models are set within a monetary exchange framework of Lucas (1988), McCallum and Goodfriend (1987), the inflation rate reduces both the return on all capital and growth rate. High taxes will propel individuals to substitute work for spare time while imposing taxes on capital prevent economic growth. Arguments have been carried out about the extent to which inflation impacts economic growth (Gomme, 1993). The study exposed that the negative relationship between inflation and employment generates a negative shift in growth levels.

2.2. Consequences of Inflation

There are several consequences of inflation. The most common are rising wages and easing debt for debtors. But also, inflation promotes exports while it inhibits imports. In addition, inflation is an indicator of a country's good economic health and favors asset holders, purchasing power from the public to the monetary authority.

2.2.1. Rising Wage

We give an example of developed countries where wages are indexed to the price level, means that in the time of inflation there is no loss of purchasing power. Thus, if wages increase speedily than prices, then households get wealthy. On the other hand, if wages increase slowly, then the households become moneyless and lose purchasing power.

However, this situation is not real in some undeveloped countries where wages are not related to the cost of living.

2.2.2. Easing Debt for Debtors

Inflation resulted in the excessive creation of money to alleviate the weight of the public debt that the government must repay to its creditors. Conversely, creditors will be refunded less amount of their debts with a currency that will have less value than when the loan has been given.

Similarly, households that have taken out a flexible rate loan will suffer the impact of a rising of short-term interest rate by the central bank. The borrower will then have much more interest rate to repay than when the loan was granted.

2.2.3. Inflation Promotes Exportations

In facts inflation makes the currency to lose its value and depreciate against other foreign currencies increasing and therefore our products become cheaper to the international market. Hence, inflation boosts the economic activity of our country and eventually creates new opportunities for a job to meet the additional demand.

On the other hand, inflation harm imports. Indeed, it is a disadvantage for domestic importers who will import foreign products at a high level of price, because of the loss of the value of the currency against foreign currencies.

2.2.4. Indicator of a Country's Good Economic Health

Inflation is not bad because it shows the existence of economic growth. However, this inflation must be lower and not exceed the growth rate of GDP. A real growth rate of a country is measured by differentiating the GDP growth rate to the growth rate of inflation; if the latter is higher than the GDP growth rate, then the economy is in recession.

2.2.5. Inflation Favors Asset Holders

If there is a rise in prices, therefore the value of real estate increases within inflation. In fact, if it is generalized to all goods and services then the value of the real estate will be greater. Therefore, investors will pay more to buy a good or asset. For other types of assets, the principle is the same.

2.2.6. Purchasing the Power from The Public to Monetary Authority

Inflation, in his process of redistributing purchasing power from the public to the monetary authority, leads to three major results.

First, there is a redistribution implicit in any process that changes the money supply. Newly created money is injected into the economy at specific places and extends slowly to individuals' cash balances, bidding up prices (Richard Cantillon, 1959). Relying on the preferences of the first receivers of money, relative prices are subject to change as some prices rise faster than others. The last receivers of the new money will redistribute to the first receivers. Those individuals who receive the new money units last will see their costs grow faster than their revenues compared to those who receive the new money first and see their incomes increase faster than their costs. Inflation allows the government and the first recipients of government spending to profit at the expense of late receivers of the newly created money.

A second cost is applied to a group of specific market participants- savers- who renounce consumption in the present in willing that their savings can rise to satisfy future expenditure. Their plans are disrupted as inflation erodes the future purchasing power of their savings. Those on fixed incomes, notably pensioners or the non-working, are hurt. As their budget is restricted by accumulated savings, the only method to increase future purchasing power is through healthy

investment returns. Inflation reduces real profits, thus perturbating their capacity to consume at a prespecified level. Inflation expands consumption as a supplemental cost on savings makes this activity relatively less attractive.

Third, savers and investors are unlinked from each other. Inflation between as an increase in the money supply (Rothbard, 2008, 2009; Mises, 1971 and in passim). This rising money supply frequently coincides with a credit expansion of the banking system. As the central bank and private banking sectors often purchase government bonds, the monetary base multiplies when banks expand credit upon the newly created reserves. This credit expansion may distort interest rates and lead to more investments than there have been real savings. As effective long-term investments can only undertake consistent with real savings, a boom-bust cycle may set in (Bagus, Philipp, David Howden and Amadeus Gabriel, 2014).

2.3. Empirical Literature Examining the Link between Inflation and Economic Growth

The existence and nature of the association between inflation and economic growth have largely been analyzed in economic literature. Accordingly, the empirical literature indicates that the inflation-growth nexus can be positive, negative or neutral. The focus of research made has been accomplished on an international level however there is a requirement to contextualize the current research in order to obtain the most appropriate policies and strategies.

Kormandi, R.C and Meguire, P.G., (1985) using data from a sample of 47 countries covering the period 1950-1977, it was observed that a 1% increase in inflation reduces economic growth by 0.57%.

Fischer, (1993) showed that a negative relationship existed between economic growth and inflation and budget deficits. He found that the causality is oriented of macroeconomic policies (such as inflation and deficits budget) towards economic growth. According to this study, inflation reduced growth, investment and productivity; public deficits reduce capital accumulation and increase productivity.

Mallik and Chowdhury, (2001) examined the short-run and long-run dynamics of the relationship between inflation and economic growth for four South Asian economies: Bangladesh, India, Pakistan, and Sri Lanka. Applying cointegration and error correction model they found a positive effect of inflation on growth and highlighted the importance of inflation in economic growth.

Erbaykal and Okuyan, (2008) examined the relationship between inflation and the economic growth in Turkey has been in the framework of data covering 1987:1-2006:2 periods. The existence of the long-term relationship between these two variables was examined using Bound Test developed by (Pesaran et al., 2001), and the existence of a cointegration relationship between the two series was detected following the test result.

Saaed, ((2007) analyzed the relationship between inflation and economic growth in Kuwait, using annual data set on real GDP and CPI for the period of 1985 to 2005. The estimated result of the relationship shows a long-run and strong inverse association between CPI and real GDP in Kuwait.

Wang Z., (2008) studied the relationship between inflation and economic growth in the context of the Chinese economy; he analyzed data using the co-integration model and the estimated results show that inflation and economic growth are positively related with more than three quarters lag.

Hossain, (2012) found that there is a long run relationship between inflation and economic growth in Bangladesh. He used VAR-Granger causality to check the causality association among the two variables. The co-integration test result showed that no co – incorporating the relationship between inflation and economic growth.

Ayyoup, (2011) used time-series data for the year of 1972-73 to 2009-10 to investigate the effect of inflation on GDP growth of Pakistan. He discovers the closeness correlation of inflation growth in Pakistan. By using the Ordinary Least Squares (OLS), he found a negative and significant relationship in inflation growth for the economy of Pakistan.

Denbel et al, (2006) studied the causal relationship between inflation and economic growth in Ethiopia. The Johansen cointegration test was conducted and the results indicated the existence of one cointegrating vector and the Vector Error Correction Model (VECM) demonstrate the presence of long-run unidirectional causality from economic growth to inflation.

Mubarik, (2005) estimated the threshold level of inflation for Pakistan. The test result indicates that above 9 percent threshold level of inflation, economic growth is affected negatively. But inflation below the estimated level is conductive for economic growth.

Rosemary Emike Idalu, (2015) analyzed the impact of inflation on economic growth in Nigeria from 1980 to 2013 using Johansen Cointegration Test and Vector Error Correction Model found a positive short-run relationship between inflation and economic growth.

Joseph L Shitundu and Eliab G Luvanda, (2000) used the Least Trimmed Squares (LTS) method to examine the effects of inflation on economic growth in Tanzania; the empirical results obtained suggest that inflation has been harmful to economic growth in Tanzania.

Tabi and Ondoa, (2011) explore the association between inflation and economic growth in Cameroon used annual time series data for the period 1960-2007and vector autoregressive model (VAR). the result shows that a rise in money supply promotes economic growth and furthermore inflation is not the main determinant of economic growth in Cameroon.

Li M., (2006) used annual data of 90 countries that are developing and 28 developed countries beside them, over the period of 1961-2004 in order to extract relevant evidence association between inflation and economic growth. According to Li, in this research, the evidence provided by the results revealed that the relationship between inflation and economic growth is non-linear not unlike capital productivity.

Gylfason and Tryggvi, (2001) as well as (Burdekin et al., 2004) have also shown that the negative effect of inflation on growth only occurs when the inflation rate exceeds 10 to 20% but below the level, there is no significant relationship between inflation and economic growth.

Ghosh and Phillips, (1998) investigated whether there is any robust relationship between inflation and economic growth using panel data 1960-1996 for 145 countries, used ordinary least square (OLS), two stage least square (2SLS). They found a statistically and economically significant negative relationship between inflation and economic growth. A positive relationship between the two variables was detected when inflation is ranged between 2-3 percent or below.

Khan and Senhadji, (2001) analyzed the impact of inflation on economic growth for 140 countries in the context of developing and industrial sectors using time series data over the period of 1960-1998. The research found a threshold rate of inflation above which inflation affects negatively economic growth, but under which the effect is insignificant and positive (1-3 for industrial countries and 11-12 for developing countries).

Ahmed and Mortaza, (2005) empirically analyzed the relationship between inflation and economic growth in Bangladesh, using annual data set 1980-2005. They applied ordinary least squares (OLS), cointegration test and error correction model (ECM). The result shows a statistically significant long-run negative relationship between inflation and economic growth. There is a threshold level (6 percent) above which inflation is harmful to economic growth but below this threshold level inflation has no impact on economic growth.

Munir and Mansur, (2009) study the threshold of inflation in Malaysian economy used time series data for the period 1970-2005 and applied threshold autoregressive (TAR). They found that 3.89 percent as the threshold level of inflation for the Malaysian economy. Inflation rate above 3.89 is harmful to economic growth but inflation rate below it expand economic growth.

John et al., (2011) investigate the existence of a threshold level of inflation in India. Quarterly data were used Q1:1996-1997 to Q3:2010-11. Conditional least squares (NLLS), ordinary least squares (OLS) and logistic smooth transition regression (LSTR) were applied and they found threshold is between 4 and 5.5 percent above which inflation obstruct economic growth but below it, inflation has a positive effect on economic growth.

Veni and Choudhury, (2007) analyzed the relationship between inflation and economic growth in India economy, time series data were used for the period 1981-2004 and cointegration and Granger causality test were applied in this study. They found that there is no cointegration between inflation and economic growth also there is no causality between inflation and economic growth which means that there is autonomous between variables.

Sidrauski, (1967) presents changes in the rate of money growth and inflation have no effects on steady-state capital and output. Hence inflation has no relationship with growth in the long run.

