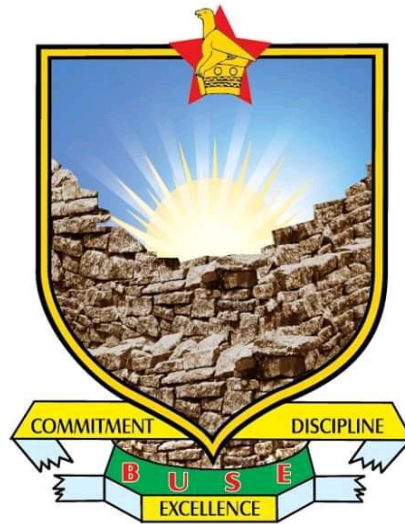


BINDURA UNIVERSITY OF SCIENCE EDUCATION

FACULTY OF COMMERCE



DEPARTMENT OF ECONOMICS

**THE IMPACT OF INFLATION ON ECONOMIC GROWTH IN SOUTHERN
AFRICAN DEVELOPMENT COMMUNITY**

(2002 -2020)

BY

RUNGANO MURANDA

B193297B

**A DISSERTATION SUBMITTED IN PARTIAL FULFILMENT OF THE
REQUIREMENT FOR THE BACHELOR OF SCIENCE HONOURS DEGREE IN
ECONOMICS AT BINDURA UNIVERSITY OF SCIENCE EDUCATION FACULTY
OF COMMERCE**

JUNE 2023

RELEASE FORM

STUDENT REGISTRATION No: B193297B

DISSERTATION TITLE: THE IMPACT OF INFLATION ON ECONOMIC GROWTH IN SOUTHERN AFRICAN DEVELOPMENT COMMUNITY

DEGREE TITLE: Bachelor of Science Honours Degree in Economics

YEAR THIS DEGREE WAS GRANTED: 2023

Permission is hereby granted to the Bindura University of Science Education Library to produce single copies for private, scholarly or scientific research purpose only. The author does not reserve the other publication rights and the dissertation nor may extensive extracts from it be printed or otherwise reproduced without the author's permission.

SIGNED :

PERMANENT ADDRESS: WADZANAI 404 LDV SHAMVA

DATE : 30 May 2023

APPROVAL FORM

The undersigned certify that they have supervised the student with registration number **B193297B** dissertation entitled ‘**The impact of inflation on economic growth in Southern African Development Community (2001-2020)**’, submitted by **RUNGANO MURANDA** in partial fulfilment of the requirements for the Bachelor of Science (Honours) Degree in Economics.

.....

STUDENT

.....

DATE

.....

SUPERVISOR

.....

DATE

.....

CHAIRPERSON

.....

DATE

DEDICATION

To my beautiful, loving and caring mother (Mrs S Muranda) and sister (Tinashe Muranda). I gratefully dedicate this dissertation to you, for you have always been there to support, advice and above all your love made the completion of this paper possible. I thank God for giving me such a blessing in my life, may the almighty God bless you abundantly.

ABSTRACT

This project uses the Southern African Development Community (SADC) as a case study to investigate how inflation affects economic growth. The motivation is apparent not only due to the dearth of studies examining this effect in the SADC region, but also because the impact of inflation on economic growth in developing nations may be different from that in developed nations due to their higher level of economic development and use of prudent macroeconomic policies (Sarel, 1996). The majority of developed nations have autonomous central banks with a defined mission to control inflation levels within a given range (adopted an inflation targeting framework), hence the effects may vary. However, most developing nations' central banks lack a distinct framework for monetary policy that explicitly targets inflation. For instance, in the SADC region, only South Africa has implemented such a framework. Because it is one of the primary indicators of macroeconomic instability, inflation also serves as a measure of how well the government is managing the economy. High rates of inflation may be a sign that a nation's monetary authority is not being properly governed. Additionally, it is an indication that the government no longer has control over its finances (Fischer, 1993).

By endogenously predicting the threshold level of inflation below which inflation may have no, or a positive, impact on economic growth, or above which inflation may be detrimental to economic growth, the project addresses the issue that inflation negatively affects economic growth. The study evaluates other factors that may impact the Southern African Development Community countries' economies.

In order to assess the impact of inflation on economic growth in the Southern African Development Community, a variety of panel data approaches, including Fixed Effects (FE), Random Effect (RE), diagnostic test, Multicollinearity and heteroscedasticity estimators, are utilized. In particular, the smoothness of the transition from a low to a high inflation regime in the region is also evaluated, as is the threshold level of inflation.

ACKNOWLEDGEMENTS

Thank you God for holding me up in all times of joy and trials. I'm most grateful for the blessings that you have showered me with. I would not be here without you. My profound gratitude to my family for their loving support and guidance, to them I say our battle is not in vein. To my mother, schoolmates this is for believing in me, your support came through timely and I'm indebted to you in ways inexpressible.

I would like to thank Dr T Kairiza my supervisor, for his guidance and commitment to the project. I would also like to thank my siblings for the support and comprise. Many thanks to Dr T Kairiza for his acceptance and assistance during the duration of this project.

Finally, I would like to thank everyone who wished me well and encouraged me to be a better person.

May the God Almighty plant you by the river side, were drought is not known and shower you with supernatural blessings.

Table of Contents

Contents

RELEASE FORM	ii
APPROVAL FORM.....	iii
DEDICATION	iv
ABSTRACT	v
ACKNOWLEDGEMENTS	vi
Table of Contents.....	vii
LIST OF TABLES	x
LIST OF APPENDICES	x
ABBREVIATIONS.....	xi
CHAPTER ONE.....	1
BACKGROUND TO THE STUDY.....	1
1.1. INTRODUCTION.....	1
1.2 BACKGROUND OF SADC	2
1.3 PROBLEM STATEMENT.....	4
1.4 Research Objectives.....	4
1.5 Research Question	5
1.6 Significance of the Study.....	5
1.7 Research Hypothesis.....	5
1.8 Assumptions	6
1.9 Limitations.....	6
1.11 Summary.....	7
CHAPTER TWO.....	8
LITERATURE REVIEW	8
2.1 INTRODUCTION	8
2.2 LITERATURE REVIEW	8
2.2.1 Empirical literature	8
The effects of inflation on economic growth.....	8
2.2.2 Other drivers of economic growth.....	12
2.3 Theoretical Review	12
2.3.1 Tobin effect and the savings rate	12
2.3.2 Demand pull theory	12

2.3.3	Dual gap theory.....	13
2.3.4	Trade and the Neoclassical Growth Model	14
2.3.5	Export led theory	15
2.4	Summary.....	16
CHAPTER THREE		17
RESEARCH METHODOLOGY		17
3.1	INTRODUCTION	17
3.2	RESEARCH DESIGN.....	17
3.2.1	Panel data analysis.....	17
3.2.2	Theoretical Framework.....	18
3.3	Research Instrument	18
3.3.1	Hausman test for fixed effects vs random effects model.....	18
3.3.2	Random effects model (REM).....	19
3.3.3	Fixed effects model (FEM).....	20
3.3.4	Diagnostic Checking.....	21
3.3.4.1	Multicollinearity	21
3.3.4.2	Heteroscedasticity.....	21
3.4	Data Collection Procedures	21
3.4.1	Stata Software.....	21
3.5.1	Consumer Price Index.....	22
3.5.2	Foreign Direct Investment	22
3.5.3	Inflation GDP deflator annual	22
3.5.4	Imports.....	22
3.5.5	Exports.....	23
3.6	Conclusion	23
CHAPTER IV		24
DATA PRESENTATION, ANALYSIS AND DISCUSSION		24
4.0	Introduction.....	24
4.1	Descriptive statistics	24
Table 1 Descriptive Statistics for Predictor Variables.....		25
4.2	Diagnostic test	25
4.2.1	Multicollinearity Test	25
4.2.3	The Breusch-Pagan Lagrange multiplier (BPLM)	26
4.2.4	Heteroscedasticity – Breusch-Pagan test.....	27

4.3 Fixed Effects versus Random Effects.....	27
4.4 The Hausman Test	29
4.5 Interpretation of results.....	30
Consumer Price index.....	31
Foreign direct investments.....	31
Inflation GDP deflator annual	32
Imports.....	32
Exports.....	33
4.6 Summary.....	33
CHAPTER V	34
SUMMARY, CONCLUSION AND RECOMMENDTION.....	34
5.1 Introduction.....	34
5.2 Summary.....	34
5.3 Conclusion of the Findings.....	34
5.4 Policy Implications and Recommendations.....	35
REFERENCES	37
Appendices	45

LIST OF TABLES	Page
Table 1: Descriptive Statistics for predictor variables.....	26
Table 2: Descriptive statistics for the dependent variables.....	26
Table 3: Matrix of Correlations.....	27
Table 7: Heteroscedasticity Test: Breusch –Pagan Godfrey.....	28
Table 4: Fixed Effects Table.....	29
Table 5: Random Effect Table.....	29
Table 6: Hausman Test.....	30

LIST OF APPENDICES

Appendix 1: Descriptive Statistics.....	26
Appendix 2: Matrix Correlation.....	48
Appendix 3: Heteroscedasity.....	49
Appendix 4: Random Effect.....	50
Appendix 5: Fixed Effect.....	51
Appendix 6: Hausman Test.....	52

ABBREVIATIONS

BOP	Balance Of Payment
CPI	Consumer Price Index
ELGH	Export Led Growth Hypothesis
FDI	Foreign Direct Investment
FEM	Fixed Effect Model
GDP	Gross Domestic Product
GNP	Gross National Product
IMF	International Monetary Fund
SADC	Southern African Development Community
OLS	Ordinary Least Square
NLLS	Non Linear Least Squares
REM	Random Effect Model
PWT	Penn World Tables
WDI	World Development Indicator

CHAPTER ONE

BACKGROUND TO THE STUDY

1.1. INTRODUCTION

In Chapter 1, the author attempts to provide an overview of the study's background, objectives, research question, sub-question, problem statement, justification for the investigation, and significance of the study, as well as specific assumptions made for the project's successful completion. Globally, central banks work to achieve and maintain price stability because they are concerned about high prices. Therefore, a low inflation rate—which typically fosters an environment favourable to rapid economic growth—is the common goal of macroeconomic policy (Fischer, 1993).

It is noteworthy that the economies of the majority of SADC nations are severely impacted by inflation. In fact, the SADC is regarded as one of the regions with high inflation (World Bank, 2010). One is prompted to ask a question of SADC nations given the various streams of literature on the connection between inflation and economic growth. Is there a positive or negative relationship between inflation and economic growth over time? This is the study's driving force. Inflation and economic growth are examined in this study in connection to the years 2001 through 2020.

