INVESTIGATING THE CAUSALITY BETWEEN ECONOMIC GROWTH, TRADE AND INCOME INEQUALITY IN SADC (1985-2020)

BY

CHILUFYA CHISANGA

A dissertation submitted to the University of Zambia in partial fulfillment of the requirements of the Degree of Master of arts in Economics

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LUSAKA

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DECLARATION

I, the undersigned do hereby declare that this dissertation entitled “Investigating the Causality between Economic Growth, Trade and Income Inequality in SADC (1985-2020)” represents my own work and that it has not been previously submitted to the University of Zambia or indeed any other University and does not incorporate any published work or material from another dissertation.

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Name……………………………………………………………………

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APPROVAL

This dissertation of Chilufya Chisanga has been approved as partial fulfilment of the requirements for the award of the degree of Master of Arts in Economics by the University of Zambia.

Examiner 1

Name…………………………………………...........................

Signature ………………………………………………………...

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Examiner 2

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ABSTRACT

Southern Africa remains one of the most unequal regions in Africa. This is despite maintaining real positive growth rates and an impressive trade liberalisation believed to have desirable impact on the standard of living and the redistribution of income within and among trading nations. Conversely, empirical literature on the nexus between economic growth, trade openness and income inequality remain open to public debate at global, regional as well as country level. This study investigates the causal relationship between economic growth, trade openness and income inequality in 11 SADC countries from 1985-2020. Data was obtained from World Development Indicators (WDI), Standard World Income Inequality Database (SWIID), International Monetary Fund (IMF) and the World Bank (WB). A multivariate analysis was adopted using Panel Autoregressive Distributive Lags (ARDL) and the Pooled Mean Group (PMG) model. Dumitrescue and Hurlin causality tests were also conducted. Cointegration was detected which revealed the existence of a long run relationship among the variables. Additionally, the estimated results indicate that in the long run, economic growth and trade openness worsens income distribution in SADC. Causality tests also reveal a unidirectional causality running from economic growth to income inequality and from trade openness to income inequality and not vice versa. The implications of the above findings are that SADC needs to focus on a more inclusive and higher growth than the current growth rates and develop appropriate trade policies which are specific to the circumstances of the region. Fiscal policy reforms with increased expenditure on education will also help reduce income disparities in the long run.

DEDICATION

I would like to dedicate this research to my wife Mary and my two sons, Samuel and Gerald and my niece, Penelope for their unwavering support during my study period.

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LIST OF ACRONYMS

ADF:	Augmented Dickey Fuller
AfDB:	Africa Development Bank
AIC:	Akaike Information Criteria
APEC:	Asian Pacific Economic Corporation
ARDL:	Autoregressive Distributive Lags
DFE:	Dynamic Fixed Effects
EU:	European Union
FE:	Fixed Effects
FDI:	Foreign Direct Investment
GDP:	Gross Domestic Product
GMM:	Generalized Methods of Moments
HDI:	Human Development Index
HO:	Heckscher Ohlin
ILO:	International Labour Organisation
IMF:	International Monetary Fund
MENA:	Middle East and North Africa
MG:	Mean Group
OECD:	Organization for Economic Corporation and Development
OLS:	Ordinary Least Squares
PMG:	Pooled Mean Group
RE:	Random Effects
UNDP	United Nations Development Programme
UNCTAD:	United Nations Conference for Trade and Development
VAR:	Vector Autoregressive
VECM:	Vector Error Correction Model
SADC:	Southern Africa Development Corporation
SWIID:	Standard World Income Inequality Database
WDI:	World Development Index
WIID:	World Income Inequality Database

CHAPTER ONE

INTRODUCTION

1.1 Overview

Economic growth has always been at the centre of human development. Even in our contemporary world, economic growth dominates the media debate on development. This is because growth is considered as a precondition for economic development and improved standard of living. In this regard, Southern Africa Development Community (SADC) aims to grow the economies of its members so as to increase wealth and improve the quality of life among its people. In the recent past, the region has made strides in maintaining positive real growth rates. This has been accompanied by progressive trade liberalisation to the rest of the world which is considered as one of the key drivers of economic growth and credited for both static and dynamic gains for trading nations (Salvatore, 2013; Taylor, 2011). However, the relationship and causality between economic growth, trade openness and rising inequality has been an issue in the development literature (Dollar and Kraay, 2000; Chong et al., 2001; Boulila et al., 2013).