Table 2.1. *Summary of empirical literature review*

Variables	Model	Findings	Authors
Inflation, Growth and Deficits budget	Granger Causality	There is a negative relationship and unidirectional running from inflation to economic growth	Fisher, (1993)
Consumer price index, Growth	VAR	There is a negative long-run relationship	Saaed (2007)
Inflation, economic growth	LTS	Inflation has a negative effect on economic growth	Joseph L and Eliab G Luvanda, (2000)
Inflation, Growth	OLS	Inflation has a negative impact on economic growth	Ayyoub, (2011)

Inflation, Growth	Cointegration Test	There is a positive relationship between inflation and growth	Wang. Z, (2008)
Inflation, economic growth	Cointegration, Error Correction Model	There is a long run positive effect of inflation on economic growth	Malik and Chowdhury, (2001)
Inflation and economic growth	VECM	Positive short-run relationship	Rosemary Emike Idalu, (2015)
Inflation, Growth	VECM	Long run causality running from economic growth to inflation	Denbel et al, (2016)
Inflation, Growth	VAR	There is a long run relationship running from inflation to growth	Hossain, (2012)
Inflation and economic growth	Bound Test	There is a long-run relationship between inflation and growth	Erbaykal and Okuyan, (2008)
Inflation, money and economic growth	VAR	A rise in money supply boosts economic growth, inflation is not the main determinant	Tabi and Ondoa, (2011)
Inflation and growth	OLS and 2SLS	A statistically and economically significant negative relationship between inflation and economic growth A positive relationship between the two variables was detected is between 2-3 or below	Ghosh and Phillips, (2008)
Inflation and growth	Conditional least squares	Threshold level of inflation above which inflation inhibits economic growth 1-3 for industrial countries and 11-12 for developing countries	Khan and Senhadji, (2001)

Inflation and economic growth	OLS, cointegration test and ECM	Statistically significant long-run negative linkage between inflation and economic growth Threshold level is 6 percent above which inflation hurts economic growth but below this threshold level inflation has no impact on economic growth	Ahmet and Mortaza, (2005)
Inflation and economic growth	Threshold Autoregressive	3.89 as threshold level of inflation of the Malaysian economy. Inflation rate above 3.89 is harmful to economic growth but inflation rate below it boosts economic growth	Munir and Mansur, (2009)

2.4. Empirical Implications about Inflation and Economic Growth in Burundi

Conclusions can be drawn from the established literature that the interaction between inflation and economic growth is aggravated by money supply. There is a recurrent need to use money supply as a regulatory tool to manage economic outcomes. However, wide literature which investigates the interplay between economic growth and inflation outlines two different features. That is the existence of threshold effects that are related to certain rates of inflation below which a unilateral relationship can be detected between inflation and economic growth. This signifies that an increase in economic growth results simultaneously to a lower level of inflation. The second feature clarifies that unsustainable rates of inflation are harmful to economic improvement and therefore need to be contained. It can moreover be said that inflationary impacts on economic growth expose variations in line with existing economic activities in a country. Differences appeared mostly when there is a gap between the level of economic activities and development from a country to another. Expectations can, however, be given that inflation in Burundi will respond accordingly to changes in economic activities that occur. Including that the level of economic growth is a major key in Burundi economy in constraining and addressing inflation related challenges. Hence, we can confirm that the bigger the level of economic activities that are

prevailing in Burundi the bigger the power to slow down inflation. This study will try to examine the magnitude to which economic growth reacts to changes in inflation. This means that the inter-association between economic growth and inflation is related to a level of responsiveness, that is, elasticities.

In conclusion, expectations are that economic activities in Burundi reflect the capability of the Burundi monetary authorities to hold back inflationary issues. A threshold inflation rate is anticipated, and we waited for the responsiveness of economic growth to changes in inflation to be inelastic.

2.5. Inflation, Growth and Central Banks

The most widely accepted basic notion on inflation is that it is a monetary phenomenon; hence the reduction of inflation is largely the purview of monetary policy. Based on the quantity theory of money, inflation is determined solely by the change in the relative supply of money and goods. The economic and financial situation of a country is largely based on the monetary policy being implemented by the Central Bank of that country. Sustainable economic growth requires that the inflation rate not to surpass the economic growth rate.

The evidence indicates that indeed inflation has a negative effect on growth, and it is mainly due to a reduction in the productivity of investment. Although high inflations are shown to be the most harmful for growth, it is found that even in low inflation, industrialized countries have a negative relationship between inflation and growth.

A key role of a central bank is to conduct monetary policy to achieve price stability (low and stable inflation) and to help manage economic fluctuations. The policy frameworks within which central banks operate emerged as the leading framework for monetary policy. Central banks in developed countries have introduced an explicit inflation target. Many low-income countries are also making a transition from targeting a monetary aggregate (a measure of the volume of money in circulation) to an inflation targeting framework. Central banks conduct monetary policy by adjusting the supply of money, generally through open market operations. For instance, a central bank may purchase government debt from commercial banks and thereby increase the money supply (a technique called “monetary easing”). The purpose of open market operations is to steer short-term interest rates, which in turn influence longer-term rates and overall economic activity. In many countries, especially low-income countries, the monetary transmission

mechanism is not as effective as it is in advanced economies. Before moving from monetary to inflation targeting, countries should develop a framework to enable the central bank to target short-term interest rates (IMF, Factsheet, 2018).

Establishing an independent central bank is an effective tool to reduce inflation if the public perceives that the central bank is tough against inflation. It is shown that moving from a fully dependent central bank to an independent central bank with more emphasis on fighting inflation than societies would like is welfare increasing. But when the central bank puts excessive weight on reducing inflation it may induce excessive output fluctuations and inefficiencies on fiscal policy. It is fair to say, however, that the bulk of the evidence suggests that central bank independence produces lower inflation at no real costs.

2.6. Sustainable Level of Inflation and Economic Growth

Despite the consensus that inflation presents detrimental effects on the economy, there is a level of inflation that can be maintained at a certain level and does not present harmful effects on economic growth. Questions about what level of inflation is noxious to growth depend on whether the relationship between economic growth and inflation is a short or long run. There are various assertations about the association between inflation and economic growth. For instance, some findings uphold the linear linkage between inflation and economic growth which is either positive (Sattarov, 2011), negative (Harris et al., 2001) or neutral (wai, 1959). On the other hand, some studies support that the association between the two variables is non-linear. Sarel, (1996) agreed that the inflation rate above a certain threshold level is detrimental to economic growth but moderate inflation rate has no insignificant effects on economic growth. He suggests that reducing inflation produces necessary benefits which are reflected by rising in output. Furthermore, the nonlinear linkage between inflation and economic growth has proved that threshold level is greater for developing countries than industrialized countries (Kremer et al., 2012); this argument

corroborates with the structuralists theory of inflation which says that inflation is necessary for growth in developing countries.

2.7. Measurement of Key Concepts

This section focuses on examining the accurate ways and mechanics of studying inflation and economic growth, to see if there is a link between them and provide an effective technique to measure these variables, it is important we ought to consider some notes on economic growth and inflation then connect them theoretically to one another.

The consumer price index (CPI) measures the rate at which the prices of consumer goods and services are changing over time. It is a key statistic for economic and social policymaking and has substantial and wide-ranging implications for governments, businesses, and households (International Monetary Fund, 2004).

A CPI measures the rate of price inflation as experienced and perceived by households in their role as consumers, it is also widely used as a proxy for a general index of inflation for the economy, partly because of the frequency and timeliness with which it is produced. It has become a key statistic for purposes of economic policymaking, especially monetary policy. It is often specified in legislation and in a wide variety of private contracts as the appropriate measure of inflation for the purposes of adjusting payments (such as wages, rents, interest and social security benefits) for the effects of inflation. It investigates have substantial and wide-ranging financial implications for governments and businesses, as well as for households. Calculating a CPI cannot be reduced to a simple set of rules or standard set of procedures that can be mechanically followed in all circumstances. While there are certain general principles that may be universally applicable, the procedures followed in practice. Whether they concern the collection or processing of the prices or the methods of aggregation, must take account of circumstances. These include the main use of the index, the nature of markets and pricing practices within the country, and the resources available to the statistical office (International Labour Office, 2004).

Van der Walt, (1985) states that inflation may be described as a sustained rise in the general price level. Inflation is, therefore, reflected in a general and widely diffused increase in the prices of goods and services in the economy. It can be measured by using the gross domestic product deflator and CPI. However, the GDP deflator is harder to calculate than the CPI and hence is often

considered a less reliable measure of inflation. To measure inflation, we consider three methods, The Consumer Price Index [CPI], Gross Domestic Product [GDP] implicit deflator and the Wholesale or Producer Price Index [WPI or PPI].

Economic growth is a complex, long-run phenomenon, subjected to constraints like the excessive rise of population, limited resources, inadequate infrastructure, inefficient utilization of resources, excessive governmental intervention, institutional and cultural models that make the increase difficult.

Economic growth is obtained by efficient use of the available resources and by increasing the capacity of production of a country. It facilitates the redistribution of incomes between population and society. The cumulative effects, the small differences in the increase rates, become big for periods of one decade or more. It is easier to redistribute the income in a dynamic, growing society, than in a static one.

Economic growth is a sustained increase, over a significant period, in the quantity of material goods and services produced in an economy of a country or an area. It can be measured using Real GDP Per Capita and Real GDP.

CHAPTER THREE

GENERAL OVERVIEW OF BURUNDIAN ECONOMY

3.1 The Burundian Macroeconomic Environment Outlook

Burundi, a country in east-central Africa, between Tanzania to the East, the Democratic of Republic of Congo to the West and Rwanda to the North.

Fig 3.1. *Encyclopedia Britannica, Inc, 2012*

Burundi has a population of about 11 million people spread over 27834km^2. Small and landlocked, Burundi is one of the poorest countries in the world: close to 74.7% of its population

of 10.8 million live below the poverty line. It is also the second most densely populated country in Africa with about 470 inhabitants per square kilometer. Burundi's economy is heavily reliant on the agriculture sector which, despite the extreme paucity arable land, poverty overwhelmingly affects small rural farmers (Burundi Overview, World Bank, 2018).

With the 7th highest fertility rates in the world, Burundi faces a large youth bulge. Almost half of the population is below the age of 15 and the working-age population accounted for only slightly more than half (52.7 percent) of the total population in 2015. Despite its high population density, Burundi is the least urbanized country in Sub-Sahara Africa (SSA) with only 12 percent of the population residing in urban areas in 2014. However, the urban population is growing fast, and the share of the urban population is projected to double by 2050 (World Bank, Report No 122549-BI, 2018).

Overall, many recent economic reforms have not been usefully completed. Its landlocked position and lack of infrastructure restrict the transportation of goods and services. Energy demand highly exceeds the capacity of supply and rolling blackouts are frequent. Years of civil war resulted in a brain drain, therefore insufficient of skilled labor limits growth in all sectors.

A resource-poor country with an underdeveloped manufacturing sector, agriculture accounts for 40% of GDP and employs more than 90% of the population. Burundi's primary exports are coffee and tea, which account for more than half of foreign exchange earnings. Thus, Burundi's export earnings and its ability to pay for imports rest primarily on favorable weather conditions and international coffee and tea prices, although exports are a relatively small share of GDP. Burundi is heavily dependent on aid from bilateral and multilateral donors. Foreign aid represented 48% of Burundi's national income in 2015. Real GDP growth dropped precipitously following political events in 2015 and has yet to recover to pre-conflict levels. Continued isolation by donors and the international community will restrict Burundi's economic growth as the country deals with a large current account deficit. The 1993-2005 civil war resulted in more than 200.000 deaths, forced more than 48.000 refugees into Tanzania, and displaced 140.000 others internally. Political stability, aid flows, and economic activity improved following the war's end, but underlying weaknesses, low governmental capacity, a high poverty rate, poor educational levels, a weak legal system, a poor transportation network, and overburdened utilities have prevented the implementation of planned economic reforms. Government corruption has also hindered the

development of a private sector. The purchasing power of most Burundians has decreased as wage increases have not kept pace with inflation (CIA World Factbook, Burundi Economy, 2018).

Burundi is gradually recovering from a deep socio-political crisis, which has destroyed the productive fabric of its economy. The economy remains fragile, because of its strong dependence on the primary sector in terms of contribution to GDP (40%). GDP per capita was US $ 215 in 2012, compared to US $ 286 before the 1993 crisis. Burundi has made progress in improving its basic education system and is preparing to launch extensive reforms that extend primary schooling, as outlined in the Millennium Development Goals. The reforms will strengthen human capital over the medium and long term. The country is also likely to benefit from modest increases in international prices for tea and coffee, which account for over 80% of exports. Debts relief for 75% of the government's foreign debt under the heavily indebted Poor Countries Initiative will help bolster the economy by stabilizing the foreign debt. Finally, although the country has found itself increasingly isolated on the international political stage, Burundi joined the East African Community (EAC) in 2009 and will continue to benefit from economic integration with the East African Community and the African Union (African Development Bank Group, African Economic Outlook, Burundi, 2018).