Therefore, it is crucial for policymakers to comprehend this link in order to create effective policies. It has been demonstrated that adopting an inflation targeting monetary policy framework by nations like New Zealand and the United Kingdom effectively reduces inflation. Given that inflation is harmful to economic growth, policymakers should strive for low inflation rates. This can be done by raising interest rates, which will then lead to a decline in investment and consumption, which could help to cool an overheating economy. Macroeconomic stability, which is characterized by low inflation, is a prerequisite for long-term economic growth but is not adequate in and of itself. This is demonstrated by the fact that most nations have had weak economic growth despite low inflation, as was the case in the Franc zone in the 1980s (Fischer, 1983). Numerous cross-country studies have found a negative correlation between these two variables, with the strength of this correlation predicted to vary by region based on the degree of development and other factors. This is so because many developed nations have strong

central banks that are independent and have a clear mandate to manage inflation within a certain target range.

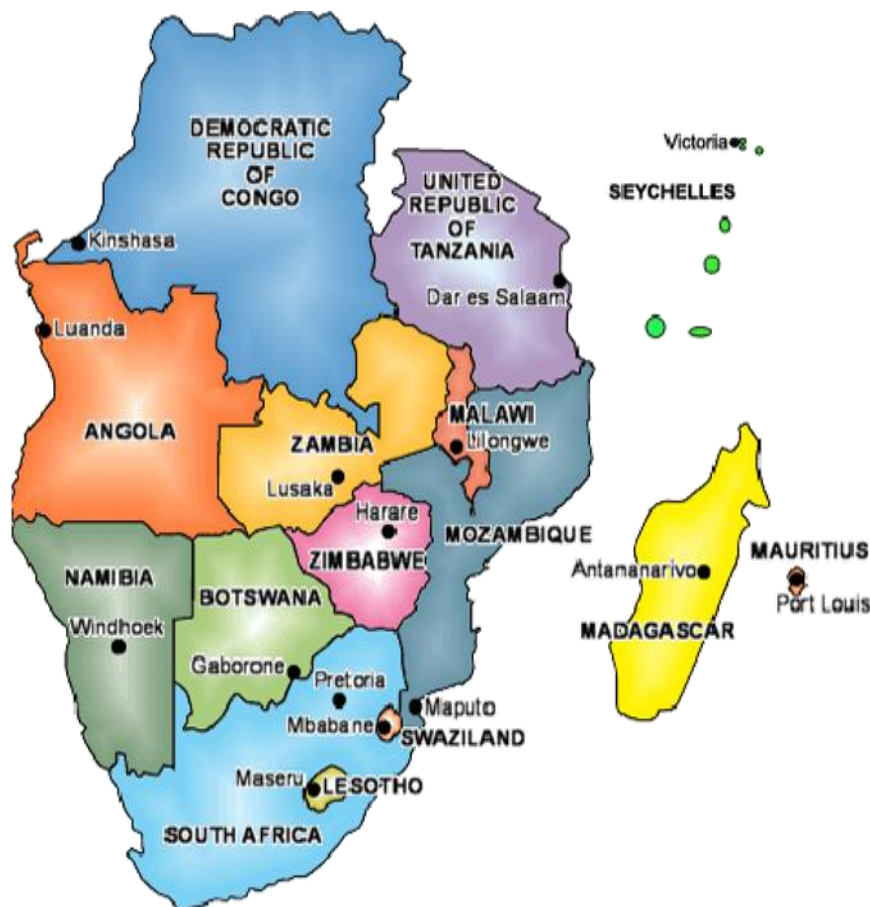
Since the early 1990s, it has been debated whether inflation has any impact on growth, as hinted at in (Hineline, 2003). A stylised fact—that there are large disparities between countries—emerged from the numerous time-series and panel data investigations. On the one hand, several research only looked at the nature of the impact of inflation on Economic growth using linear methodologies. Beginning with the work of De Gregorio (1993) and Fischer (1993), who discovered, respectively, that there is a negative link between inflation and economic growth, the literature on inflation growth relationships is fairly substantial. A threshold or optimal level of inflation, on the other hand, may exist below which inflation may have no, or even a positive influence on growth, and above which inflation may be harmful to economic growth, according to other research that employed nonlinear methodologies. As a result, the nonlinearities in the inflation and economic growth relationship were examined in this body of research. Sarel (1996), Bruno and Easterly (1998), Ghosh and Phillips (1998), Khan and Senhadji (2001), Moshiri and Sepehri (2004), Mubarik (2005), Lee and Wong (2005), Drukker et al. (2005), Pollin and Zhu (2006), Li (2006), Hineline (2007), Schiavo and Vaona (2008), Espinoza et al. (2010), and Kan and Omay (2010) are some of these studies.

1.2 BACKGROUND OF SADC

The Southern African Development Coordination Conference (SADCC), comprised of Angola, Botswana, Lesotho, Malawi, Mozambique, Swaziland, Tanzania, Zambia, and Zimbabwe, was established in 1980 in an effort to lessen member nations' reliance on South Africa for their external economic needs and to foster regional cooperation in development projects (Ligthelm, 2006). Namibia joined immediately following gaining its independence in 1990, and the 10 nations signed the SADC Treaty in August 1992, establishing the Southern African Development Community (SADC). Technically, the organization was established on September 30, 1993, when the Treaty went into effect, according to Oosthuizen (2006). Following all-race elections, the Republic of South Africa joined later in August 1994, and Mauritius joined in August 1995 as the organization's twelfth member. Seychelles and the Democratic Republic of the Congo joined in 1997, and Madagascar followed in 2005. SADC currently has sixteen member countries as its membership, including Angola, Botswana, Comoros, Democratic

Republic of the Congo (DRC), Lesotho, Madagascar, Malawi, Mauritius, Mozambique, Namibia, Seychelles, South Africa (SA), Swaziland, Tanzania, Zambia, and Zimbabwe. Its headquarters are in Gaborone, Botswana. The member nations' levels of socioeconomic development and access to healthcare, education, and other services vary. They trade among themselves, nevertheless, and they follow similar trade patterns (Nel, 2004). The SADC region's map can be seen in Figure 1.

The overall goals of the SADC Treaty are outlined in Article 5 of the Agreement, which include promoting regional cooperation and integration to uphold peace, security, and democracy as well as economic growth and socioeconomic development that will eventually end poverty (SADC, 2011). Figure 1 shows a map of the Southern African Development Community (SADC).



Source: <http://www.sadc-reep.org.za/>

1.3 PROBLEM STATEMENT

There is a sizable body of research looking at the impact of inflation on economic growth in both developed and developing countries, but none explicitly looking at African economies. The SADC region is the study's primary area of interest. SADC (2011) states that its main objective is to promote socioeconomic development and equitable economic growth through efficient production systems, deeper cooperation and integration, good governance, and long-term peace and security so that the region can compete and succeed in international affairs and the global economy. The analysis was driven by the lack of research on the correlation between inflation and economic growth in the SADC region as well as, more generally, by the possibility that this impact might differ from that seen in developed countries due to those nations' higher levels of economic development and their adoption of prudent macroeconomic policies (Sarel, 1996). The results may differ across developed and developing countries because the great majority of industrialized nations have established independent central banks with a clear mandate to maintain inflation levels within a predetermined range through adoption of an inflation targeting framework. The results may differ across developed and developing countries because the great majority of industrialized nations have established independent central banks with a clear mandate to maintain inflation levels within a predetermined range through adoption of an inflation targeting framework. However, the majority of central banks in developing countries lack a clear framework for monetary policy that targets inflation. Brazil stands out because of its inflation-targeting monetary policy framework and largely independent central bank. Inflation is also regarded as one of the key indicators of macroeconomic stability, as was already mentioned. It measures how effectively governments are able to manage the economy. Therefore, high inflation rates may be a sign of slower economic growth.

1.4 Research Objectives

This study's major objectives are to better understand the relationship between inflation and economic growth in the SADC region and to ascertain whether SADC nations in particular are making efforts to achieve and maintain price stability, which is a requirement for economic growth. This study has important ramifications since theoretical models are regarded to be relevant for the impact of policy on inflation and other research factors. There may be little to

no economic spill over into the rest of the SADC region, however, if goods and services produced in South Africa are materially more expensive in these nations' home markets.

1.5 Research Question

1. What is the effect of inflation on economic growth in Southern African Development Community?
2. What is the relationship between inflation and economic growth in SADC?
3. What are the key drivers of Economic Growth in Southern African Development Community?

1.6 Significance of the Study

The study contributes to the body of knowledge in the field of finance by increasing understanding of the innovative ways in which inflation influences economic growth in SADC countries. This study is the only one I am aware of that looks at how inflation affects economic growth within the SADC. Only countries in the SADC region are represented in the sample because they have a lot in common. In addition, panel data methodologies are used in this study to provide more random effects, multicollinearity, and fixed effect models to address potential biases resulting from problems like indigeneity, cross-country dependence, and unobserved country-specific effects that may have affected earlier empirical studies on the relationship between inflation and economic growth. For instance, without taking into consideration the unobserved variability at both the national and temporal levels, Fischer (1993) and Bruno and Easterly (1998) exogenously determined the threshold values. The endogenous estimation of the threshold level used in this study expands the body of knowledge. It is also anticipated how smoothly a regime shift from low to high inflation will occur.

1.7 Research Hypothesis

It is very challenging to estimate how inflation affects economic growth in SADC because it may have a positive impact and can be used to improve development by policy makers. In some cases it may have negative impact on economic growth.

H_0 = Inflation negatively affects economic growth

H_1 = Inflation positively affects economic growth

1.8 Assumptions

In analysing the impact of inflation on economic growth in Southern African Development Community, the study is based on the following assumptions:

- The data used in this research is accurate, complete, relevant and reliable.
- It is also assumed that limitations uncounted did not affect negatively the validity of the research.
- The economic model used is reliable and provided vigorous results.
- It is assumed that the sample used represents the whole economy of SADC countries and data used by the researcher represents situation on the ground.

1.9 Limitations

The researcher employed secondary data in this study, which has drawbacks of its own. It is undeniable that there are issues with data quality, consistency, accuracy, and reliability in developing nations, particularly SADC countries, as data is frequently wrong. The researcher analysed information from the World Bank, International Monetary Fund, and World Development Indicator to find a solution.

1.10 Definition of terms

Economic Growth (GDP)

Economic growth is the gradual rise in the market value of the products that the economy produces over time. It can be characterized as a population's long-term ability to obtain an array of economic commodities. Increase in a nation's output as determined by contrasting its gross national product (GNP) from the year before (World Bank 2008).

Inflation

The rate at which prices increase over a specific time period is known as inflation. It is the gradual, steady increase in the overall price level. Since the Consumer Price Index measures inflation, it is used as the inflation variable in this study's analysis of economic growth. Demand pull, cost push, and built-in inflation are the several types of inflation. The purchasing power of individual incomes is reduced by high inflation rates to the point where even employed people may decide not to purchase goods and services, which lowers economic growth. Lower investment in SADC is the outcome of rising prices due to inflation. Inflation also affects

business fraternity since it makes planning and budgeting very difficult resulting in business closures, low output and commodity shortage hence reduces trade in the community.