1.1.1 Motivation

Development analysts argue that economic growth on a sustained basis at national, regional and global level is a major factor in reducing negative social problems such as higher levels of inequality (Cypher et al., 2004). To this effect, governments around the world and indeed multilateral organizations such as the World Bank (WB) and the International Monetary Fund (IMF) have increasingly focused on interventions aimed at stabilizing economies and promoting growth. The last three decades have also witnessed the spread of a new economic paradigm generally refered to as globalization. This paradigm advocates for rapid removal of barriers to international trade and the liberalisation of domestic markets in order achieve higher growth (Bukhari et al., 2016). Over the same period, the global economy has generally experienced positive growth accompanied by even higher growth in global trade (Dollar et al., 2000; Salvatore, 2013).

Sub Saharan Africa (SSA) and SADC in particular has not been left out of this euphoria. Over the past three decades, though varied within member states, the region as a whole has performed fairly well in maintaining positive real Gross Domestic Product (GDP) and real per capita growth rates (SADC, 2018). Additionally, individual countries in SADC have progressively liberalized their trade with the rest of the world since the mid-1980s, resulting in increased exports and imports of goods and services as a percentage of their GDP (SADC, 2001; UNCTAD, 2004).

Inequality on the other hand is now considered as one of the defining challenges of our time globally (Atkinson, 2015; Norris et al., 2015). This has attracted debate among scholars on the distributive consequences of positive growth and trade liberalisation. SSA in particular has been grappling with high income inequality levels such that the adoption of the 2030 agenda for Sustainable Development has drawn considerable attention to the problem in the region. Unfortunately, SADC countries within SSA account for the highest levels of income inequality (Elena et al., 2007; UNDP, 2017).

As a consequence of this debate, there exists empirical literature with the objective of establishing the relationship or causality between economic growth, trade openness and income inequality. For instance, Dollar and Kraay (2000) using Ordinary Least Squares (OLS) employed a sample of 101 countries to establish the link between economic growth, trade openness and inequality. Using Autoregressive Distributive Lags (ARDL), Antwi (2017) investigated 37 countries in SSA in order to establish weather Kuznets hypothesis hold. Davuthan et al., (2015) focused exclusively on the Turkish economy. He used the Vector Error Correction Model (VECM) and Granger Causality analysis to establish the impact of economic growth and trade openness on income inequality.

It however, appears that there is lack of consensus across different regions and countries. Some find that economic growth and trade openness reduce income inequality while others find that the opposite is true. Others find that only trade worsens income distribution while others do not find any relationship at all. It is from this perspective that one would want to look at the relationship or causality in the case of SADC. This would provide empirical evidence and contribute to social debate on the subject.

1.1.2 Growth in the SADC region

The SADC region continues to strive in maintaining real positive economic growth in order to alleviate poverty, create wealth and enhance the standard and quality of life of its people. Over the past three decades, the region as a whole has consistently maintained positive economic growth rates (SADC, 2018). As Moyo (2018) argues, SSA in general and the Southern African region's growth in particular is real because the real per capita income has been increasing.