3.2. Economic Growth Patterns in Burundi

Burundi is one of the poorest countries and with lowest level income in the world due to its economic and social development patterns. The country has virtually no service or manufacture industry and over 90 percent of the population relies on agriculture. Burundi's economy is highly dependent on foreign aid at the rate of 50 percent of the government budget. In recent years, the government has been working with international organizations on purpose to eradicate corruption, to address bureaucracy, lack of security and basic infrastructure, poor education and healthcare system. As a result, Burundi has succeeded to attract foreign direct investments to its coffee and tea industries sectors which are expected to drive the growth.

The Government of Burundi seeks to attract more foreign investment. However, inexpert fiscal governance and corruption limit foreign direct investment (FDI). The 2013 IMF estimate for FDI inflow in Burundi was USD 68 million. Since 2008, members of the executive branch have granted large discretionary exemptions to private foreign companies by presidential decree or ministerial ordinance in order to attract FDI. These direct government-to-company agreements

undermine the Burundian tax law and the investment code. Following the recommendations of IMF however, significant efforts have been made to curb these discretionary exemptions. In addition to reducing revenues for the state, these exemptions injure private companies already operating in Burundi by grating advantages to select competitors. Conversely, over the last year, both the telecommunications and mining sectors have been subject to large increases in taxation, also by presidential decree or mistrial ordinance, that have reduced profits and discourage investors. In some cases, the revenues from the new taxes were managed outside of the official government budget. Corrupt is suspected (U.S. Department of State, Burundi investment climate statement, 2015).

3.2.1. The Changing Pattern of Economic Growth

Agriculture is the economic mainstay of the country with industrial activities accounting for less than one –fourth of the gross domestic product. Coffee, chiefly Arabica is the principal export crop and source of foreign exchange cash crops of lesser importance include cotton and tea (Ellen Kahan Eggers and Renee Lemarchand, 1997).

The industrial and commercial strategy of Burundi was devised in 2011, emphasizing enhanced competitiveness and an improved business environment. To achieve this, it engaged in an ambitious reform program: the establishment of an investment agency; reform of chamber of commerce and industry; establishment of one-stop for business creation or customs procedures. These ambitions reforms led to significant advances, illustrated by the World Bank ranking of ease of doing business, in which Burundi climbed from 109th place in 2007 for business creation to eighteenth place in the world in the 2017 ranking. Nevertheless, Burundi still occupies the 157th place in the global ranking behind Rwanda (fifty-sixth) but ahead of the Democratic Republic of Congo (184th). The main problems continue to be accessed to credit and electricity supply.

In fact, Burundi identified three priority sectors for the development of its trade strategy: agribusiness (justified by the size of the agricultural sector), tourism (Burundi, which has many tourist attractions, is keen to benefit from the regional stimulus) and the mining sector. For the latter, the establishment of a new mining code in 2013 as well as a mining policy by the Ministry of Energy and Mines in 2014 was designed to develop the potential offered by mineral resources, particularly gold, nickel and cassiterite, to contribute to the diversification of the economy and exports. The main lines of the strategy proposed to enhance the regulation of the sector by

combating illegal exploitations; they also aimed to attract investors by developing hydroelectric energy facilities and means of transport (Economic Commission for Africa, Burundi, 2016).

The following section will trace economic development in Burundi starting with the colonial era to the post-independence developments and recent trends.

3.2.2. The Colonial Development

Before independence, Burundi's economy was integrated with those of Rwanda and Congo, the three Belgian colonies using Bujumbura as the industrial base serving Burundi, Rwanda and Eastern Congo. There are little industry and development is slow because of a lack of trained workers and little investment (Janvier D. Nkurunziza and Floribert Ngaruko, 2005).

Regarding the sequence of the economic effect of colonization strategies proposed by Acemoglu et. al, it can be noticed, that the Belgian encouraged and applied extractive colonization methods in Congo, Rwanda and Burundi. Extractive colonialism produced institutions that did not provide checks and balances against the government or the protection of property rights. The property rights of the European settlers were in most cases quite secure, but most of the African population did not enjoy the same rights, which prevented their participation in many economic activities (Acemoglu and Robinson, 2001).

Colonialism restricts the Belgian colonies, Congo, Rwanda and Burundi included the production of primary goods for export. Furthermore, the colonies were totally dependent upon the European powers industries and the local retail markets were increasingly submerged with a variety of expensive foreign goods. A little progress was achieved in the economy, but it couldn't help the natives to boost their living standards, seeing as they consumed what they did not produce, and they produced what they did not consume.

Coffee, which was introduced to the area in 1930, is the main cash crop accounting for 80 percent of foreign revenue. This leaves the economy vulnerable to variations in weather and to fluctuations in the international coffee market. After the Second World War, the Belgians continued to run the economy to their own advantage. Goods were exported via Belgian colonies on the Atlantic seaboard. Belgium nor other western nations planned to develop Burundi (Wolbers. Marian F, 1989).

3.2.3. The failure of Post-Independence Developments

Since independence, it has been caught in a multidimensional fragility trap that has considerably limited its economic development and progress with improving the living standards of the population. The most well-known aspect of this fragility is the high degree of political instability and violence which are endemic to the country. Political fragility has hampered efforts to strengthen the country's economic resilience on foreign aid. More recently, years of political and economic fragility, combined with growing population density are beginning to leave their mark on the environment, leading to a third important aspect of fragility: environmental (World Bank, Report No 122549-BI, 2018).

Burundi gained its independence in 1962, as economic independence was thought to give teeth to political independence; disintegration of the common market was damaging to Burundi's economy. After the Belgians left Burundi, firm capacity utilization dropped at the bottom to about 25-50 percent in 1962-1963. Most of the factors explaining economic decline during this period were a consequence of the loss of qualified manpower in addition to the loss of the Rwandese and Eastern Congolese markets. Hence, the following period of independence (1960-1972) is characterized by diverse crisis politico-ethnic resulting in economic decline. On the other side in the next period from 1972 to 1988, relative calm was observed on the political front; the country embarked on a massive program of investment financed mostly by foreign resources, in addition, to increase export revenue following the coffee boom. Although, per capita GDP increased the cost was massive borrowing and alarming inefficiencies. The last period from 1988 to date is characterized by war, embargo, unprecedented economic crisis and peace agreements. As a result, the economy was shaken, both government and economy agents attempted to import and export products illegally, criminalizing economic activity. The Burundi franc plummeted, and inflation reached levels never seen before. Burundi recorded its highest levels of poverty and corruption reached new heights. With peace agreements, the country recovered a relative calm and the economy started to flourish at a lower level but still in shambles (F. Ngaruko and Janvier D. Nkurunziza, 2005).

3.2.4 Recent Trends, Developments and Prospects

The Gross Domestic Product (GDP) in Burundi expanded 2.80 percent in 2017 from the previous year. GDP Annual Growth Rate in Burundi average 2.72 percent from 1961 until 2017, reaching an all-time high of 21.33 percent in 1970 and a record low of -13.75 percent in 1961.

Fig 3.2. *Annual GDP Growth Rate (BANK OF BURUNDI)*

Burundi has a poorly diversified economy, which, in the context of a sluggish international economic climate, resulted in a growth of 4.6%, below initial projections of 5.2%. This performance reflects the fragility of an economy that, despite reforms, must deal with various constraints, including low investment, high production costs combined with low-skilled labor, and an unattractive business environment. In addition to the structural weaknesses, the economy is also hit by the consequences of climate change, low levels of production and volatile world coffee prices. Growth in 2013 was driven by the secondary sector (16% of GDP) and tertiary sector (45% of GDP). Secondary-sector growth accelerated from 8.0% in 2012 to 9.5% in 2013, while tertiary-sector growth accelerated from 3.0% to 4.1% over the same period. Growth in the primary sector (39% of GDP), however, fell from 5.2% to 3.9%. The average weighted index for industrial production increased by 4.3%, thanks mainly to the food (+3.8%), chemicals (+9.3%) and building materials (+47.7%) sectors. The main cause of the primary sector's decline was the fall in coffee production, which was a victim of the cyclical nature of the coffee harvest. Green-coffee production in the 2013/14 season contracted by 42.5% compared to the previous season, falling

from 23775 to 13677 tons. Dry-tea production, on the other hand, grew by 1.4% from 9040 to 9164 tons. Food-crop production also increased by 3.5%. On the demand side, gross capital formation increased by 8.4% in 2013. Overall, however, the external sector made a negative contribution of 0.5% to growth due to low coffee production in 2013. The macroeconomic outlook remains precarious and depends largely on the external economic climate. Nevertheless, the authorities are projecting 5.2% growth in 2014 (slightly more optimistic than the IMF's projection of 4.07% growth), based on 6.8% growth in the primary sector and 10.5% growth in the secondary sector, and despite a 2.8% contraction in the tertiary sector. These projections assume a recovery in agriculture through implementation of the government's agricultural investment program, the development of agro-industry, and the start of mining operations, particularly for nickel and coltan. The tertiary sector will be boosted using fiber-optics and investment in the telecommunications and tourism sectors, which should have a positive effect on growth.in addition, the commitments for an estimated USD 2.6 billion made by donors in October 2012 support these assumptions. The IMF also predicts a fall in world food and oil prices to reduce inflation to around 6%, which it says could stabilize the exchange rate between the Burundian franc and the US dollar, boosting domestic demand (Sibaye, J. T., and Daniel, G., 2014).

The main threat to medium-term growth is the economy's high sensitivity to the vagaries of the weather. Instability in the east of Democratic Republic of Congo (DRC) could also prove to be a destabilizing factor, while the uncertain international climate could stem the flow of foreign aid. Finally, lower tax revenue because of the new income-tax law and pre-election spending pressures could renew tensions in the fiscal position and increase borrowing from the Bank of Republic of Burundi (BRB), the country's central bank (Economic prospects in Africa, Burundi, 2014).

3.3. Burundian's Inflation Experience

Inflation, as measured by the consumer price index, reflects the annual percentage change in the cost to the average consumer of acquiring a basket of goods and services that may be fixed or changed at specified intervals, such as yearly. The Lapsers formula is generally used.

The causes of inflation come from external and internal factors. External factors are consistent with international and regional developments as well as the challenges of the Burundian financial stability stemming from global developments, notably the decline in coffee prices, the

depreciation of the national currency against foreign currencies and moderate economic growth in main trading partner countries of Burundi, which influences the level of inflation in Burundi.

As internal factors, we notice economic growth, inflation rate, the balance of payment, budget deficit, public debt, the exchange rate. They are related to the macroeconomic environment in the country which plays a key role in determining the level of inflation. Our attention will be focused on internal factor namely: inflation rate.

In Burundi, the level of prices of foods influences the level of inflation. And we notice that the causes are various; agriculture shows a deficit of 30% that is not filled and 35% of households have no cultivable land. Another no meaningless problem is the lack of foreign currency and a higher level of foreign exchange cost. In addition, the budget deficit leads to the increase in taxes on the products of first necessity and this has repercussions on the standard of living of the population. As well as the budget does not promote economic growth, the tendency is to broaden the base tax. In order to finance the budget deficit, advances from the Central Bank are used fluently. However, this situation influences the increase in the money supply in the context of stagnation of production. This could create the depreciation of our currency (BIF) against foreign currencies and domestic production.