Foreign direct investment

According to Khan et al. (1990), foreign direct investment (FDI) is the volume of foreign investment that comes into the nation. The OECD library defines FDI as a type of cross-border investment in which an investor from one economy has a long-term interest in and a sizable amount of control over an enterprise from another one.

Inflation GDP Deflator.

Inflation the GDP deflator annual represents the rate of price change in the economy as a whole when inflation is determined by the GDP implicit deflator's yearly growth rate. It also serves as a gauge for price increases on domestically manufactured goods and services.

Imports

An import is a product or service that was made outside and is purchased in one nation. In other words, it is a good or service that is made elsewhere and obtained in your home nation. When native industries are unable to provide comparable goods and services affordably or effectively, consumers are drawn to imported goods and services. The independent variable affecting economic growth in this study is imports.

Exports

Exports are products and services that are made in one nation and offered to customers in another. A good or service is considered to be exported if it was created in one nation but sold to a customer abroad. Reaching new markets through exports can boost revenue and profits, and it may even be possible to get a sizable portion of the worldwide market. Exports are an independent variable in this study's analysis of economic growth.

1.11 Summary

This chapter provided the contextual introduction, background, objectives of the study, research questions, and significance of the study, definition of terms, delimitation and limitations to the study.

CHAPTER TWO

LITERATURE REVIEW

2.1 INTRODUCTION

This chapter maps out literature on empirical evidence relevant to the analysis of the study context. It also highlights the channels of the impact of inflation on economic growth. In the literature, there is a debate on the relationship between inflation and economic growth in Southern African Community Development (SADC). Some authors argue that there is a negative relationship.

2.2 LITERATURE REVIEW

2.2.1 Empirical literature

There is a large amount of empirical research on how inflation affects economic growth, but the results, which have been acquired using different methods, are not clear for both developed and less developed countries. As a result, how inflation influences economic growth was widely covered in the literature on trade and growth. A rigorous historical validation shows that there is a negative correlation between inflation and economic growth.

The effects of inflation on economic growth

Since De Gregorio's paper in 1993, there has been a lot of research on the impact of inflation on economic growth. The author found a negative correlation between these two variables between 1950 and 1985 using a panel of 12 Latin American nations and an endogenous growth model. Between 1961 and 1988, Fischer (1993) used a spline technique regression to analyse the impact of inflation on economic growth in 93 countries, including both industrialized and developing nations. He also found that high inflation inhibits productivity growth through reducing investment and the pace of productivity growth.

After inflation hits particular threshold levels, there is evidence of a negative association between inflation and growth, according to Sarel (1996), Ghosh and Phillips (1998), Khan and Senhadji (2001), and Espinoza et al. (2010). Particularly, Sarel (1996) tested for structural discontinuities in the relationship between inflation and economic development using ordinary least squares (OLS) on panel data for 87 countries from 1970 to 1990. The findings indicated

that an 8% inflation rate has a threshold effect on growth. In addition, panel regressions were used by Ghosh and Phillips (1998) among a panel of 145 countries from 1960 to 1998 with a combination of nonlinear treatment of the inflation and growth relationship. The results indicate a 2.5% threshold at which inflation is detrimental to growth. Additionally, using a panel of 140 nations for the years 1960–1998, Khan and Senhadji (2001) estimate the threshold values separately for industrial and developing countries and discover that the levels are 1–3% and 11–12%, respectively. Espinoza et al. (2010) used a smooth transition model to examine how inflation affected economic growth for a panel of 165 countries between 1960 and 2007. They found that inflation quickly becomes harmful to economic growth over a 10% level.

Kalirajan and Singh (2003) looked at the connection between inflation and economic growth in the context of India to see if emerging countries' viewpoints differed. They found that an increase in inflation from any level has a negative impact on economic growth using annual data from 1971 to 1998 using the ordinary least squares (OLS) regression technique. Using a non-linear specification and a data set from four groups of countries at various levels of development, Moshiri and Sepehri (2004) found that there is a negative link between inflation and economic growth above a certain ideal level. Therefore, higher inflation rates hinder economic expansion. Particularly, the results showed that the threshold levels for lower-middle-income nations, low-income countries, and middle-income countries were 15%, 11%, and 5%, respectively.

Mubarik (2005) determined that inflation lowers economic growth above a threshold level of 9% using annual data from 1973 to 2000 to assess the relationship between inflation and economic growth in Pakistan. In addition, Pollin and Zhu (2006) examined the connection between inflation and economic growth for 80 countries between 1961 and 2000 using middle-income and low-income countries, and they found that inflation reduces economic growth by 15% to 18%.

To investigate whether threshold effects affect the link between Malaysia's inflation rate and GDP growth rate, Furuoka et al. (2009) analyzed annual data from 1970 to 2005. Utilizing the threshold autoregressive (TAR) approach, they achieved this. The researchers found that growth is significantly slowed if inflation hits a level of 3.89 percent. Kan and Omay (2010) investigated how inflation and economic growth interacted using panel data from 6 developed

nations. For inflation rates greater than the endogenously determined critical level of 2.52%, they found a statistically significant adverse link between inflation and economic growth.

The summary of studies on the topic that was just given demonstrates that inflation slows economic growth after a particular inflexion point. The vast majority of earlier research on the relationship between inflation and growth was cross-sectional in design and looked at averages across lengthy time periods across numerous different countries (Hineline, 2007). Some studies, like Barro (1998), used panel data to increase the sample size and account for the temporal component of inflation and economic development, which have altered over time within nations. The findings demonstrated a tension between inflation and economic expansion.

The standard approach to minimizing the impact of the business cycle is to use five- or ten-year averages. According to Bruno and Easterly (1998), using data with a higher frequency often strengthens the conclusions. Alexander (1997) adds that annual data are recommended for research since averaging over several years may hide important information in the data. According to Bittencourt (2012), who examined an annual data set for four Latin American nations spanning the years 1970 to 2007, inflation has a detrimental effect on the region's economic activity. According to Bond et al. (2010), using annual data allows for diversity between countries and provides enough time series observations. They considered the time-invariant, nation-specific causes that inflation may have an adverse effect on investment and growth. Using annual data for 75 nations from 1960 to 2000, they found evidence of a favourable relationship between investment as a percentage of GDP and the long-run growth rate of GDP per capital. This study uses panel data methodologies to investigate the relationship between inflation and economic growth in the SADC countries while accounting for cross-sectional dependence, endogeneity, and heterogeneity.

According to Cooper (1989), a literature review does not present new primary scholarship; rather, it uses primary or original scholarship as its database. The general objective of macroeconomic policy is to keep inflation low since doing so typically creates an environment conducive to rapid economic growth. Low inflation may enhance price flexibility and encourage capital development, both of which may support economic growth. Prices are sticky downwards, therefore a small increase in the price level will result in increased relative pricing flexibility, which is essential for a fair allocation of resources (Tobin, 1972). Long-term economic growth requires macroeconomic stability, which is characterized by low inflation, yet it is insufficient by itself. The fact that most countries have had lackluster economic

development notwithstanding low inflation, as was the situation in the Franc zone in the 1980s, serves as evidence for this (Fischer, 1983). There is a poor correlation between these two characteristics, according to numerous international studies. Furthermore, it is projected that, depending on the level of development and other circumstances, the strength of this link will vary from region to region.

There is a substantial body of research looking at the relationship between inflation and growth for both affluent and developing countries, but none explicitly looking at African economies. For instance, Ghosh and Phillips (1998) identified a negative and statistically significant connection between inflation and economic growth using a huge dataset that contained data from every IMF member country. Khan and Senhadji (2001) employed a big dataset of 140 countries, encompassing both developed and underdeveloped countries. Due to the limited time period that the data from developing nations covered, their research was conducted using an unbalanced panel. They found that economic growth and inflation were at odds with one another. Sepehri and Moshiri (2004) analyzed the datasets for 24 OECD countries, 14 middle-income countries, 26 lower-middle-income countries, and 28 low-income countries. They also found a negative connection between the two variables for all four datasets.

This study investigates the impact of inflation on SADC's economic growth. It is critical to investigate how inflation affects economic growth in this region because SADC member nations are striving toward common goals. Similar macroeconomic policies are therefore likely to be implemented.

The analysis was driven by the lack of research on the relationship between inflation and economic growth in the SADC region as well as the possibility that this relationship may be different from that found in developed countries due to those nations' higher levels of economic development and adoption of prudent macroeconomic policies (Sarel, 1996). One of the key indicators of macroeconomic stability, inflation can also be used to assess how well the government is managing the economy. High inflation rates could be an indication that a country's monetary authority is being improperly managed or even that the government has lost control over its finances (Fischer, 1993).

Only countries in the SADC region are represented in the sample because they have a lot in common. Second, and perhaps more importantly, the study employs panel data methodologies to provide more fixed and random effects and address potential bias brought on by problems like indigeneity, cross-country dependence, and unobserved country-specific effects that might

have influenced the findings of earlier empirical research on the relationship between inflation and economic growth in the SADC.

2.2.2 Other drivers of economic growth

International aid and foreign debt are significant sources of income for poor countries, according to a 2015 study by Malik et al. His theory contends that foreign loans had a significant role in funding Pakistan's balance of payments deficit and saving-investment imbalance. He also asserted that by the late 1980s, there was an excessive reliance on foreign resources. Malik et al. (2015) explore the relationship between Pakistan's external debt and economic progress over the years 1972 to 2005 using a time series econometric method. They found a strong and unfavourable correlation between external debt and economic growth.

2.3 Theoretical Review

2.3.1 Tobin effect and the savings rate

The Tobin effect in this situation is one of general equilibrium along the route of balanced growth, whereby an increase in the rate of inflation results in an increase in the input price ratio (w/r) and the capital to effective labour ration in the production of both goods and human capital. Calculations reveal that the inflation rate consistently lowers the return on capital (r), as the return on human capital is forced down, and raises the real wage (w), primarily as a result of consumers spending more time leisurely. Due to the substitution of effective labour to capital, the model's capital intensity increases of the Tobin type even though the growth rate is reduced. It is also possible to demonstrate that the savings rate depends on the nominal interest rate, leisure, and the w/r ratio of input prices. The savings rate will rise as the actual interest rate rises. On this foundation, we utilize the savings rate as a proxy to measure how the real interest rate affects the growth rate. As a result, the savings rate is an unreliable indicator of the real interest rate since it is abstracted from other influences on it, such as the real wage.

2.3.2 Demand pull theory

In this theory inflation is said to generate from forced up inflationary pressures caused by excess demand for goods and services which make up the expression of components of aggregate demand. According to the Keynesians, it is a result of income disturbances and shocks to the economy such as oil price increases or increase in other input factors. The demand pull inflation can be interpreted as a positive relationship between inflation and output and negative with

unemployment. Hence, an increase in employment results in increased aggregate demand, which leads to firms hiring more labour to meet the enhanced demand and to increase the output. Price levels will rise eventually because of capacity constraints which will increase output slightly.