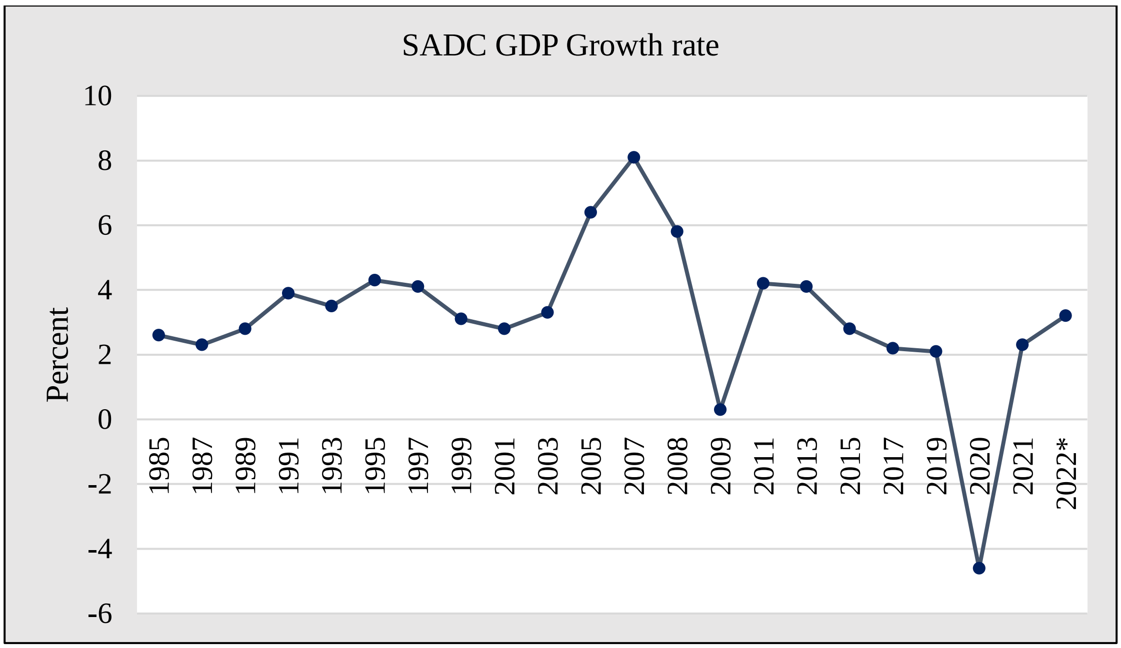


Figure 1.1: GDP Growth rates for SADC

Source: Author's illustration based on data from SADC and WDI

From figure 1.1, it can be observed that despite some swings, the region has maintained positive growth rates except only for the year 2020. Real growth rate in 1985 stood at an estimated 2.6 percent but declined to 2.3 percent in 1987. From 1989 to 1999, an upward trend was maintained before a slight fall in 2001. An impressive positive trajectory was recorded from 2003 up to 2007 when real growth rate peaked to 8.1 percent and above the macroeconomic convergence target set by SADC. There was however, a sharp decline in the year 2009 attributed to the world financial crisis of 2008/9 (SADC, 2011).

Growth picked to 4.2 percent in 2011 before a sharp contraction to an estimated 4.6 percent in 2020. This was mainly due to constrained economic activities as a result of the Covid 19 pandemic lockdowns (IMF, 2021). It however, rebounded to an average growth of 2.3 percent in 2021 and is projected to grow further in 2022 (ibid).

1.1.3 Global trade in the SADC region

Trade is fundamental to the economic development agenda of the region. Therefore, SADC countries have in the last three decades made steady progress in gradually opening up their economies to the rest of the world. This has been achieved by progressively removing barriers to trade such as subsidies, tariffs and quotas. This has resulted in the integration of domestic markets into a single world market (Dong et al., 2013).