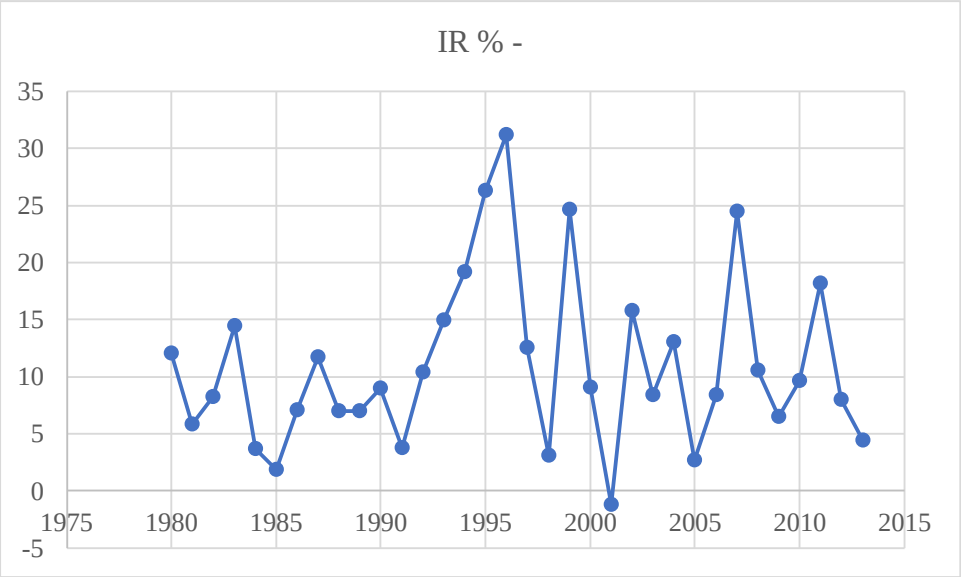

Fig 3.3. *Inflation rate in Burundi from 1980 to 2014 (Source: Researcher's own computation based on BRB data)*

With higher inflation rates in 2007 (24.5%) and in 2008 (10.5%), inflation has been gradually brought under control in 2009 (6.5%). The first six months of 2009 have been marked

by a lowering of prices since June 2008, thus announcing the end of the price rises experienced in Burundi. After reaching a ceiling of 819 points, the consumer price index stabilized at around 810. The year-on-year inflation rate fell to 7.6% in June and to 5.6% in August, its lowest level in two years and considerably lower than the 28.6% of a year earlier. The objective of reaching the inflation level targeted by the government has thus been broadly achieved (World Bank, Republic of Burundi, Macroeconomic framework, 2010).

In the medium term, annual inflation is predicted to fall gradually to about 5.5% in 2012. However, Inflation stood at 8.3 % at the beginning of 2011, before reaching a peak of 13.3 % at the end of the last quarter of 2011. This drastic rise was due to a rapid increase in the cost of foodstuffs and fuel (African Economic Outlook, Burundi, 2012).

Furthermore, (IMF country reports 14/293) shows that inflation dropped sharply from 12 percent year-on-year at end 2012 and 9 percent at the end 2013, and then 3.5 at the end May 2014, driven by favorable development in international petroleum products and food prices, (and resumption of agricultural production).

3.4. Inflation vs Economic Growth in Burundi

In Burundi's economic policies three different periods can be distinguished. The period of (1980-1993), inflation has insignificantly impacted economic growth because the inflation over the years was stable; within a record below 10 percent most of the years under this period.

Second period (1994-2009) the inflation was unstable and so volatile over this period; registered inflation was in excess above 10 percent in 10years over 15years.

The last period (2010-2014), drop-in inflation was manifested in the years 2010, 2011, 2013, 2014 and inflation was recorded less than 10 percent.

Regarding the three-period mentioned above, economic growth overall was low level and slowdown by a volatile political and economic environment. Meanwhile, some of the years (1981, 1985) recorded a growth of GDP over 10 percent counter to the period between (1993-1997), economic growth in Burundi was extremely bad with a negative record in growth of GDP.

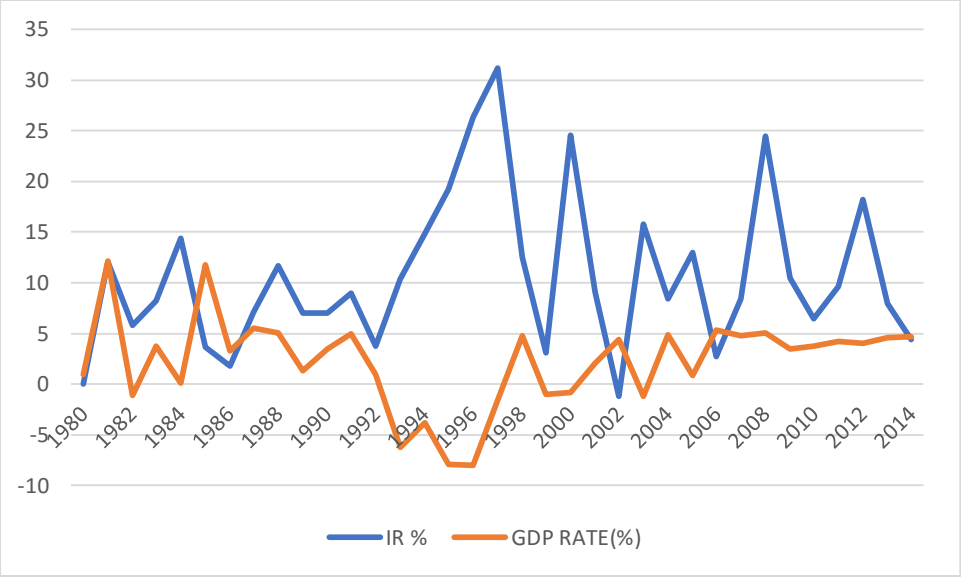

Fig 3.4. *Evolution of inflation rate and growth rate 1980-2014 (Source: Researcher's own computation)*

The two graphs show an opposite evolution over the period of study except for the period (1981-1983), therefore when inflation rate goes up growth rate goes down and vice versa.

3.5. Burundi's Economic Policies and Strategies

The Bank of the Republic of Burundi (BRB)'s main objective is to maintain price stability and to contribute towards the stability of the country's financial system. The economic intelligence unit (EIU) predicts that BRB will maintain a restrictive policy stance despite a weakness in economic activity to contain inflation and reduce excessive exchange rate volatility (Economic Outlook, Burundi, 2016).

Burundi's revenue-collection office, the OBR (Office Burundais des Recettes), has continued with reforms aimed at broadening the tax base and increasing the efficiency of tax collection. The measures taken have included restoring the food and oil tax eliminating exemptions on all public contracts (African Economic outlook, Burundi, 2014).

Between 2005 and 2014, a stable growth rate of about 4.5 percent, although lower than the regional average, had allowed Burundi to start achieving good results in macroeconomic policy and the fight against poverty. Structural reforms had been launched for this purpose. They were part of the strategic development program "Vision 2025" (Republic of Burundi, 2011), whose goal

to reduce poverty by half, estimated in 2011 at 67 percent and promote accelerated economic growth at least 10%.

This growth will be vitalized by the dynamic of a varied and competitive productive sector both in domestic and foreign terms. This will be contingent on part on the modernized and industrialized agricultural sector in order to raise productivity and establish the processing and marketing of agricultural products. Additionally, the sectors that instigate growth such as services in general, new communication, technologies, and tourism in particular, mines, industry and the industries of transformation and conservation, will be developed. These activities will facilitate Burundi to compete in the sub-regional market. This growth would not be achievable without the contribution of the private sector as an engine of development. In order to harness this contribution, the Government will establish the reforms necessary to promote an attractive business climate. Moreover, this growth will be sustained by the implementation of an important and efficient infrastructure without which such growth would not be feasible (UNDP, Complete vision Burundi 2025, 2011).

Nevertheless, these encouraging results were not enough to achieve the goals of alleviation and rapid reduction of poverty which still affected 64.6 percent of the population in 2014 compared with 67.1 percent in 2006. This was since the growth rate over the last decade, although steady, was too low to achieve the country's development goals. Moreover, Burundi faced many obstacles which called for more extensive structural reforms. Although "vision 2025" is still the strategic document for action by the Government, the achievement of its goals seems to be severely compromised by the current sociopolitical crisis (United Nations, Economic Commission for Africa, Country Profile, Burundi, 2016).

The Finance Ministry and the Central Bank have agreed to coordinate their fiscal and monetary policies to reach the target rate of inflation, improve the cash resource predictions of the BRB, and ensure the absorption of foreign aid funds through appropriate foreign exchange tenders. In addition, the BRB has committed itself to strengthening banking supervision to minimize risks linked to the financial sector. The minimum amount of capital required by commercial banks has been raised to 5 billion (Republic of Burundi, Economic Framework, 2012).

CHAPTER FOUR

RESEARCH METHODOLOGY

4.1. Introduction

This chapter deals with econometric procedures that will be undertaken to establish the relationship between economic growth and inflation. As such, will cover stationarity tests, co-integration, error correction model, Granger Causality Test.

4.2. Model Specification

The study will adopt the use of time series data generated annually from Burundi from 1980-2014. The data used in the estimation process was gotten from Central Bank of Burundi, International Monetary Funds and World Bank.

To analyze these data series, prior we perform the various test for stationarity of the series and then check for the theory of co-integration and Error Correction Model to observe the extent to which inflation is related to economic growth and vice-versa.

The study will employ a model by (Ahmed and Mortaza, 2005) which was applied to analyze growth-inflation relationship while using the data of real GDP and consumer price index of Bangladesh economy. (Ahmed and Mortaza, 2005) used refined time series econometric techniques to ascertain if a long run relationship exists between economic growth and inflation. They observed that a significant and negative relationship between the two variables have been evident for long time period. The primary model by (Ahmed and Mortaza, 2005) showing the linkage between economic growth and inflation is expressed as follow:

$$\mathbf{GDP = \beta 0 + \beta 1 CPI + \mu} \qquad \mathbf{(1)}$$

Where,

GDP = Gross domestic product

CPI = Consumer price index

μ= error term

Burundi's monetary policy stays focused on price stabilization. The Central Bank (Bank of the Republic of Burundi- BRB) main objective is to keep the growth of the money supply within boundaries compatible with economic activity. This study therefore incorporates these elements to establish their impact on the relationship between inflation and economic growth.

Thus, the mathematical form of my model of analysis will be the following: RGDP (t) = f (CPI (t), M2(t), DUMMY(t), e (t)) where these variables denote the real GDP of period t, the consumer price index of the period t, the money supply of period t, dummy of period t and the term of errors.

After transformation, the linear form of the model is as follows:

$$\mathbf{RGDP\ (t) = \beta_0 + \beta_1 CPI(t) + \beta_2 M2\ (t) + \beta_3 DUMMY(t) + e(t)} \quad \mathbf{(2)}$$

β_0 = constant ;

β_1, β_2, β_3 = coefficients of the independent variables; e= error term.

The study will also attempt to find out the responsiveness of economic growth to a change in both exogenous variables. Such responsiveness is described as elasticity, and this is important in ascertaining the responsiveness of economic growth to a change in inflation. Hence, converting the data to logs helps to deal with the problem of heteroscedasticity. There the model can be written as follow:

$$\mathbf{LRGDP\ (t) = \beta_0 + \beta_1 LCPI(t) + \beta_2 LM2\ (t) + \beta_3 DUMMY(t) + e(t)} \quad \mathbf{(3)}$$

4.3. Stationarity Tests

The terms non- stationary and stationary form a fundamental part of time series econometric analysis. A stationary time series refers to data whose statistical properties remain unchanged over time regardless of the change in time (Fielitz, 1971). Investigating time series data for obtaining significant properties of these time series will be meaningless if the data are non-stationary or cannot be transformed to be stationary. Using non-stationary time series in regression analysis can lead to spurious regression (Asteriou and Hall, 2007) with a high R square and the coefficients are related to high t-statistics as well.

Dickey and Fuller (1979, 1981) developed a procedure for testing non-stationarity based on the presence of a unit root. This procedure has become known as the Dickey-Fuller test (DF) for unit roots (Asteriou et al., 2007). There is also an extension of the Dickey-Fuller (DF) test called the augmented Dickey-Fuller test (ADF), which removes all the structural effects (autocorrelation) in the time series and then tests using the same procedure.