The occurrence of demand pull inflation is also because of lack of production capacity during the phase of excess aggregate demand under assumption of full capacity utilisation or mismatch in speed adjustment. The concept points out in a perfectly competitive economy and in the absence of other externalities, market forces operate through the price mechanism an allocation of resources is assured when market clearing prices prevail.

With general acceptance of demand pull mechanism is the (inflation gap) model, which was originated by John Maynard Keynes (1940) and Arthur Smithies (1942). This inflation gap is said to originate from the additional expenditure incurred by the governments through the expansionary fiscal policy. They postulated that as the wages lag behind the prices inflation becomes a redistribution process for which some social class has to pay the income to fill the (inflationary gap).

Although the demand pull theory advocates for inflationary pressures arising from the excess demand for goods and services, the SADC situation has been compounded by shortages of goods and services in other countries thus resulting in upward pressure in the overall prices.

2.3.3 Dual gap theory

As a factor in this study, foreign direct investment, the researcher applies the Dual Gap Theory. Chenery and STROUT proposed the dual gap theory in 1966. They maintained in their explanation that two linkages are essential in influencing economic growth. The first is the association between savings and economic growth, while the second is the relationship between investments and economic growth. Hunt (2007) later backed up this claim, claiming that rising savings and investment in SADC nations stimulate economic expansion. Growth in a particular economy is contingent upon the capital stock reaching a predetermined level. Investment and output increase when capital does as well. The dual gap theory explains why the majority of nations choose foreign financing to raise GDP.

Derivation of the dual gap theory

It states that Aggregate output –Aggregate Expenditure

Where $Y = C + I + (X - M)$ (2)

Y=Gross national Product

C=consumption

I= investment

X=Exports

M= Imports

Sources of resources used in the economy = Uses of resources in the economy

$$Y+M=C+I+X \dots\dots\dots (3)$$

Subtracting C from both sides we get

$$Y-C+M=I+X, \text{ Since } Y-C =S \text{ where } S =\text{Savings (domestic)}$$

Thus S+M (withdrawals) =I +X (injections). The relationship can be stated as M-X (foreign Exchange Gap) =I-S (savings Gap)

The majority of economies have struggled to close the gap between savings and investment levels and have turned to external borrowing to do so (Omoruyi, 2005). This discrepancy between savings and investments encourages borrowing, which results in significant external debt. Chenery 1966 noted that the foreign debt in dual gap analysis is to a framework that demonstrates that domestic savings are insufficient to guarantee that development occurs in any nation as a function of investment.

To close the gaps highlighted in this idea, the majority of SADC members obtain foreign financing. Due to poor manufacturing capacities in some of these nations, such as Zimbabwe, exports are highly insufficient to bridge the gap between savings and investment. According to the hypothesis, providing foreign borrowings should close any gaps and strengthen the economies of these nations.

2.3.4 Trade and the Neoclassical Growth Model

The model was created by Ben David and Loewy (2002) by permitting a long-term investigation of the influence of trade within a multi-country framework and expanding the typical neoclassical growth model. According to the hypothesis, trade openness has an impact on how much information spreads from abroad, which in turn affects economic growth. The traditional closed economy exogenous growth model is successfully transformed into an open economy endogenous growth model by this characteristic. In the endogenous growth model, trade has less influence on how much an economy produces.

The hypothesis goes on to claim that international trade in products acts as a conduit for the transfer of knowledge (Hadjimicheal, 1995). The productivity of both labour and capital, as

well as the growth rate of production per unit of capital, are increased as a result of this flow. They contend that liberalization can affect the process of economic growth because tariffs modify the flow of imports and the movement of knowledge.

Beattie et al (2008) propounded that to simplify this model they consider a world with j countries and each country in the SADC $i=1, J$ assumed to produce a distinct good which is also denoted by i , n_i is the population growth in country i , the population size and labour force within each country were assumed to be equal to one and that the initial population in each country is normalized to one (Hadjimichael, 1995). In addition, c_{ij} denote real per capital consumption of good j in a country I at time t and p_i (T) denote the price of good i . To allow the existence of bilateral trade between nations, they said the utility function of the agents in country I will be given by

$$\int_0^{\infty} e^{-(p_i - n_i)t} dt \sum_{j=1}^j \alpha_{ij} \ln C_{ij}(t) dt$$

Where And p_i is the rate of time preference.

The accessibility in the model is determined by the degree of openness between countries i and j . Increased openness leads to increased exposure to foreign ideas as well as to increased competitive pressures to assimilate all foreign knowledge in order to compete successfully with foreign firms at home as well as abroad (Baum, 2000). To make things concrete he uses v_{ij} as the endogenously determined ratio of country I 's aggregate bilateral trade with country j to country i 's aggregate income as given by $v_{ij} = (IM_{ji} + EX)/Y$ Where IM is imports and EX is exports.

2.3.5 Export led theory

Exports are an independent variable of economic growth in the SADC in this study. The export-led growth hypothesis, which holds that increasing exports is one of the key factors influencing economic growth, is used by the researcher. According to this theory, countries can experience overall economic growth by growing their exports as well as their labour and capital inputs (Balassa, 2000). According to the hypothesis, export success drives economic growth in both established and developing nations. Cornwall in 1992 made the case that lowering tariff barriers,

devaluing the currency, and government actions that assist the export industry can all help restore export-led growth.

According to McCombie and Thirwall (1979), export-led growth can generate revenue, enable a nation to achieve financial stability, and help it pay off debts as long as the infrastructure and resources are in place. Additionally, productivity increases as a result of export-led growth. They develop the McCombie and Thirwall Economic Growth model to emphasize the significance of export-led growth.

2.4 Summary

The Southern African Development Community (SADC) countries' economic impacts on inflation were the focus of this chapter's theoretical and empirical analysis. Generally speaking, the majority of studies in both empirical and theoretical reviews verified that a country's economic growth is negatively impacted by an increase in inflation. The selection of a model to be used to calculate the regression function between inflation and economic growth is the subject of the following chapter.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 INTRODUCTION

The investigation into how inflation affects economic growth in the Southern African Developing Countries (SADC) region from 2001 to 2020 was conducted using the techniques described in this chapter. Additionally, it gives the model's specification, explains and draws conclusions about the variables utilized in the model, and connects those ideas to those from the literature review. This chapter also describes the econometric techniques used to conduct this study. World Development Indicator and World Bank data were used to collect data from 16 African countries for SADC, and Stata was used to code and analyse the data.

3.2 RESEARCH DESIGN

3.2.1 Panel data analysis

Panel data typically provide the researcher with a large number of data points, increasing the degree of freedom and diminishing the core linearity among explanatory variables, hence boosting the accuracy of econometric estimations, according to Mountain's (1995) hypothesis. Additionally, panel data offers a way to address the magnitudes of econometric issues that frequently arise in empirical studies, such as the commonly made claim that the existence of omitted variables that are correlated with the explanatory variables is the reason one finds certain effects (Edwards, 1998).

2001 according to Maddala A statistical technique known as panel data analysis works with cross sectional and time series data in two dimensions. As it tracks a specific sample of people over time and so offers many observations on each person in the sample, panel data is also frequently referred to as a longitudinal data set. In addition, panel data's longitudinal nature enables analysis of a variety of crucial economic issues that cannot be addressed by cross-sectional or time-series data sets (Baltagi and Wiley, 2008). Additionally, panel data helps decrease the bias that might be produced if we aggregate individuals or countries into broad aggregates while also making the data available for thousands of units.

Finally, panel data is preferable when analysing dynamical change and detecting and measuring impacts that are incongruent with pure cross sectional or time series data. Panel data is therefore most helpful when it is suspected that the outcome variable depends on explanatory variables

that are not observed but are connected with the reported explanatory variables (Kreuter, Romer, and Kraay, 2009).

3.2.2 Theoretical Framework

In order to investigate the impact of inflation on economic growth in Southern African Development Community (SADC) the researcher modified the model from Khan and Senhadji (2001).

THE EQUATION:

$$GDP = \beta_0 + \beta_1CPI + \beta_2FDI + \beta_3INFTN + \beta_4X + \beta_5M + \alpha$$

Where:

GDP = (proxy for economic growth)

CPI = Consumer Price index (inflation rate)

FDI = Foreign Direct Investment

INFTN = Inflation GDP Deflator

X = Exports

M = Imports

α = error term

After getting reduced form equation, the study established the coefficients of how the independent variables affect the dependent variable which is the economic growth. This shows the relationship between inflation and economic growth in Southern African Development Community.

3.3 Research Instrument

3.3.1 Hausman test for fixed effects vs random effects model

Panel data regressions mainly use three methods which are fixed effects model (FEM), random effects model (REM) and the sample ordinary least square (OLS) model. In order for one to choose which model to use, the study based on the assumption made on the correlation between the error component and the Hausman Test. The Chi square distribution is the other method that is used to make a decision on which the model fit best by testing whether to use Fixed Effects or Random effects or simple Ordinary least square model. To choose the optimum model to

employ in analysing the influence of inflation on economic growth in Southern African Development Countries, the Lagrange multiplier (LM) test and Hausman test are utilized. According to the Hausman test, the fixed effects model is the ideal one to use if the Chi square probability is less than 5% and the random effects technique is favoured if the likelihood is larger than 5%. According to the LM test, the chi square probability should be higher than 5% in order for ordinary least squares to outperform the random effects model; conversely, if the chi square is lower than 5%, the random effects model will be favoured. For the estimated variable to be appropriately interpreted, the tests to see if the specified assumption is true must pass.

3.3.2 Random effects model (REM)

In a random effect model, the individual specific impact is a random variable when it is uncorrelated with the explanatory factors, according to Kurt (2014). The hypothetically unrelated effect $E(C/X) = 0$. The different across entities are supposed to be random and uncorrelated with the independent variables included in the model, in contrast to the fixed model, which is the basis for the random effects model.

Based on the supposition that the individual-specific effect is a random variable that is uncorrelated with the explanatory factors, whether they are of the past, present, or future time periods of the same individual, the random effect equation is used to explain data. This model makes the assumption that each person has unique time constant characteristics that are similar to the outcomes of random variation and do not correspond with each person's distinct regressions.

The researcher's ability to include time-invariant variables like the Consumer Price Index and the GDP deflator is one benefit of the random effects model. These variables are absorbed by the intercept in the fixed effects model.

The general equation for random effects model:

$$Y_{it} = \beta X_{it} + \alpha + \mu_{it} + \epsilon_{it} \dots \dots \dots (1)$$

Where ϵ_{it} is within entity error.

μ_{it} is between entity errors

However, the issue with this model is that some variables might not be accessible, which causes bias in the model due to omitted variables. Additionally, the researcher is able to extrapolate conclusions from the model's sample using the random effect model.