To allow for the various possibilities, the DF test is estimated in three different forms, that is under three different null hypotheses.

Yt is a random walk: $Yt = \delta Yt{-}1 + ut$ (1)

Yt is a random walk with drift: $Yt = \beta 1 + \delta Yt{-}1 + ut$ (2)

Yt is a random walk with drift around a stochastic trend: $Yt = \beta 1 + \beta 2t + \delta Yt{-}1 + ut$ (3)

In conducting the DF test as in (1), (2), or (3), it was assumed that the error term ut was uncorrelated. But in case thru t are correlated, Dickey and Fuller have developed a test, known as the augmented Dickey- Fuller (ADF) test. This test is conducted by 'augmenting' the preceding three equations by adding the lagged values of the dependent variables Yt. To be specific, suppose we use (3). The ADF test here consists of estimating the following regression:

$$\Delta Y\ t = \beta\ 1 + \beta\ 2 + \delta\ Y\ t\text{-}1 + \sum \alpha i\ \Delta Yt\text{-}i + \varepsilon t \quad (4)$$

Where εt is the pure white noise error term and i is the current period. Thus, changes in the variables at lag 1 and 2 are determined as follow;

$\Delta Yt{-}1 = (Yt{-}1 - Yt{-}2)$ (5)

$\Delta Yt{-}2 = (Yt{-}2 - Yt{-}3)$ (6)

An important assumption of the DF test is that the error terms Ut are independently and identically distributed. The ADF test adjusts the DF TEST to take care of possible serial correlation in the error terms by adding the lagged difference terms of the regressand. Phillips and Perron use nonparametric statistical methods to take care of the serial correlation in the error terms without adding lagged difference terms (Gujarati, 2004).

4.4. Co-integration

The notion behind the use of co-integration test seeks to analyze if a long-run association exists between the variables. Co-integration tests are undertaken using the approach of ENGEL and GRANGER (1987) based on the residue analysis. In principle, co-integration tests based on residue analysis approximate the simple test of unit root.

First, consider two time series, X_{1t} and X_{2t} which both are I (1), both series contain a unit root. If these two series cointegrate then there will exist coefficients, μ and $\beta 2$ such that:

$$X_{1t} = \mu + \beta 2 x_{2t} + \mu t \quad (7)$$

Will define an equilibrium. In order to test for cointegration using the Engle-Granger 2 step approach, we would

1) Test the series, X_{1t} and X_{2t} for unit roots. İf both are I (1) then proceed to step 2,
2) Run the above defined regression equation and save the residuals. İ defines a new error correction term, $u_t = ecm_t$
3) Test the residuals (ecm_t) for a unit root. Note that this test is the same as a test for no-cointegration since under the null-hypothesis the residuals are not stationary. İf however there is cointegration than the residuals should be stationary.

4.5. Error Correction Model

The cointegration regression so far considers only the long-run property of the model and does not deal with the short-run dynamics explicitly. Clearly, a good time series modeling should describe both short-run dynamics and the long-run equilibrium simultaneously. For this purpose, we now develop an error correction model (ECM). Although ECM has been popularized after Engle and Granger. Using the error correction model (VECM) the process of adjustment is defined with the error correction term (ECT).

If all variables in the system are ~I (1), and they cointegrate in the long run, then we define the error correction model by:

$$\Delta Yt = \beta 1 \Delta Xt - \beta 2 (Yt-1 - \beta Xt-1) + \mu_t$$

The ($Yt-1 - \beta Xt-1$) component of the equation describes the long-run adjustment of the system and $\beta 2$ is the estimator for the error correction term (ECT)

(Asteriou and Hall, 2011) state that when co-integration exists between two or more variables, the residuals obtained from the ordinary least square's regression can be applied to estimate the error correction model and examine the effects of the variables in the long run and short run and therefore understand how the coefficient of the lagged residual terms adjusts periodically.

4.6. Granger Causality

Granger causality is one of the earliest methods developed to quantify the temporal causal effect among times series. It is based on the common conception that the cause usually occurs prior to its effect. Formally, X Granger causes Y if its past value can help to predict the future value of Y beyond what could have been done with the past value of Y only. It has gained tremendous success across many domains due to its simplicity, robustness, and extendibility (Mohammad Taha Bahadori and Yan Liu, 2013).

If a time series is a stationary process, the test is performed using the level values of two (or more) variables. If the variables are non-stationary, then the test is done using first (or higher) differences. The number of lags to be included is usually chosen using an information criterion, such as the Akaike information criterion or the Schwarz information criterion. Any lagged value of one of the variables is retained in the regression if (1) it is significant according to a t-test, and (2) it and the other lagged value of the variable jointly add explanatory power to the model according to an F-test. Then the null hypothesis of no Granger causality is not rejected if and only if no lagged values of an explanatory variable have been retained in the regression. In practice, it may be found that neither variable Granger-causes the other, or that each of the two variables Granger-causes the other.

Let y and x be stationary time series. To test the null hypothesis that x does not Granger-cause y, on first finds the proper lagged values of y to include in a univariate autoregression of y:

$$Y_t = a_0 + a_1 y_{t-1} + a_2 y_{t-2} + \ldots\ldots\ldots + a_m y_{t-m} + error_t$$

Next, the autoregression is augmented by including lagged values of x:

$$Y_t = a_0 + a_1 y_{t-1} + a_2 y_{t-2} + \ldots\ldots\ldots + a_m y_{t-m} + b_p x_{t-p} + b_q x_{t-q} + error_t$$

One retains in this regression all values of x that are individually significant according to their t-statistics, provided that collectively they add explanatory power to the regression according to an F-test (whose null hypothesis is no explanatory power jointly added by the x's). in the notation of the above augmented regression, p is the shortest, and q is the longest, lag length for which the lagged value of x is significant.

The null hypothesis that x does not Granger-Cause y is accepted if and only if no lagged values of x retained in the regression (Diebold and Francis X, 2001).

Granger causality test will be used to research a causal relationship existing among the variables RGDP, CPI, M2: that is, we test if CPI Granger causes RGDP. Given the null and alternative hypothesis as follow; if the null hypothesis is rejected it means (H0), RGDP does not Granger cause CPI and if the alternative is not rejected it means (H1), RGDP granger cause CPI. Similarly, we must check if RGDP causes M2.

4.7. Definition and Selection of Variables

Four variables are specified in our model; where RGDP (real gross domestic product) is used to measure growth in economic activities of Burundi; CPI (consumer price index) is used to denote an increase in general price level i.e., inflation; M2 (money supply) is used to denote an increase in money supply and DUMMY is used to denote the period of crisis for a specified period in my country. Afterward, we ought to give a brief aspect and insight of each of those variables.

4.7.1. Real Gross Domestic Product (RGDP)

The main objective is to identify the various elements that may contribute to the explanation of economic activity in Burundi. GDP measures the economic growth rate of an economy. The assessment of production can be made in both nominal and real terms. The nominal output is the one that does not account for inflation; the real output is deflated, and it is also the one that informs the real growth of the economy. In this study, market prices GDP in million BIF were used to estimate the model using data collected from World Bank from the period 1980-2014. It can be seen in figure 4.1 that the economic growth pattern for Burundi has been unstable since

the period 1980-2014. Major drop in the economy was observed in the period (1993-1997). A high annual growth rate was recorded for the period 1981,1983.

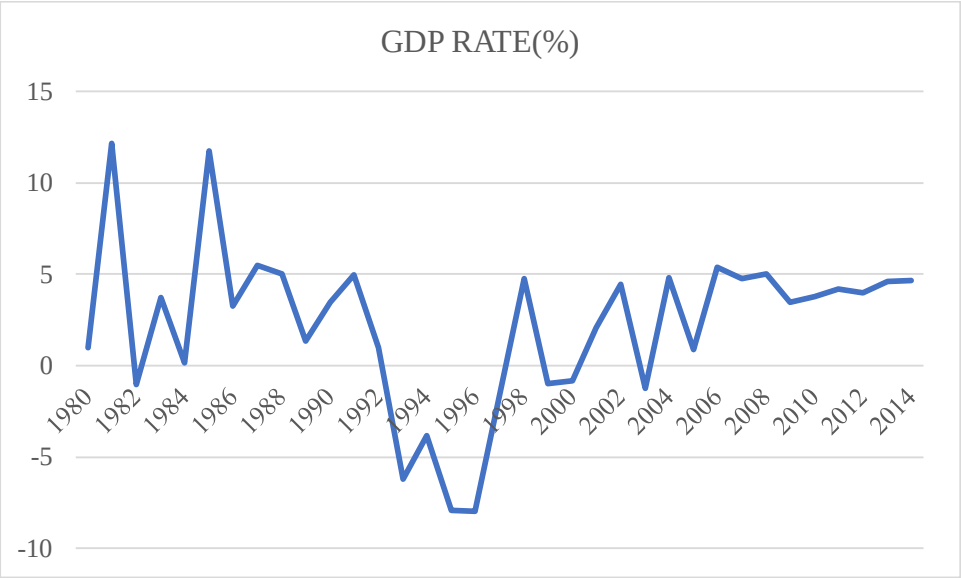

Fig 4.1. *Economic Growth trend 1980-2014 (Source: Researcher's own computation based on data from World Bank)*

4.7.2. Consumer Price Index (CPI)

The consumer price index is a measure that examines the weighted average of prices of a basket of goods and services which are of primary consumer needs. Its rate of change over the period is the rate of inflation. Obtained data from IMF showed that the CPI for Burundi has been relatively contained under a sustained level for the period (1980-1994). However, a rise in CPI was recorded for the rest of the period. A higher inflation rate can lead to a slowdown in economic growth and thus a decrease in the overall product.

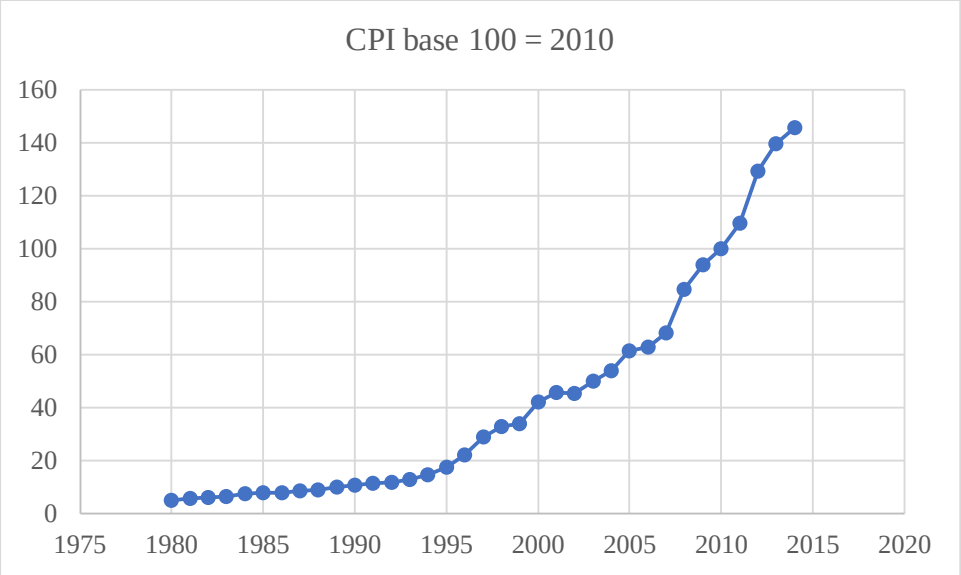

Fig 4.2. *Levels of Consumer Price Index 1980-2014 (Researcher's own computation based on IMF data).*

4.7.3. Money Supply (M2)

According to the quantitative theory of money, an increase in the money supply leads to a rise in prices. Many economic studies have revealed a "cause and effect" association between money supply and inflation. The results revealed that although money supply is positively related to growth, the result is however insignificant in the case of GDP growth rates between contractionary and expansionary money supply by (Ogunmuyiwa and Ekone, 2010). The money supply influences indirectly on the level of economic activity.