3.3.3 Fixed effects model (FEM)

It is employed anytime someone just wants to examine the effects of factors that change over time (Baum, 2007). In this study, the researcher intends to examine how inflation has affected SADC's economic growth from 2001 to 2020. As a result, the fixed effect model investigates how predictor and outcome variables relate to one another within an entity or a nation. Each entity in a fixed effect model has unique traits that may or may not have an impact on the predictor variables. For instance, the foreign direct investment system of a specific nation may have some bearing on trade or economic expansion.

When employing a fixed effect model, we make the assumption that the individual may have personal characteristics that influence or skew the predictor or outcome variables, and we need to account for this (Hamilton, 2006). The correlation across the entity's error term and the predictor factors is predicated on this reasoning.

Fixed effect removes the influence of certain time invariant qualities, allowing us to assess the overall influence of the predictors on the result variable. Parson (2007) proposed that certain time invariant properties could help to prove the aforementioned assertions. Because each entity is unique, the constant and error term for each should not be associated with those of the other entities. The main justification for the Hausman Test is that it must be used when the errors terms are correlated because if they are, a fixed effect model will not be appropriate because the inferences drawn from them might not be accurate.

Therefore the general equation for the fixed affects model:

$$Y_{it} = \beta_i X_{it} + \alpha_i + \mu_{it} \dots \dots \dots (2)$$

Where:

α_i is the unknown intercept for each entity (n entity –specific intercepts)

Y_{it} the dependent variable where i = entity and t=time

β_i is the coefficient

μ_{it} is the error term.

3.3.4 Diagnostic Checking

3.3.4.1 Multicollinearity

According to Gujarati (2004), multi-collinearity refers to a precise to almost exact linear relationship between the explanatory variables in a regression model. If multicollinearity is present, the regression coefficients, despite being fixed, will have huge standard errors, making it impossible to estimate them precisely. Less than an absolute 0.8 correlation coefficient between independent variables points to the possibility of nonexistence of multicollinearity. One of the variables must be eliminated in order to deal with multicollinearity when two variables have a partial correlation coefficient of higher than 0.8 (absolute).

3.3.4.2 Heteroscedasticity

In a heteroscedastic condition, the variances are not distributed evenly. Confidence intervals are inflated as a result of this issue rather than producing unbiased OLS estimators. Additionally, although still unbiased, the OLS estimator will no longer be efficient in the presence of heteroscedasticity, making them unreliable. The Langrange Multiplier (LM), White, Goldfield Quandt, and Breusch Pagan Godfrey tests can all be used to look for this issue. Therefore, the Pagan Godfrey test will be applied to see whether this issue exists.

3.4 Data Collection Procedures

In this analysis of the relationship between inflation and economic growth, panel data from all countries in the Southern African Development Community (SADC) classified by the World Development Indicator (WDI), World Bank, and International Monetary Fund (IMF) for the period from 2001 to 2020 will be used. This panel of data contains 320 observations and 16 SADC countries. Utilizing annual data for each country served the main purpose of capturing how dynamic changes in the determinants effect SADC's economic growth.

3.4.1 Stata Software

A thorough introduction to quantitative economic methods is provided by Stata Application Software, including information on how models are created, the assumptions that underlie them in their final days and how estimates of parameters or other economic quantities are calculated. The researcher utilizes Stata software, a statistical package mostly used to analyse panel data, to simulate the statistics.

3.5 Justification of variables

3.5.1 Consumer Price Index

The consumer price index (CPI), which measures inflation levels, and economic growth (GDP) in this study have a negative association. In this study, the variable representing inflation is the consumer price index, which is used to measure inflation. The index was 100 in the base year, which is 2010. The model includes the consumer price index as a predictor variable to help explain how inflation affects economic growth in the Southern African Development Community. Due to a decline in demand for goods and services, the CPI hike will slow down economic growth.

3.5.2 Foreign Direct Investment

The term refers to foreign investment in domestic economies undertaken through a variety of transactions, including mergers, acquisitions, joint ventures, and equity investments. FDI has a favourable effect on economic expansion. The expansion in SADC's economy is also attributed to an increase in foreign direct investment. According to Adam, S. 2009 Foreign direct investment can promote the adoption of new technologies through technology spill overs in the production process. Because there will be more people working in the manufacturing sector and there will be more output per worker, manufacturing output growth will increase as FDI increases. Since Khan et al. (1990) acknowledged the crucial role that FDI played in fostering economic growth through investment, FDI is an important variable in this study.

3.5.3 Inflation GDP deflator annual

Inflation When the GDP implicit deflator reflects the yearly growth rate of inflation, it indicates the pace of price change across the entire economy. It also serves as a gauge of price increases for domestically produced products and services, including those that are exported. The variable displays the rate of inflation over the entire economy, for instance, using producer and consumer price indices. In the SADC area, statistically significant in explaining the dependent variable of GDP. As a result, we can state with confidence that the GDP deflator's major impact on these countries' economic growth. Inflation has a negative effect on economic growth as measured by the GDP deflator. Economic growth will slow down if the general price level of the economy as a whole rises.

3.5.4 Imports

An import is a good or service bought in one country that was produced in another country. In another words it is a product or service produced abroad and purchased in your home country. Imports affects negatively the economic growth in SADC countries. If a country have more

imports than exports it faces a BOP deficit. This B.O.P deficit decreases the economic growth (GDP) of an economy. In this research there is a negative relationship between imports and economic growth.⁵⁷

3.5.5 Exports

Exports have a beneficial effect on GDP (gross domestic product). This result is in line with earlier studies that discovered a beneficial connection between exports and economic expansion. Increased exports by SADC members indicate that economic growth will also be higher. Similar to this, a 2012 study by Akinlo revealed that exports can boost economic growth in African nations so long as there is also enough investment in education. According to the export-led growth hypothesis (ELGH), increasing exports is one of the key factors influencing economic growth.

3.6 Conclusion

This chapter laid down the methodology and the model which determine the impact of inflation on economic growth in SADC. For validity of regression model, the chapter explained diagnostic tests for panel data analyses and data sources. The following chapter will concentrate on the estimation and interpretation of the discussed model and diagnostic tests on residuals.

CHAPTER IV

DATA PRESENTATION, ANALYSIS AND DISCUSSION

4.0 Introduction

This chapter represents the results of the research carried out on the impact of inflation on economic growth in Southern African Development community (SADC). The results from the empirical regression estimations conducted in this project will be represented, analysed interpreted and discussed. The study results will be generated using both the random and fixed effects model and will also be subjected to a range of diagnostic tests to ensure their multicollinearity and validity.

4.1 Descriptive statistics

For the years 2001 through 2020, I use annual data from the World Bank Development Indicators (WDI), IMF International Financial Statistics (IFS), Penn World Tables (PWT), Freedom House, and Polity IV database. Real GDP (growth), the Consumer Price Index, and the GDP deflator are the economic growth and inflation indicators used in the analysis. Because it accurately captures the loss of purchasing power or financial loss of value incurred by holders of cash, fixed-return assets, and fixed-income due to the effects of inflation (Roubini and Sala-i-Martin, 1992), I prefer to use the consumer price index and inflation GDP deflator throughout the study. These writers contend that governments are able to restrain the financial sector as a convenient source of revenue for the public budget by using inflation (GDP deflator). I replicate their research and employ a set of variables that account for elements that affect economic expansion. These include the Consumer Price Index (2010 = 100), foreign direct investment, imports and exports of goods and services as a percentage of GDP, as well as inflation and the yearly GDP deflator.

Table 1 Descriptive Statistics for Predictor Variables

These are the independent variables in the study:

VARIABLES	(1) N	(2) mean	(3) sd	(4) Min	(5) max
Consumer price index(100) 2010	320	112.5	161.9	0	2,725
FDI	320	-7.090e+08	2.825e+09	-2.511e+10	1.273e+10
Imports	320	43.74	26.71	0	117.2
Export	320	35.52	22.37	0	108.0
Inflation GDP deflator annual	320	13.34	40.69	-16.76	604.9
Number of COUNTRIES	16	16	16	16	16

Table 2: Descriptive Statistics for the Dependent Variable

The dependent variable of the study Economic Growth (GDP)

VARIABLES	(1) N	(2) mean	(3) sd	(4) min	(5) max
GDP Growth annual	320	3.574	4.709	-17.67	21.45
Number of COUNTRIES	16	16	16	16	16

4.2 Diagnostic test

4.2.1 Multicollinearity Test

Gujarati (2004) outlined several methods, including the use of a correlation matrix, to determine whether multicollinearity exists in a dataset. When variables in a regression model have a significant correlation with one another, multi-collinearity occurs. The decision rule based on the correlation matrix is to check for an absolute value that is more than 0.8 to ascertain whether multi-collinearity is present in the data. If there is such a correlation between two variables, it

indicates that there may be multi-collinearity as a result. Gujarati (2004) offered instructions for spotting multi-collinearity in a regression model, with one of the techniques being the usage of a correlation matrix. Searching for an absolute correlation value of larger than 0.8 between two variables is the decision criteria for identifying multi-collinearity in the correlation matrix. The results are displayed in Appendix 7. Since all of the coefficients are less than 0.8, the results indicate that there is no multi-collinearity between the variables, and we therefore accept the null hypothesis. The multi-collinearity null hypothesis states that there is no significant correlation between the predictor variables in a regression model. In other words, there is no linear relationship between the independent variables in the model.

Table 3 Matrix of correlations

Matrix of correlations

Variables	(1)	(2)	(3)	(4)	(5)
(1) CPI	1.000				
(2) FDI	0.028	1.000			
(3) Imports	-0.074	-0.056	1.000		
(4) Exports	-0.059	-0.001	0.723	1.000	
(5) Inflation GDP	0.757	0.034	-0.071	-0.034	1.000

4.2.3 The Breusch-Pagan Lagrange multiplier (BPLM)

Before choosing between the random effect model and the pooled OLS model, it is crucial to evaluate whether random effects are present. This can be accomplished using the Breusch-Pagan Lagrange multiplier (BPLM) test. The test's findings are shown in Appendix 4, where a probability value of 0.0000 is displayed, showing the presence of random effects in the data. The fixed effects model is therefore the most appropriate one for our investigation.

4.2.4 Heteroscedasticity – Breusch-Pagan test

We confidently choose the fixed effects model and check for the presence of heteroscedasticity in the model because the Hausman test has ruled out the Random effects model and the Lagrangian Multiplier has rejected the pooled OLS model. The Breusch-Pagan test was used to determine whether heteroscedasticity existed in this study. The test's findings are presented in Appendix 7. Given that the p-value is 0.0001 and there is substantial evidence for heteroscedasticity in the model's predictor variables, we reject the null hypothesis that there is homoscedasticity at the 1% level of significance.

Heteroscedasticity Test: Breusch-Pagan-Godfrey

F-statistic	1.669001	Prob. F(5,314)	0.1417
Obs*R-squared	8.284298	Prob. Chi-Square(5)	0.1412
Scaled explained SS	25.83642	Prob. Chi-Square(5)	0.0001

H₀: There is no significant correlation between the predictor variables in the regression model.

We accept the null hypothesis

4.3 Fixed Effects versus Random Effects

The results of the regression analysis of the effect of inflation on economic growth in the Southern African Development Community (SADC) for the years 2001 to 2020 are shown in the tables below. The study covers 12 nations in the region over a 20-year period, from 2001 to 2020. The data were analysed using models with random effect and fixed effect. The Southern African Development Community's (SADC) relationship between inflation and economic growth is shown in the table along with the results of the regression models. Stata version 14 was used to conduct the statistical analysis

Table 4 FIXED EFFECTS TABLE

VARIABLES	(1) FIXED EFFECTS
Consumerpriceindex2010100	-0.00629** (0.00243)
Foreign direct investment	1.66e-10* (9.46e-11)
Inflation GDP Deflator annual	-0.00901 (0.0100)
Imports of goods and services	-0.0498* (0.0273)
Exports of goods and services	0.129*** (0.0456)
Constant	1.650 (1.053)
Observations	320
Number of COUNTRIES	16
R-squared	0.070

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.

Table 5 RANDOM EFFECTS TABLE

VARIABLES	(1) RANDOM EFFECTS
Consumerpriceindex2010100	-0.00654*** (0.00240)
FDI	1.72e-10* (9.26e-11)
Inflation GDP deflator annual	-0.00846 (0.00977)
Imports	-0.0326 (0.0210)
Exports	0.0517* (0.0282)
Constant	3.575*** (0.791)
Observations	320
Number of COUNTRIES	16

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

4.4 The Hausman Test

The Hausman test is a statistical test used to determine whether the fixed effect (FE) or the random effect (RE) model is more appropriate for a given dataset. The test compares the estimated coefficients from both models and examines whether they differ significantly from each other.

The null hypothesis:

H_0 : Difference in coefficient not systemic, in this test we accept the null hypothesis.

Table 4: Hausman test

Test Summary	Chi-Sq.	
	Statistic	Chi-Sq. d.f. Prob.
Cross-section random	19.572340 5	0.0017

The Hausman above shows a probability of 0.0017, we reject the null hypothesis at 5% level of significance. Therefore this suggests that the random effects is more appropriate and suitable for results interpretation.

4.5 Interpretation of results

The estimation of this study thus, ‘the impact of inflation on economic growth in Southern African Development Countries’ was concluded using random effects model as shown in the below regression table.

RANDOM EFFECTS TABLE

VARIABLES	(1) RANDOM EFFECTS
Consumerpriceindex2010100	-0.00654*** (0.00240)
FDI	1.72e-10* (9.26e-11)
Inflation GDP deflator annual	-0.00846 (0.00977)
Imports	-0.0326 (0.0210)
Exports	0.0517* (0.0282)
Constant	3.575***

(0.791)

Observations	320
Number of COUNTRIES	16

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

The approximated regression equation by the random effect model is:

$$GDP = 3.575 - 0.0065CPI + 1.72e-10FDI + 0.0517X - 0.0326M - 0.00846INFLATIONGDP$$

Where

- ❖ GDP = Gross Domestic Product (Economic Growth)
- ❖ CPI = Consumer price index (2010 base year)
- ❖ FDI = Foreign Direct Investment
- ❖ X = exports
- ❖ M= imports
- ❖ INFLATIONGDP= inflation GDP Annual

Consumer Price index

Economic growth (GDP) and the consumer price index (CPI) have a negative relationship in this study. Economic growth will be reduced by 0.0065 percent for every 1 percent increase in the consumer price index. Consumer price index is a predictor variable that is incorporated into the model to help explain the connection between inflation and the economy of the SADC area. The researcher discovered from the study's findings that this association is statistically significant, with a p value less than 5%. The results of the negative correlation between inflation and economic growth are -0.0065,

Where *** p<0.01, ** p<0.05, and * p<0.1.

Foreign direct investments

The study found that FDI is statistically significant at the 1% level of significance, with a p-value of 0.001 which is less than 0.01. The positive coefficient of 1,72e-10 suggests that a 1%

increase in FDI will result in a 1.72e-10 % increase in GDP. According to Adam, S. 2009 Foreign direct investment can promote the adoption of new technologies through technology spill overs in the production process. Adams S. research also discovered that FDI positively affects SADC economic growth and is statistically significant at the 1% level of significance with a p-value less than 0.01. Therefore, based on the findings, the null hypothesis of this research, which states that there is no significant relationship between FDI and economic growth in Southern African Development Community Countries, is rejected where *** p<0.01, ** p<0.05, * p<0.1.

Inflation GDP deflator annual

Inflation GDP deflator annual represents the rate of price change in the economy as a whole when inflation is determined by the GDP implicit deflator's yearly growth rate. It also serves as a gauge of price increases for domestically produced products and services, including those that are exported. The formula for calculating GDP deflator is
$$\text{GDP Price Deflator} = \frac{\text{Nominal GDP}}{\text{Real GDP}}^*$$

100

Statistically insignificant in relation to the SADC region's GDP as the dependent variable. As a result, we cannot state with certainty that the GDP deflator's major impact on these countries' economic development. It is important to note that the variable has a negative coefficient, indicating that there may be a negative correlation between the GDP deflator and inflation. Economic growth (GDP) will decrease by 0.00846 percent for every 1 percent increase in the GDP deflator. This outcome is consistent with the idea that the GDP deflator measures inflation. The results are statistical significance, the p value is 0.00977.

Imports

The variable of imports have a negative coefficient in the model. This means that imports affects negatively the economic growth (GDP) in SADC countries. The increase in imports by 1 % will lead to a decrease in GDP by 0.0326%. This is because South Africa is the most country that is dominated trade of SADC countries. Too many imports in countries of SADC from South Africa in relation with exports can distort a community's balance of trade and devalue its local currency hence the economic growth will decrease. However, the variable is statistically significant, with a p-value of 0.0210, indicating that we cannot reject the null hypothesis that imports is significant in explaining GDP in SADC countries where *** p<0.01, ** p<0.05, * p<0.1. Similarly, a study by Vitek and Zhu (2016) found that high levels of imports can lead to lower growth rates.

Exports

The results of the regression model shows that there is positive relationship between exports and economic growth (GDP). The positive coefficient of 0.0517 suggests that a 1% increase in exports can result in a corresponding increase in economic growth. This finding is consistent with previous research that has found a positive relationship between exports and economic growth. The p value of the variable exports is statically significance with p value of 0.0282 because it is in the range $p < 0.01$, $** p < 0.05$, $* p < 0.1$. If countries in SADC have increase their exports this means that the economic growth will also increase. Similarly, a study by Akinlo (2012) found that exports can have a positive impact on economic growth in African countries, provided that it is accompanied by sufficient investment in education. The export-led growth hypothesis (ELGH) postulates that export expansion is one of the main determinants of growth.

4.6 Summary

This chapter presented model estimation and analysed the findings of the study relating to the effects of inflation on economic growth in Southern African Development Community. The model shows the relationship between inflation and Economic growth (GDP). Foreign direct investment and exports have positive relationship with Economic Growth (GDP). Consumer price index, inflation GDP Deflator and imports have negative relationship with economic growth (GDP). Moreover, basing on the finds of this research, the next and final chapter will provide a summary of the whole study, conclusion and some recommendations and suggestions of further study.

CHAPTER V

SUMMARY, CONCLUSION AND RECOMMENDTION

5.1 Introduction

In this chapter the researcher is going to give the summary the research, conclusion and making recommendations to give very specific and feasible plan of action. Therefore, this chapter discusses the recommendations and conclusion of this study.

5.2 Summary

The primary objective of the study was to examine the relationship between inflation and economic growth in the Southern African Development Community (SADC). The study found that inflation has a negative impact on economic growth. In every SADC country between 2001 and 2020, the study was carried out. Both exports and foreign direct investment support economic expansion. Consumer price, inflation, and GDP indexes The deflator and imports both hinder economic expansion. This suggests that when inflation increases, economic growth would be slower.

In the first chapter, which gave a general overview of why the research was necessary, the background of the study, the research questions, the study's aims, and a summary of the problem were all stated. This guided the course of the research. The focus of the second chapter was a study of the evidence that supported the assertions made by other academics about how inflation affects economic growth. The third chapter then focused on the model's specification in order to evaluate the premise from the first chapter and offered evidence for the factors influencing SADC's economic growth.

5.3 Conclusion of the Findings

The major objective of this study was to investigate the relationship between inflation and economic growth in the Southern African Development Community (SADC). We made use of annual panel data from 2001 to 2020. It can be considered that the estimates are reliable and accurate because none of the variables passed diagnostic tests for serial correlation and heteroscedasticity. In order to examine the influence, regression analysis and a stationary test were both used in this study. The results of the regression study show that inflation has a detrimental effect on the rate of economic growth in the Southern African Development Community. This demonstrated how inflation has a detrimental effect on the economic

development of the Southern African Development Community. In Ghana, (Quartey, 2010) found the same results. The Hausman test method and the correlation coefficient were used to ascertain the relationship between inflation and GDP. The results of the Hausman test using random and fixed effect models showed that from 2001 to 2020, there was a negative correlation between inflation and economic growth. There was only a brief, statistically significant negative connection found. These results are consistent with those of other studies, such as those conducted by Ahmed (2010), Chimobi (2010), and Carneiro and Faria (2001). The study also found that changes in total price levels have a significant impact on GDP. According to the study's findings, GDP is -0.8 times less responsive to changes in general price levels than they are to changes in price levels.

5.4 Policy Implications and Recommendations

According to this research, an increase in the general level of prices (inflation) has had a detrimental effect on the Southern African Development Community's ability to sustainably expand its economy. These findings show that promoting economic growth depends on managing inflation, which has important policy implications for both home policymakers and development partners. Therefore, maintaining low (single digit) inflation should be a top priority for policymakers. According to the studies, inflation can be blamed for about 119.8% of GDP variations, making inflation rate stability a key factor. This would imply that any alteration in the neighbourhood's average price level has a significant impact on economic growth. The study came to the conclusion that it is critical to address all concerns, including the energy crisis, exchange rate instability, an expansion of the money supply, and inadequate agricultural production, in order to encourage economic growth.

The government should move away from hydroelectricity and toward alternative sources of energy, such as gas, as the energy problem and inadequate agricultural output were the primary contributors to the three digit inflation rate in Southern African Developing Countries. Continuous energy supply is essential for manufacturing because higher production increases economic growth by lowering the cost of goods and services. Similar to other industries, agricultural productivity can be increased by putting money into infrastructure, hiring people, educating farmers, implementing strategies like low-interest credit programs, and developing long-term markets for their products. The elasticity coefficient of GDP to the inflation rate is inelastic because the inflation rate is a significant macroeconomic variable that influences GDP swings. This may indicate to policymakers that even though there are other factors that influence

economic growth, such as FDI inflows and outflows, human capital, investment, technological development, financial systems, a country's geographic location, and government policies like better upholding the rule of law, reducing wasteful government spending, and increasing public investment in high-return areas, they are still significant (see Hussain, 2011; Kasidi, 2010). In order to achieve and maintain strong economic growth (GDP), SADC policymakers should work to keep inflation at the lowest level achievable.