In Burundi, the most common monetary aggregates are of two types: M1 or money supply in the narrow sense, containing cash and sight deposits, then M2, which adds quasi-currencies to M1.

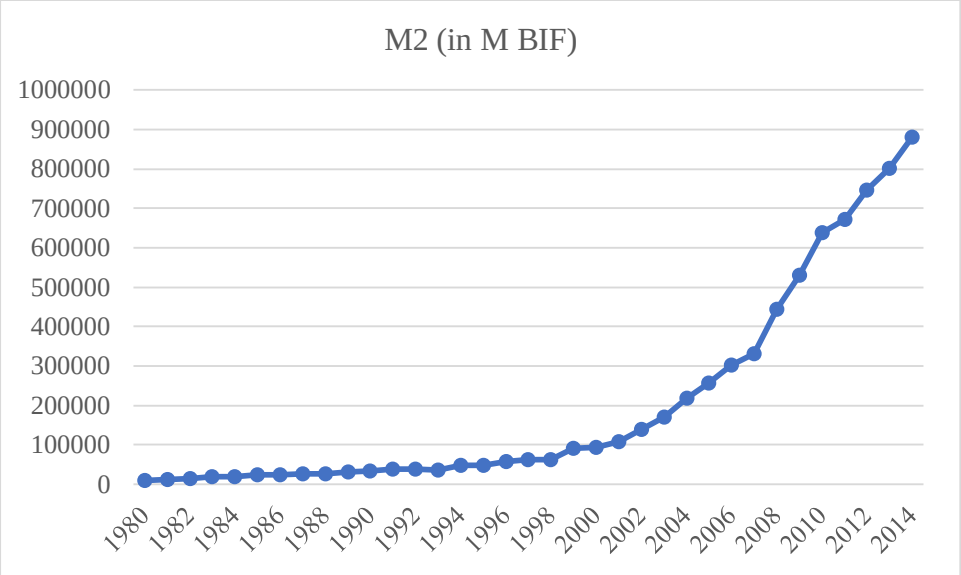

Fig 4.3. *Graph of Money Supply 1980-2014 (source: Researcher's own computation based on BRB data)*

4.7.4. Dummy Variable

In regression analysis the dependent variable, or regressand, is frequently influenced not only by ratio scale variables (e.g., income, output, prices, costs, height, temperature) but also by variables that are essentially qualitative, or nominal scale, in nature, such as sex, race, color, religion, nationality, geographical region, political upheavals, and party affiliation. Since such variables usually indicate the presence or absence of a quality or an attribute, such as male or female, war or peace, black or white, they are essentially nominal scale variables. One way we could quantify such attributes is by constructing artificial variables that take on values of 0 or 1, 1 indicating the presence or possession) of that attribute and 0 indicating the absence of that attribute (Gujarati: basic econometrics, 2004). In this study, 1 indicates period of war and 0 period of peace in Burundi. They are useful tools in econometrics since often interested in variables that are qualitative rather than quantitative. A summary of the data source used in this study and the respective variables with their expected relationship with economic growth is shown in the table below. Money supply was observed to be catapulting economic growth and hence a positive relationship between economic growth and money supply is anticipated. In contrast consumer price an index is expected to be associated negatively to economic growth.

The regression of the model by OLS gives the following equation: LRGDP = 11.47-0.537LCPI+ 0.396LM2-0.041DUMMY

Table 4.1. *Data source and expected results*

Variables	Data source	Period	Expected relationship
LRGDP	WORLD BANK	1980-2014	……..
LCPI	IMF	1980-2014	(-)
LM2	BRB	1980-2014	(+)
DUMMY	AUTHOR	1980-2014	(-)

CHAPTER FIVE

INTERPRETATION OF RESULTS AND DISCUSSIONS

5.1. Introduction

In this chapter, the emphasis is first on the empirical evidence of the utilized data analysis and diagnostic tests. Thereafter, the discussion focuses on the results of unit roots tests both ADF and Phillips-Perron stationarity test. Lastly, the discussion is on co-integration test together with the unit roots tests on residual under the Engel Granger approach, error correction model with Granger causality tests as performed. The main idea behind this chapter is to give numerical support that can help to give concrete support about the impact of inflation on economic growth in Burundi.

5.2. Stationarity Tests

To avoid estimating a spurious regression model, stationarity tests were used to check if the data has unit root. The absence of unit root means that the data is stationary and vice versa. To check for stationarity, the Augmented Dickey-Fuller (*ADF)* and Phillips Perron (*PP*) methodology were performed to ensure if the data has a unit root based on the null hypothesis that the data has unit root. Both results of unit root test are presented in table 5.1 and table 5.2

Table 5.1. *ADF Stationarity test results*

		Level		First difference				
Variables		**ADF t-stat**	**Critical value 5%**	**Stationary Yes or No**	**ADF t-stat**	**Critical value 5%**	**Stationary Yes or No**	**I (0) or I (1)**
LRGDP	**Intercept**	-1.927	-2.951	No	-5.810	-2.954	Yes	**I (1)**
	Intercept & trend	-1.890	-3.548	No	-5.713	-3.552	Yes	**I (1)**
LCPI	**Intercept**	0.369	-2.951	No	-4.279	-2.954	Yes	**I (1)**
	Intercept & trend	-1.804	-3.548	No	-4.249	-3.552	Yes	**I (1)**
LM2	**Intercept**	0.036	-2.951	No	-6.183	-2.954	Yes	**I (1)**
	Intercept & trend	-1.285	-3.548	No	-6.174	-3.552	Yes	**I (1)**

ADF tests results show that the data has a unit root and hence it can be said to be non-stationary means that is integrated with I (0). However, stationarity is observed when the data is first differenced, that is, I (1) at 5% level of significance; similar deductions can be made for the PP tests.

Table 5.2. *PP Stationarity test results*

		Level		First difference				
Variables		**PP t-stat**	**Critical value 5%**	**Stationary Yes or No**	**PP t-stat**	**Critical value 5%**	**Stationary Yes or No**	**I (0) or I (1)**
LRGDP	**Intercept**	-2.025	-2.951	No	-5.810	-2.954	Yes	**I (1)**
	Intercept & trend	-2.006	-3.548	No	-5.713	-3.552	Yes	**I (1)**
LCPI	**Intercept**	0.265	-2.951	No	-4.227	-2.954	Yes	**I (1)**
	Intercept & trend	-2.00	-3.548	No	-4.283	-3.552	Yes	**I (1)**
LM2	**Intercept**	0.035	-2.951	No	-6.157	-2.954	Yes	**I (1)**
	Intercept & trend	-1.418	-3.548	No	-6.182	-3.552	Yes	**I (1)**

Note: ***I (1)*** *stationary in first difference or rejection of the null hypothesis of unit root at 5% level of significance.*

5.3. Diagnostic Tests

5.3.1. Heteroskedasticity

In order to test for the heteroskedasticity problem in the model, where first the Breusch-Pagan Godfrey test was performed and revealed that the model is free from the heteroskedasticity.

Table 5.3.1. *Heteroskedasticity*

Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	1.726817	Prob. F(2,32)	0.1940
Obs*R-squared	**3.409445**	Prob. Chi-Square(2)	**0.1818**
Scaled explained SS	4.509424	Prob. Chi-Square(2)	0.1049

If we look to the test of Breusch-Pagan-Godfrey we can see that considering Obs*R-squared and Prob. Chi-Square (2) we cannot reject the null hypothesis and then there is no Heteroskedasticity.

5.3.2. Autocorrelation

The Breusch Godfrey test shows that there is no serial correlation in the model, because the P-value is greater than 5% level of significance.

Dependent Variable: LRGDP
Method: Least Squares
Date: 05/16/19 Time: 13:49
Sample: 1980 2014
Included observations: 35

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LCPI	-0.615280	0.096944	-6.346752	0.0000
LM2	0.457881	0.077168	5.933592	0.0000
C	11.02416	0.571157	19.30144	0.0000

R-squared	0.574041	Mean dependent var	14.23346
Adjusted R-squared	0.547419	S.D. dependent var	0.165560
S.E. of regression	0.111379	Akaike info criterion	-1.469941
Sum squared resid	0.396969	Schwarz criterion	-1.336625
Log likelihood	28.72396	Hannan-Quinn criter.	-1.423920
F-statistic	21.56233	Durbin-Watson stat	**0.870386**
Prob(F-statistic)	0.000001		

Durbin- Watson value must fall between 2-4, so here we can see is out of interval which means there is autocorrelation.

To resolve the problem, we create on period lag of our dependent variable GDP and apply regression.

Dependent Variable: LRGDP

Method: Least Squares

Date: 05/16/19 Time: 13:55

Sample (adjusted): 1981 2014

Included observations: 34 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LCPI	-0.349001	0.103817	-3.361702	0.0021
LM2	0.268558	0.080262	3.346008	0.0022
C	4.857457	1.528982	3.176923	0.0034
LRGDP(-1)	0.523547	0.126251	4.146858	0.0003

R-squared	0.737660	Mean dependent var	14.23093
Adjusted R-squared	0.711426	S.D. dependent var	0.167359
S.E. of regression	0.089904	Akaike info criterion	-1.870022
Sum squared resid	0.242481	Schwarz criterion	-1.690451
Log likelihood	35.79038	Hannan-Quinn criter.	-1.808783
F-statistic	28.11850	Durbin-Watson stat	1.798732
Prob(F-statistic)	0.000000		

After let see what the test of Breusch-Godfrey Serial Correlation LM Test give us:

Table 5.3.2. *Breusch-Godfrey serial correlation LM test*

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	0.258871	Prob. F(2,28)	0.7737
Obs*R-squared	0.617273	Prob. Chi-Square(2)	**0.7344**

Now we can see that I solve the problem of autocorrelation if considering the probability, we can now accept the null hypothesis (there is no serial correlation) because the probability is greater than 5%.

5.3.3. Normality of Residuals Distribution

According to Jarque-Bera test performed in this study, the residuals of the regression are normally distributed in the model because the p-value is greater than 5% level of significance.

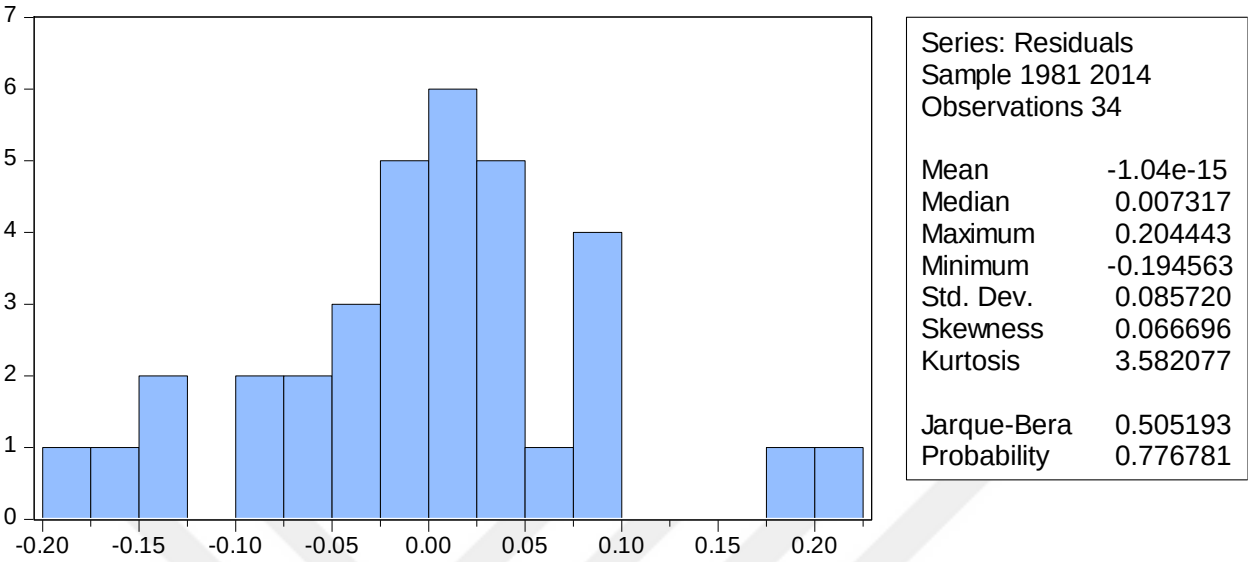

Fig5.1. *Graph of Residuals distribution*

In view of the diagnostic tests applied, it can be said that the model used in this study is robust and as such reliable.