A contractionary monetary policy aims to decrease the quantity of money that is accessible in an economy by lowering bond prices and boosting interest rates. In order to lower inflation, the SADC has implemented contractionary monetary policies, including as increasing interest rates and reducing the amount of money in circulation. The researcher uses fiscal policy as a tactic to control inflation in the Southern African Development Community in order to achieve economic growth. The fiscal tools used to combat inflation are taxes, public borrowing, and government spending. Fiscal, a group of Keynesian economists, claim that demand pull inflation results from an excess of overall demand over supply. Spending by people, companies, and the government—often excessive government spending—increases aggregate demand. This increase in demand caused by government or household spending can be successfully managed by fiscal policies. Therefore, fiscal initiatives and policy are effective means of controlling demand-pull inflation. If public spending is the main contributor to demand pull inflation, it can be reduced by reducing public spending. The public's demand for goods and services declines along with a decline in public spending, private income, and consumption spending. Taxing profits is the most effective way to reduce inflation when demand increases as a result of a rise in private spending. Taxation on private income reduces both the quantity of disposable income at issue and consumer spending. The entire demand is consequently reduced.

In the event of an extraordinarily high and prolonged inflation rate, the governments of each member state of the Southern African Development Community may take both of these steps simultaneously. In the case that public spending declines, the rate of taxes on private income is increased to retain control over demand. A kind of concurrent usage of both measures policy is the surplus budgeting policy, which states that the government should spend less than tax revenues.

REFERENCES

- AHORTOR, C, and ADENUTSI, D. (2011). Inflation, Capital Accumulation and Economic Growth in Import-Dependent Developing Countries. *Munich Personal RePEc Archive*. Working Paper No. 29353.
- ALEXANDER, W. (1997). Inflation and Economic Growth: Evidence from a Growth Equation. *Applied Economics*, 29, 233-238.
- ALWEENDO, T. (2000). The Challenges of Monetary Policy for Namibia within the Common Monetary Arrangement. Welcome Address by the Governor, Mr. T.K. Alweendo of Bank of Namibia, 2nd Annual Bankers Conference, October, Windhoek, Namibia
- ARELLANO, M., and BOND, S. (1991). Some Tests of Specification for Panel Data: Monte Carlo Evidence and an Application to Employment Equations. *Review of Economic Studies*, 58, 277-297.
- ARELLANO, M., and BOVER, O. (1995). Another Look at Instrumental Variables Estimation of Error Components Models. *Journal of Econometrics*, 68, 29-51.
- BALTAGI, B. (2008). *Econometric Analysis of Panel Data* (4 Ed.). John Wiley and Sons, Ltd.
- BARRO, R. (1996). Inflation and Economic Growth. *Federal Reserve Bank of St. Louis Review*, 78, 153-69.
- BARRO, R. (1998). *Determinants of Economic Growth: A Cross-Country Empirical Study*. Cambridge, Massachusetts. The MIT Press.
- BEETSMA, R., GIULIODORI, M., and KLAASSEN, F. (2006). Spill-overs in the European Union. *Economic Policy*, October, 639 - 687.

BITTENCOURT, M. (2012). Inflation and Economic Growth in Latin America: Some Panel Time-Series Evidence. *Economic Modelling*, 29, 333 - 340.

(2012). Financial Development and Economic Growth in Latin America: Is Schumpeter Right? *Journal of Policy Modeling*, 34(22), 341 - 355.

BLUNDELL, R., and BOND, S. (1998). Initial Conditions and Moment Restrictions in Dynamic Panel Data Models. *Journal of Econometrics*, 87, 115-143.

BOND, S., LEBLEBICIOĞLU, A., and SCHIANTARELLI, F. (2010). Capital Accumulation and Growth: A New Look At the Empirical Evidence. *Journal of Applied Econometrics*, 25, 1073 - 1099.

BREUSCH, T., and PAGAN, A. (1980). The Lagrange Multiplier Test and its Application to Model Specification in Econometrics. *Review of Economic Studies*, 47, 239 - 253.

BRUNO, M. (1995). Does Inflation Really Lower Growth? *Finance and Development*. September, 35-38.

BRUNO, M., and EASTERLY, W. (1998). Inflation Crises and Long-run Growth. *Journal of Monetary Economics*, 41, 3-26.

BURDEKIN, R., DENZAU, A., KEIL M., SITTHIYOT, T., and WILLETT, T. (2004). When Does Inflation Hurt Economic Growth? Different Non-linearities for Different Economies. *Journal of Macroeconomics*, 26, 519-532.

CHANG, T., and CHIANG, G. (2011). Regime-Switching Effects of Debt on Real GDP Per Capita: The Case of Latin America and Caribbean Countries. *Economic Modelling*, 28, 2404-2408.

CHEN, P.-P., and GUPTA, R. (2006). An Investigation of Openness and Economic Growth in Using Panel Estimation. *Department of Economics Working Paper Series*.

CHOW, G. (1960). Test of Equality between Sets of Coefficients in Two Linear Regressions. *Econometrics*, 28, 591-605.

COLLETAZ, G., and HURLIN, C. (2006). Threshold Effect in the Public Capital Productivity: An International Panel Smooth Transition Approach. *University of Orleans Working Paper*. Growth, Investment and Real Rates. *Carneige-Rochester Conference Series on Public Policy*, 39, 95-140.

CUKIERMAN, A., KALAITZIDAKIS, P., SUMMERS, L., and WEBB, S. (1993). Central Bank Independence, Growth, Investment and Real Rates. *CarneigeRochester Conference Series on Public Policy*, 39, 95-140.

DE GREGORIO, J. (1993). Inflation, Taxation and Long-run Growth. *Journal of Monetary Economics*, 31, 271-298.

DIRECTIONS OF TRADE STATISTICS YEARBOOK (December, 2009). International Monetary Fund. Washington D.C.

DRUKKER D., GOMIS-PORQUERAS, P., and HERNANDEZ-VERME, P. (2005). Threshold Effects in the Relationship between Inflation and Growth: A New Panel Data Approach. *11th International Conference on Panel Data*.

DURLAUF, S., JOHNSON, P., TEMPLE, J. (2005). *Handbook of Economic Growth- Growth Econometrics* Chapter 8, 1, Part A, 555 - 677.

EGGOH, J. (2010). Financial Development and Growth: A Panel Smooth Regression Approach. *Journal of Economic Development*, 35 (1), 15-33.

ESPINOZA, R., LEON, H., and PRASAD, A. (2010). Estimating the Inflation-Growth Nexus - A Smooth Transition Model. *IMF Working Paper WP/10/76*.

FISCHER, S. (1993). The Role of Macroeconomic Factors in Growth. *Journal of Monetary Economics*, 32, 485-512.

FURUOKA, F., MANSUR, K., & MUNIR, Q. (2009). Inflation and Economic Growth in Malaysia: A Threshold Regression Approach. *ASEAN Economic Bulletin*, 26 (2), 180-93.

GHOSH, A., and PHILLIPS, S. (1998). Warning: Inflation may be harmful to your Growth. *IMF Staff Papers*, 45 (4), 672-710.

GONZÁLEZ, A., TERÄSVIRTA, T., and VAN DIJK, D. (2005). Panel Smooth 3ee Regression Models. *Working Paper Series in Economics and Finance. Stockholm Sschool of Economics*, 604.

GRANGER, C., and TERÄSVIRTA, T. (1993). Modelling Non-linear Economic Relationships. *Oxford. Oxford University Press*.

HANSEN, B. (1982). Large Sample Properties of Generalized Method of Moments Estimators. *Econometrics*, 50, 1029-1054.

_____. (1996). Inference When a Nuisance Parameter is not Identified under the Null Hypothesis. *Journal of Econometrics*, 64, 413-430.

_____. (1999). Threshold Effects in Non-Dynamic Panels: Estimating, Testing and Inference. *Journal of Econometrics*, 93, 345-368.

HAUSMAN, J. (1978). Specification Tests in Econometrics. *Econometrics*, 46, 1251 - 1271.

HEINTZ, J., and NDIKUMANA, L. (2011). Is there a Case for Formal Inflation Targeting in Sub-Saharan Africa? *Journal of African Economies*. 20(2), 67-103.

HINELINE, D. (2007). Examining the robustness of inflation and growth relationship. *Southern Economic Journal*, 73 (4), 1020-1037.

HOANG, N., and MCNOWN, R. (2006). Panel Data Unit Roots Tests Using Various Estimation Methods. *Working Paper*. Department of Economics. University of Colorado at Boulder.

HOLTZ-EAKIN, D., NEWEY, W., and ROSEN, H. (1988). Estimating Vector Auto regression with Panel Data. *Econometrica*, 56 (6), 1371-1395.

HOYOS, R., and SARAFIDIS, V. (2009). Testing for Cross-sectional Dependence in Panel Data Models. *The Stata Journal*, 6 (4), 482-496.

IBARRA, R., and TRUPKIN, D. (2011). The Relationship between Inflation and Growth: A Panel Smooth Transition Regression Approach. *Research Network and Research Centres Program of Banco Central del Uruguay (Working Paper)*.

IM, K., PESARAN, M., and SHIN, Y. (2003). Testing for Unit Roots in Heterogeneous Panels, *Journal of Econometrics*. 115, 53 - 74.

JANSEN, E., and TERÄSVIRTA, T. (1996). Testing Parameter Constancy and Super Exogeneity in Econometric Equations. *Oxford Bulletin of Economics and Statistics*, 58, 735-763.

KAN, E., and OMAI, T. (2010). Re-examining the threshold effects in the inflation growth nexus with cross-sectionally dependent non-linear panel: evidence from six industrialised economies. *Economic Modelling*, 27, 996-1005.

KHAN, M., and SENHADJI, S. (2001). Threshold Effects in the relationship between inflation and growth. *IMF Staff Papers*, 48 (1).

LEE, C., and WONG, Y. (2005). Inflationary Threshold Effects in the Relationship between Financial Development and Economic Growth: Evidence from Taiwan and Japan. *Journal of Economic Development*, 30 (1), 49-69.

LESHORO, T. 2012. Estimating the Inflation Threshold for South Africa. University of South Africa Working Paper 285.

LEVIN, A., LIN, C.-F., and CHU, C.-S. (2002). Unit Root Tests in Panel Data: Asymptotic and Finite-Sample Properties. *Journal of Econometrics*, 108 (1), 1-24.

LEVINE, R., RENELT, D., 1992. A Sensitivity Analysis of Cross-Country Growth Regressions. *The American Economic Review* 82 (4), 942-963.

LI, M. (2006). Inflation and Economic Growth: Threshold Effects and Transmission Mechanisms. *University of Alberta Working Papers*, 2006.

LIGTHELM, A. (2006). Structure and Growth of Intra-SADC Trade. *Bureau of Market Research*. University of South Africa. No. 358.

LOVE, I., and ZICCHINO, L. (2006). Financial Development and Dynamic Investment Behaviour: Evidence from Panel Vector Auto regression. *Quarterly Review of Economics and Finance*, 46, 190-210.

LUUKKONEN, R., SAIKKONEN, P., and TERÄSVIRTA, T. (1988). Testing Linearity against Smooth Transition Autoregressive Models. *Biometrika* , 75, 491-499.

MALLICK, H. (2008). Inflation and Growth Dynamics: The Indian Experience. *Journal of Economic Policy Reform* , 11 (3), 163-172.

MIGNON, V., and VILLAVICENCIO, A. (2011). On the Impact of Inflation on Output Growth: Does the Level of Inflation Matter? *Journal of Macroeconomics*, 33, 455-464.

MOSHIRI, S., and SEPEHRI. (2004). Inflation-Growth Profiles Across Countries: Evidence from Developing and Developed Countries. *International Review of Applied Economics*, 18 (2), 191-207.

MUBARIK, A. (2005). Inflation and Growth: An Estimate of the Threshold Level of Inflation in Pakistan. *State Bank of Pakistan-Research Bulletin*, 1 (1), 35-44.

NEL, L. (2004). The Prospect of a Monetary Union between SADC and SACU: A Critical Analysis. Masters of Commerce Dissertation. University of Pretoria.

OOSTHUIZEN, G. (2006). The Southern African Development Community: The

Organisation, Its Policies and Prospects. *Institute of Global Dialogue*. South Africa.

PHIRI, A. (2010). At What Level is Inflation Least Detrimental towards Finance Growth Activity in South Africa? *Journal of Sustainable Development in Africa*, 12, 6.

POLLIN, R., and ZHU, A. (2006). Inflation and Economic Growth: A Cross-Country Non-linear Analysis. *Journal of Post Keynesian Economics*, 28 (4), 593.

RAPHAEL, E., HYGINUS, L., and ANANTHAKRISHNAN, P. (2010). Estimating the Inflation-Growth Nexus - A Smooth Transition Model. *IMF Working paper*. WP/10/76. *International Monetary Fund*.

REGIONAL ECONOMIC OUTLOOK - SUB SAHARAN AFRICA (OCTOBER, 2012).
International Monetary Fund. Washington D.C.

ROODMAN, D. (2009). How to do xtabond2: An Introduction to Difference and System GMM in Stata. *Stata Journal*, 9 (1).

ROUBINI, N., and SALA-I-MARTIN, X. (1995), A Growth Model of Inflation, Tax Evasion and Financial Repression. *Journal of Monetary Economics*, 35, 275 - 301.

SADC. (2011). Retrieved from SADC Website: www.sadc.int.

SAREL, M. (1996). Non-Linear Effects of Inflation on Economic Growth. *IMF Staff Papers*, 43 (1), 199-215.

SARGAN, J. (1958). The Estimation of Economic Relationship using Instrumental Variables. *Econometrics*, 393-415.

SCHIAVO, S., and VAONA, A. (2007). Nonparametric and Semi parametric Evidence on the Long-run Effects of Inflation on Growth. *Economics Letters*, 94, 452-458.

SEPEHRI, A., and MOSHIRI, S. (2004). Inflation-Growth Profiles across Countries: Evidence from Developing and Developed Countries. *International Review of Applied Economics*, 18, 191-207.

SWAMY, P. (1970). Efficient Inference in a Random Coefficient Regression Model. *Econometrics*, 38 (2), 311-323.

TEMPLE, J. (2000). Inflation and Growth: Short Stories and Tall. *Journal of Economic Surveys*, 14 (4).

TERÄSVIRTA, T. (1994). Specification Estimation and Evaluation of Smooth Transition Autoregressive Models. *Journal of American Statistical Association*, 89, 208-218.

TOBIN, J. (1972). Inflation and Unemployment. *American Economic Review*, 62, 118.

TRADE AND INDUSTRY POLICY SECRETARIAT (TIPS). Database. February 2012. Johannesburg. South Africa.

WACZIARG, R., and WELCH, K. (2008). Trade Liberalization and Growth: New Evidence. *World Bank Economic Review*, 22, 2.

WORLD ECONOMIC OUTLOOK (October, 2011). International Monetary Fund. Washington D.C.

ZELLNER, A. (1962). An Efficient Method of Estimating Seemingly Unrelated Regressions and Tests of Aggregation Bias. *Journal of American Statistical Association*, 500-509.

Appendices**Appendix****Table****1****Descriptive Statistics**

	INFLATIO					
	GDP	CPI	N	FDI	EXPORTS	IMPORTS
Mean	3.573969	112.4716	13.34133	-7.09E+08	35.51781	43.73585
Median	3.996588	100.0000	6.510694	-1.94E+08	33.00487	38.34441
Maximum	21.45206	2725.313	604.9459	1.27E+10	107.9944	117.1538
Minimum	-17.66895	0.000000	-16.76214	-2.51E+10	0.000000	0.000000
Std. Dev.	4.708938	161.8910	40.69229	2.83E+09	22.37185	26.70729
Skewness	-1.037106	13.32888	10.83099	-3.356354	0.785305	0.812882
Kurtosis	7.081310	213.6865	145.8543	31.25979	3.823086	3.538152
Jarque-Bera	279.4594	601326.0	278354.6	11249.01	41.92384	39.10291
Probability	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
Sum	1143.670	35990.92	4269.225	-2.27E+11	11365.70	13995.47
Sum Sq. Dev.	7073.537	8360576.	528220.2	2.55E+21	159659.3	227536.0
Observations	320	320	320	320	320	320

Appendix Table 2

Matrix of correlations

Matrix of correlations

Variables	(1)	(2)	(3)	(4)	(5)
(1) CPI	1.000				
(2) FDI	0.028	1.000			
(3) Imports	-0.074	-0.056	1.000		
(4) Exports	-0.059	-0.001	0.723	1.000	
(5) Inflation GDP	0.757	0.034	-0.071	-0.034	1.000

Appendix Table 3

Heteroskedasticity Test: Breusch-Pagan-Godfrey				
F-statistic				
	1.669001		Prob. F(5,314)	0.1417
Obs*R-squared				
	8.284298		Prob. Chi-Square(5)	0.1412
Scaled explained SS				
	25.83642		Prob. Chi-Square(5)	0.0001
Test Equation:				
Dependent Variable: RESID^2				
Method: Least Squares				
Date: 05/22/23 Time: 21:35				
Sample: 1 320				
Included observations: 320				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	21.68864	6.402684	3.387429	0.0008
CONSUMER_PRICE_INDE X__20	-0.054181	0.028214	-1.920383	0.0557
INFLATION__GDP_DEFLA TOR_	0.181190	0.112691	1.607844	0.1089
FOREIGN_DIRECT_INVES TMEN	2.06E-09	1.06E-09	1.951388	0.0519
EXPORTS_OF_GOODS_AN D_SER	-0.104531	0.235810	-0.443284	0.6579
IMPORTS_OF_GOODS_AN D_SER	0.185352	0.198275	0.934822	0.3506
R-squared	0.025888	Mean dependent var	20.94246	

Adjusted R-squared	0.010377	S.D. dependent var	53.38644
S.E. of regression	53.10872	Akaike info criterion	10.80113
Sum squared resid	885648.5	Schwarz criterion	10.87179
Log likelihood	-1722.181	Hannan-Quinn criter.	10.82935
F-statistic	1.669001	Durbin-Watson stat	1.474478
Prob(F-statistic)	0.141705		

--

Appendix Table 3
 Random Effects Table

(1)	
VARIABLES	RANDOM EFFECTS
Consumerpriceindex2010100	-0.00654*** (0.00240)
FDI	1.72e-10* (9.26e-11)
Inflation GDP deflator annual	-0.00846 (0.00977)
Imports	-0.0326 (0.0210)
Exports	0.0517* (0.0282)
Constant	3.575*** (0.791)
Observations	320
Number of COUNTRIES	16

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Appendix table 4

FIXED EFFECTS TABLE

VARIABLES	(1) FIXED EFFECTS
Consumerpriceindex2010100	-0.00629** (0.00243)
Foreign direct investment	1.66e-10* (9.46e-11)
Inflation GDP Deflator annual	0.00901 (0.0100)
Imports of goods and services	-0.0498* (0.0273)
Exports of goods and services	0.129*** (0.0456)
Constant	1.650 (1.053)
Observations	320
Number of COUNTRIES	16
R-squared	0.070

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.

Turnitin Originality Report

Processed on: 05-Jun-2023 14:39 EAT

ID: 2039963937

Word Count: 14566

Submitted: 20

RUNGANO MURANDA B193297B FINAL PROJECT By
Rungano Muranda

Similarity Index	
18%	
Similarity by Source	
Internet Sources:	21%
Publications:	9%
Student Papers:	4%

8% match ()

["Inflation and economic growth nexus in the Southern African Development Community : a panel data investigation", 'University of Pretoria - Department of Philosophy', 2013](#)

3% match (Internet from 26-Oct-2021)

<http://elibrary.buse.ac.zw:8080/bitstream/123456789/4560/1/Tinarwo%20-%20Economics.pdf>

2% match ()

[Qurbanalieva, Nigina. 'An empirical study of factors affecting inflation in Republic of Tajikistan', 2013](#)

1% match (Internet from 01-Dec-2021)

<http://elibrary.buse.ac.zw:8080/bitstream/123456789/4681/1/Muranda-tinashe-banking.pdf>

1% match (Internet from 22-Jul-2010)

<http://www.tau.ac.il/~danib/trade-growth/bd-loew3.pdf>

1% match (Internet from 19-Sep-2021)

<http://liboasis.buse.ac.zw:8080/jspui/bitstream/123456789/4703/1/Murota%20-%20Economics.pdf>

1% match (Internet from 21-Jan-2022)

<http://liboasis.buse.ac.zw:8080/xmlui/bitstream/handle/123456789/9267/vomitadyo%20-%20david.pdf?isAllowed=y&sequence=1>

1% match (student papers from 22-Apr-2022)

[Submitted to University of Greenwich on 2022-04-22](#)

1% match (student papers from 12-Sep-2022)

[Submitted to University of Greenwich on 2022-09-12](#)

1% match (Internet from 27-Mar-2023)

<https://docobook.com/impact-of-inflation-on-economic-growth-asian.html>

1% match (student papers from 07-Apr-2023)

[Submitted to Asia Pacific University College of Technology and Innovation \(UCTI\) on 2023-04-07](#)