5.4. Long Run Relationship

Table 5.3 below shows the results of the long-run association between the endogenous variable (RGDP) and the exogenous variables (CPI, M2 and DUMMY). Thus, the variables are utilized in their level forms and the model is tested for co-integration existence between the dependent and independent variables. The model indicates that a negative relationship exists between economic growth and the lagged consumer price index.

Table 5.4. *Long run relationship*

Dependent Variable: LRGDP
Method: Least Squares
Date: 05/15/19 Time: 17:11
Sample: 1980 2014
Included observations: 35

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LCPI	-0.537022	0.149570	-3.590438	0.0011
LM2	0.396936	0.117589	3.375630	0.0020
DUMMY	-0.041562	0.060127	-0.691241	0.4946
C	11.47854	0.873917	13.13459	0.0000

R-squared	0.580507	Mean dependent var	14.23346
Adjusted R-squared	0.539911	S.D. dependent var	0.165560
S.E. of regression	0.112299	Akaike info criterion	-1.428094
Sum squared resid	0.390943	Schwarz criterion	-1.250340
Log likelihood	28.99164	Hannan-Quinn criter.	-1.366733
F-statistic	14.29958	Durbin-Watson stat	0.877738
Prob(F-statistic)	0.000005		

5.5. Co-integration Test

Co-integration was conducted using the approach of Engel and Granger based on the residue analysis to determine the long-run evolution between economic growth (LRGDP) and the independent variables (LCPI, LM2 and DUMMY). Comparing the Mackinnon (1991) critical points and the ADF test statistic, it is decided to reject H_0 at 5% level of significance. In principle, co-integration test based on residue analysis, approach the simple test of the unit root. The test is conducted on the residual series of the long-run relationship. Thus, the following hypotheses were subjected to testing:

H_0: no co-integration between variables

H_1: co-integration between variables

Table 5.5. *Co-integration tests results*

Variable	ADF critical value at 5%	Mackinnon Critical value at 1%, 5%, 10%	Stationary in level Yes or no	Statistical decision I (0) or I (1)	Variables are cointegrated Yes or no
Residue	-3.09	-4.64, -4.10, -3.81	No	I (0)	No

Table 5.5 results show strong evidence of the absence of co-integration between variables. Thus, the null hypothesis of no co-integration between variables is accepted at 5%. Hence, we noted that there is no long-run relationship between inflation and economic growth. Therefore, no long-run relationship between inflation, economic growth, and money supply. By Engel-Granger approach the absence of co-integration conduct us to conclude that we cannot run error correction model as the residual of long-run relationship is not stationary. Thus, all the variables have not both short and long-run relationship with each other as revealed by co-integration tests.

5.6. Responsiveness of GDP to the Variables

The data was transformed to logarithms to establish the responsiveness of economic growth to changes inflation. Such responsiveness also is known as elasticity. Logs are necessary for setting the problem of heteroscedasticity in time series data in this way making the data stationary. An ordinary least squares method was used to determine the responsiveness of GDP to a change in exogenous variables. An R^2 of 0.5805 means that 58.05% variation in GDP is explained by consumer price index, money supply and dummy. The Prob (F-stat) of 0.000005 also explained in the overall the significance of our model. The results are recorded in tables 5.5 and 5.6.

Table 5.6.1. *Model data summary results*

R^2	0.5805
Prob(F-statistic)	0.000005

Table 5.6.2. *Responsiveness of GDP to the variables*

Variables	Coefficients	Std. Error	T-statistic	Prob
LCPI	-0.537022	0.149570	-3.590438	0.0011*
LM2	0.396936	0.117589	3.375630	0.0020*
C	11.47854	0.873917	13.13459	0.0000*
DUMMY	-0.041562	0.873917	-0.691241	0.4946

**Significant at 5% level of significance*

The regression of the model by OLS gives the following results: LRGDP = 11.47-0.537LCPI+ 0.396LM2-0.041DUMMY

The elasticity coefficient of GDP to money supply is inelastic (0.396) as it lies below 1. However, the elasticity coefficient of GDP to consumer price index is elastic since -0.537. LCPI and LM2 are significant at 5%. It can be noted that economic growth is more negatively response to changes in inflation and positively response to changes in money supply. A 1% increase in money supply results in an increase in GDP by 0.39%. Inflation has negative impact on economic growth, with GDP showing more degree of responsiveness to changing general price level given the coefficient on table 5.6, a 1% rise in inflation will lead to about 0.54% drop in growth. This confirms the results established by (Ahmed and Mortaza, 2005) which show that there is a statistically significant long-run negative relationship between inflation and economic growth. The elasticity coefficient of dummy is negative and insignificant which means that the war has a negative impact on economic growth, but this effect is low and insignificant.

5.7. Granger Causality

It can be noted that consumer price index does not Granger cause real economic growth and that real economic growth does not cause consumer price index. This is because their respective probabilities are more than 5% and hence, we can accept null hypotheses. Money supply

can be said not to Granger cause real economic growth, but real economic growth Granger causes money supply. In the same way, money supply does not Granger cause consumer price index, but consumer price index granger causes money supply; since their p-values are less than 5% we can reject their null hypotheses. Thus, there is a unidirectional relationship running from RGDP to money supply and from CPI to money supply as well.

Table 5.7. *Pairwise granger causality*

Null Hypothesis	Obs	F-statistic	Prob
LCPI does not Granger cause LRGDP	34	0.04002	0.8427
LRGDP does not Granger cause LCPI		0.78074	0.3837
LM2 does not Granger cause LRGDP	34	0.00242	0.9611
LRGDP does not Granger cause LM2		5.25849	0.0288
LM2 does not Granger cause LCPI	34	0.10138	0.7523
LCPI does not Granger cause LM2		6.91112	0.0132

CHAPTER SIX

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

6.1. Introduction

This chapter outlines conclusions and recommendations that can be drawn from this study. As well, will provide ideas that can be used to improve economic performance and reduce the negative consequences that are generated by the increases in the rate of inflation. Such, recommendations will be with regards to economic growth, inflation, money supply elements. This chapter will also dwell on suggestions that can be drawn from this study and proposed for future research.

6.2. Summary of Major Findings

The research goal is to examine empirically the impact of inflation on Burundi's economic growth i.e. real gross domestic product in Burundi. Time series data were collected annually for variables for the period of 1980-2014. The study used the Augmented Dickey-Fuller (*ADF*), Phillips Peron (*PP*) unit root tests. The results generated for the ADF and PP showed that at level form all the variables are non-stationary but after first differencing the variables became stationary and integrated of order 1. Furthermore, the study employed a Granger-Engel cointegration technique to ascertain the presence of a long run relationship between economic growth and inflation. The result of the study revealed that there is no cointegration, therefore, no existence of a long-run relationship between inflation and economic growth. The OLS was also used to determine the responsiveness of economic growth to changes inflation and money supply. It was revealed that in the short run economic growth had an inelastic responsive to changes in money supply, and elastic responsive capacity to changes in consumer price index (inflation). Since the aim of the researcher is to analyze the impact of inflation on economic growth, the results from. Granger Causality indicates the absence of causality test between inflation and economic growth. The generated results between money supply and real GDP shows a unidirectional causality from economic growth to money supply, causality between inflation and money supply showed that inflation Granger causes money supply. Conclusions will, therefore, be designed on these results.

6.3. Conclusions

The main objective of this study was to determine the effects of inflation on economic growth in Burundi. In order to reach this goal, a comprehensive literature review was carried out to look back on what other authors found when developing similar studies. Our critical review denotes that there is no agreement on the relationship between inflation and economic growth. The results frequently are related to the assumptions adopted in the study. Accordingly, the empirical findings are varied based on the data employed, the methodology used, nature of the study whether panel data or country specific, the economic conditions, and the time period of the research also the number of independent variables applied in the model.

A Granger-Engel cointegration model was used to investigate the long run relationship between economic growth and inflation. This objective has not been achieved as discussed in the last five chapter. We found that there is no cointegration between inflation and economic growth, it can therefore be concluded that inflation is most time a monetary phenomenon that occurs from a rapid expansion in the quantity of money than in total output whereas causality analysis found that economic growth does not grange cause inflation and vice-versa however economic growth causes money supply and inflation causes money supply too but the effect was effective after 1 year. An Ordinary Least Square was employed to establish the responsiveness of economic growth to changes in inflation. The results showed that economic growth is negatively and significantly more responded to changes in inflation. It can be concluded that price stability is taken as an important variable to expand economic growth as well as development. The major goal for many central banks is to preserve price stability with high growth rates. As the value of the money decreases people also lose confidence in it as a medium of exchange. Therefore, it's resulting in a fall in savings and a decrease in investment as well as in economic growth. Much of the literature recognized investment as the principal channel through which inflation inhibits economic growth. Hence, high inflation rate harms economic growth. Therefore, it can be noted that the ability of the Burundian economy to expand depends on the ability to advocate economic reforms accompanying structural political reforms and to address issues related to inflation.

Thus, it exists a short run threshold rate of inflation beyond which will create significant negative effects on economic growth. This means that low levels of inflation are necessary and are indicators of a country’s economic health but the rising in economic growth is relatively inelastic. Such a positive impact is being conducted by good strategies using money supply to promote

production and foreign direct investment that is being established by the Burundian government. Significant drop in economic growth will be observed when the inflation rate exceeds the threshold rate.

Further conclusion can be drawn that considering structural breaks in Burundi that was accounted for by the dummy variable which represent the effects of the crisis period have a non-significant and negative effect on economic growth. From this, it can be concluded that the war in our country is not the only factor that hurts economic activities. Other determinants interfere, Burundi's leadership didn't have priority to promote economic growth when cronies rather than qualified managers are conducting the economy when priority is given to investment projects in function of their geographical location rather than the main goal needs of the economy, economic models lose their senses. Moreover, agriculture which is the main resource for the country suffers the lack of innovations, modernization, and diversification.

6.4. Policy Implications/Recommendations

The possible existence impact of inflation on economic growth is a concern in Burundi and continues to capture more attention in the monetary economics literature. According to the findings of this study the following policies and recommendations can be established:

- this study discovered that a rising in general price level (inflation) has been harmful to sustainable economic growth in Burundi. These findings have necessary policy implications for government and policy maker of Burundi who should work hard on options that keep inflation rate modest and non-volatile which will be useful in reducing variations and uncertainties in the financial area of this economy. These efforts would probably stimulate capital formation activities hence expand economic growth.
- furthermore, factors such as money supply and exchange rates that have effects on inflation rate which afterward affect economic growth need to be stakeout through policies accurately address the risks posed by these factors. This will ultimately spur stability between these variables and diminishing or eliminate occasions that economic growth Granger cause inflation in Burundi thus enhance economic performance. Hence, it could be recommended that considering together supply-side policies and demand running

policies such as a decreasing in real broad money supply should be applied to minimize inflation in the long term and in the short term.

- Measures are also recommended that a commitment by the authorities to maintain low rate inflation would help to create a favorable climate for low interest rates which are currently high, and productive investment in the long term, which would promote economic growth and employment.
- In Burundi as elsewhere, economic agents respond to incentives. Burundian's contribution to economic growth will in large part relate to the extent to which the structure of incentives, both political and economic, is aligned with people's preferences (Easterly, 2001).

6.5. Areas for Further Research

The findings here were based on annual time series data running from 1980-2014. This means that the impact of inflation on economic growth in Burundi should be controlled and compared with the results in this study and beyond the year 2014.

The study restricted its focus to a Burundi context. This suggests that a similar approach can be utilized to study other countries cases.

Regarding future research, there is a requirement for other studies to be carried out to help identify the optimal inflation level that would boost economic growth for Burundi. This area is of interest and practical significance that merits some attention and could complement the current study. This would make it achievable for Burundi to continue ameliorated economic growth strategies that would decrease negative effect of inflation on economic growth.

REFERENCES

Acemoglu, Daron, Simon, J., and James, A. R. (2001). The colonial origins of comparative development: An empirical investigation. *American Economic Review*, 91 (5), 1369-1401.

Ahmed, S., and Mortaza, G. (2005). "Inflation and economic growth in Bangladesh: 1981-2005", policy analysis unit (PAU), research department, Bangladesh bank, Head Office, Dhaka, Bangladesh, *Working Paper Series*, WP 0604, 1-22.

Asteriou, D., and Hall, S. G. (2007). *Applied Econometrics: A Modern Approach*, Pagrave Macmillan, New York. 293.

Asteriou, D., and Hall, S. G. (2011). Applied econometrics. Palgrave Macmillan. 234.

Ayyoup. (2011). Does the inflation affect the economic growth? The case of Pakistan. *Pakistan Journal of Social Science (PJSS),* 31(1), 51-64.

Blanchard, J., and Kiyotaki, N. (1987). Monopolistic competition and effects of aggregate demand. *The American Economic Review,* 77(4), 647-666.

Burundi economic outlook. (2016). *The Story Behind the Numbers*. 1-4.

Burundi overview. (2018). The World Bank in Burundi, (November).

Cantillon, R. (1959). *Essay on the Nature of Trade in General, (ed and trans.)* Henry Higgs. London: Frank Cass and Co.

Clerg, D. (1984). Inflation. Paris Syros. 126.

Dickey, D. A., and Fuller, W. A. (1979). 'Distribution of the estimators for autoregressive time series with a unit root', *Journal of American Statistical Association,* 74, 427-431.

Dickey, D. A., and Fuller, W. A. (1981). 'The Likelihood ratio statistics for autoregressive time Series with a unit root', *Econometrica*, 49, 1057-1072.

Dornbusch, R., et al. (1996). "Brazil's incomplete stabilization and reform," *Brookings Papers on Economic Activity,* No. 1. On 8th May 2016.

Easterly, W. (2001). The Elusive Quest for Growth, Cambridge, Massachusetts: MIT Press.

Eggers, and Ellen, K. (1997). Countries and culture. *Burundi Historical Dictionary. 2nd ed*. Scarecrow.

Ellen, K., Rene, L. (1997). A thorough chronological guide to Burundi's unsettled existence.

Engle, R. F., and Granger, C. W. J. (1987). Co-integration and error correction: representation, estimation and testing. *Econometrica*, 55(2), 251-276.

Erbaykal, E., and Okuyan, H. A. (2008). Does inflation depress economic growth? Evidence from Turkey. *International Research Journal of Finance and Economics*, Issue (17), 1450-2887.

Fisher, S. (1993). The role of macroeconomic factors in growth. *NBER Working Paper*, 4565.

Friedman, M., and Schwatz, A.J. (1963). *A Monetary History of the United States 1867 – 1960*. Princeton: Princeton University Press.

Ghosh, A., and Phillips, S. (1998). "Warning: inflation may be harmful to your growth." *IMF Staff Papers*, 45(4), 672-710.

Gokal, V., & Hanif, S. (2004). Relationship between inflation and economic growth in Fiji. *Working Paper*.

Gomme, P. (1993). "Money and growth revisited: Measuring the costs of inflation in an endogenous growth model". *Journal of Monetary Economics*, 32 (1), 51-77.

Gujarati, N. D. (2004). Basic econometrics. 4th Edition. McGraw Hill. 297-298.

Gylfason, T., & Herbertsson, T.T. (2001). "Does inflation matter for growth?", *Japan and The World Economy* (13), 405-428.

Harris, N., Gillman, M., Matyas, L. (2001). The negative inflation-growth effect: Theory and evidence, Melbourne Institute, *Working Paper*, (12/01).

Haslag, J. H. (1995). Output, growth, welfare and inflation: A survey. *Economic Review Second Quarter*, Federal Reserve Bank of Dallas.

Hossain, E., Ghosh B.C., & Islam, K. (2012). Inflation and economic growth in Bangladesh. *International Refereed Research Journal*, III, 4(2).

Hossain, E., Ghosh, B.C. and Islam, K. (2012), "Inflation and economic growth in Bangladesh", *International Refereed Research Journal*, 4(2), 85-92.

ILO/IMF/OECD/UNECE/Eurostat/The World Bank. (2004). *Consumer Price Index Manual: Theory and Practice*, Geneva, International Labour Office.

IMF. (2018). Factsheet, monetary policy and central banking, *Institute Press.* 1-2.

International Monetary Fund. (2004). Consumer price index manual: *Theory and Practice*., (August25).

Janvier, D. N., and Floribert N. (2005). Why has Burundi grown so slowly? 6-8.

Janvier, D. N., and Floribert, N. (2005). "Why has Burundi grown so slowly?", 1-46.

John, J., Mohanty, D., Chakraborty, A. B. and Das, A. (2011). "Inflation threshold in india: An empirical investigation", *RBI Working Paper*, (18 / 2011).

Joseph, L. C., and Eliab, G. L. (2000). The Effect of inflation on economic growth. *African Journal of Finance and Management*, 9 (1), 70-77.

Khan, M. S., and Senhadji, M. A. (2001). "Threshold effects in the relationship between inflation and growth", *IMF Staff Papers*, 48(1).

Kormandi, R.C., Meguire, P.G. (1985). Macroeconomic determinants of growth: cross country evidence. *Journal of Monetary Economics*, 16 (2). 141-163.

Kremer, S., Bick, A., Nautz, D. (2012). Inflation and growth: New evidence from a dynamic panel threshold analysis, empirical economics, (44), 861-878.

Leeson, R. (1994). 'Inflation, disinflation and natural rate of unemployment: A dynamic framework for policy analysis' *The Australian Economy in 1990's,* 125-175.

Li, M. (2006). Inflation and economic growth. *Essays, UK*. (November 2013).

Lukasz, P. (2014). Comparative economic research, 17(1).

Madhukar, S. and Nagarjuna, B. (2011). Inflation and growth rates in India and China: A perspective of transition economies, *International Conference on Economics and Finance Research*. 4(97). 489-490.

Mallik, G., & Chowdhury, A. (2001). Inflation and economic growth: Evidence from south asian countries. *Asian Pacific Development Journal*, 8(1).

McCallum, B.T., Goodfriend, M. S. (1987). "Demand of money: Theoretical studies", in New Palgrave Money, J. Eatwell, M. Millgate and P. Newman, eds., Macmillan Press, New York.

Ministry of Planning and Communal Development/ UNDP. (2011). *Complete Vision Burundi 2025*. 1-11.

Mises, Ludwig von. [1912] (1971). The Theory of money and credit, (trans.) H. E. Batson. Irvington-on-Hudson, New York: Foundation for economic education.

Mohammed, T. B., and Yan, L. (2013). An examination of practical granger causality inference. University of southern california. 467-475.

Mubarik, Y. A. (2005). "Inflation and growth: An estimate of the threshold level of inflation in pakistan", *SBP-Research Bulletin*, 1(1), 35-44.

Mundell, R. (1963). Inflation and real interest. *The Journal of Political Economy,* 71(3), 280-283.

Munir, Q., and Mansur, K. (2009). "Non-linearity between inflation rate and GDP growth in malaysia", *Economics Bulletin*, 29(3), 1555-1569.

Ogunmuyiwa, S. M., and Ekone, F. (2010). Money supply and economic growth nexus Nigeria. *Journal Social Science*, 23(1), 199-204.

Phillip, B., David, H., and Amadeus, G. (2014). The causes and consequences of inflation. *Business and Society Review*, 119(4), 497-517.

Piana, V. (2002). *Inflation Economic Web Institute* Inflation *"On Target" and the benefits of price stability May.* Monetary policy Report.

Romer, P.M. (1994). 'The Origins of Endogenous Growth', *Journal of Economic Perspectives,* 8(1), 3-22.

Rosemary, E. I. (2015). "Impact of inflation on economic growth: Case study of Nigeria". *Thesis,* 39-42.

Rothbard, Murray N. [1962] (2009). *Man, Economy, and State,* Scholar's Edition. Auburn, AL: Ludwig von Mises Institute.

Rothbard, Murray N. [1963] (2008). *What Has Government Done with Our Money*? Auburn, AL: Ludwig von Mises Institute.

Saaed, A. J. (2007). "Inflation and economic growth in Kuwait: 1985-2005: Evidence from cointegration and error correction model", *Journal of Applied Econometrics and International Development,* 7(1), 203-218.

Sarel, M. (1996). Nonlinear Effect of Inflation on Economic Growth," *IMF WP/95/56,* Washington.

Sattarov, K. (2011). "Inflation and economic growth analyzing the threshold level of inflation: Case study of Finland, 1980-2010", Thesis, 15 ECTS, UMEA University, Sweden.

Sibaye, J. T., and Daniel. G. (2014). African economic outlook. Burundi. 3-4.

Sidrauski, M. (1967). Rational choice and patterns of growth in a monetary economy. *American Economic Review,* 57(2*),* 534-544.

Snowdon, B., and Vane, H. R. (2005). "Modern macroeconomics: its origins, developments, and current state". 38-45.

Solow, R.M. (1956). "A contribution to the theory of economic growth." *Quarterly Journal of Economics,* 70.

Stockman, A. C. (1991). Anticipated inflation and the capital stock in cash-in advance economy. *Journal of Monetary Economics,* 8.

Swan, T. W. (1956). "Economic growth and capital accumulation". *Economic Record*, 32. 334-61.

Tabi, and Ondoa. (2011). "Inflation, money and economic growth in Cameroon" *International Journal of Financial Research,* 2(1): 45-56.

The International Journal of Applied Economics and Finance, 2011, 10-12.

The World Bank. (2018). Republic of Burundi addressing fragility and demographic challenges to reduce poverty and boost sustainable growth, systematic country diagnostic. *Report (122549-BI)*. 27.

Tobin, J. (1965). Money and economic growth. Econometrica: Journal of Econometric Society, 671-684. Study of Tanzania. *Asian Journal of Empirical Research,* 3(4), 363-380.

U, S. Department of State. (2015). Burundi investment climate statement.

Umaru, A., & Zubairu, A. A. (2012). Effect of inflation on the growth and development of the nigerian economy: An empirical analysis. *International Journal of Business and Social Science,* 3(10).

United Nations. Economic commission for Africa. (2016). *Country profile Burundi*. Addis Ababa: UN. ECA. 8-34.

United Nations. Economic commission for Africa. (2016). *Country Profile Burundi*. Addis Ababa, Ethiopia. 1-2.

Veni, L. K., and Choudhury, P. K. (2007). "Inflation and growth dilemma: An econometric analysis of the indian economy", *The IUP Journal of Financial Economics*, 5(1), 79-87.

Wai, U. T. (1959). "The Relation between inflation and economic development: A statistical inductive study", *IMF Staff Papers,* 7(2), 302-317.

Wang, Z., (n.d.). (2008). Chinese economic growth and inflation. *Chinese society science*.

Wolves, M. F. (1989). *Burundi*. Chelsea House. For Young Readers.