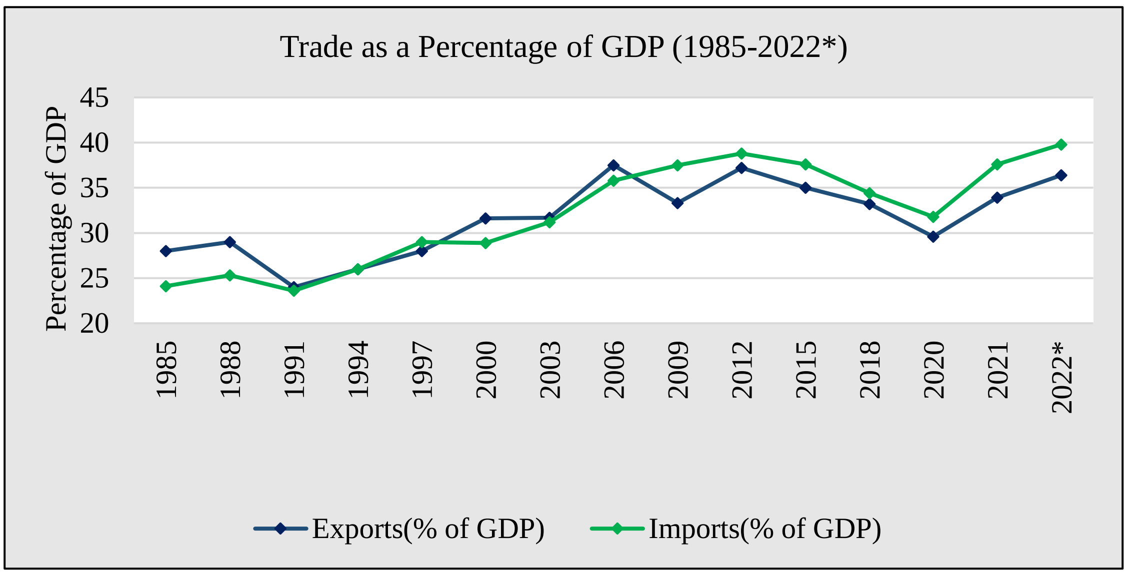


Figure 1.2: Trade as a Percentage of GDP in the SADC region

Source: Author's illustration based on data from SADC, WDI and AfDB

As can be observed from figure 1.2, SADC region as a whole has maintained a fairly open and stable trade with the rest of the world for more than three decades. A generally upward trend is also observed. In 1985, imports were only estimated at 24.1 percent with exports at 28 percent. By 2012, these values increased to 38.8 and 37.2 percent correspondingly. Despite a slump in the year 2020 attributed largely to Covid 19 pandemic total imports increased from 31.8 percent of GDP to an estimated 34.9 percent while exports increased from 29.6 to 33.9 percent in the year 2021. It is further projected that as the global economy recovers from the effects of the Covid 19 pandemic, SADC exports are projected to increase to 36.4 percent with imports at 39.8 percent of its GDP in 2022 (SADC, 2020; IMF, 2021).

1.1.4 Income inequality in the SADC region

Until recently, policy makers in SSA perceived inequality as quite low and a non-existent issue when it comes to impediment to poverty reduction (Fields, 1998). However, results from recent surveys reported by a number of countries in the region have confirmed that income inequality is indeed considerably higher than initially thought despite predominantly homogenous livelihood systems (Atkinson, 2015). The region is ranked second from Latin America in terms of higher levels of inequality with ten out of the nineteen most unequal countries globally in the region (UNDP, 2017).

Table 1.1: Trends in Average Inequality, Growth and Trade Openness in SADC

Year	*Inequality (Gini)*	*GDP growth (%)*	*Trade (% of GDP)*
1985	51.2	2.6	51.4
1990	50.4	3.9	54.7
1995	51.8	4.3	65.4
2000	52.6	3.3	71.6
2005	53.1	6.1	81.3
2010	52.8	4.2	83.6
2015	53.8	2.8	83.8
2020	54.2	-4.6	79.7

Source: Authors computation with data from SWIID, World Bank and WDI

In SADC, the disproportionate distribution of income within member states has become one of the most salient phenomena in the past two decades (ibid). The level of income inequality in the region remains among the highest in the world (AfDB, 2019). Three countries in SSA classified as having very high inequality with Gini greater than 0.60 are all in the SADC region. These are South Africa, Namibia and Botswana while three out of the five countries in SSA classified as having high inequality with Gini coefficient between 0.53-0.599 are also in the SADC region. These are Lesotho, Zambia and Eswatini (UNDP, 2017). From table 1.2, it is evident that average inequality as measured by Gini has generally exhibited an upward trend. GDP growth has been positive except only for the year 2020 while the volume of trade has increased in the region.

1.2 Statement of the Problem

From the background above, it is clear that the SADC region in general has performed fairly well in maintaining positive growth rates in both real GDP and per capita income despite some swings. The region as well as individual countries have also fared well in progressively opening up their barriers to international trade under the theoretical guide that greater openness promotes growth and reduces both the between and within country income inequality among trading nations (Grossman et al., 1991; Salvatore, 2013).

Undeniably, the growth enhancing effect of international trade for SADC countries is documented in a number of empirical studies (Kalaba et al., 2008; Zahonogo, 2017; Haroon et al., 2017). However, the problem is the notorious levels of stagnantly high or indeed growing income inequality levels despite positive trends in economic growth and trade openness. Gini indices for ten SADC countries show a consistent pattern of economic growth co-existing side by side with growing levels of income inequality (UNDP, 2016). South Africa, Namibia, Botswana, Zambia and Lesotho count among the top 10 most unequal countries in Southern Africa with South Africa, Namibia and Botswana among the most unequal countries in the World (UNDP, 2017).

While SADC member countries have concentrated much on economic growth and the promotion of trade openness within and outside the SADC borders, not much attention has been devoted to understanding the causal effect of growth and trade openness on income inequality within the member states. To a large extent, the region has relied on the general theoretical expectation of positive economic spillovers such as reduced income disparities. Therefore, there is a knowledge gap empirically on the interaction between economic growth, openness to trade and inequality in SADC countries. On the other hand, relatively few studies especially on SSA and SADC region in particular have been published on this issue despite the growing global attention and discontent that income inequality is attracting in the region. This study therefore aims to understand the causal link between growth, openness to trade and income inequality in SADC.

1.3 General Objective of the Study

- The overall aim of this study is to investigate the causal relationship between economic growth, openness to trade and income inequality in SADC countries.

1.3.1 Specific objectives

- To empirically examine the relationship between economic growth and income inequality in SADC member states.
- To determine the relationship between trade openness and income inequality in SADC member states.

1.4 Research hypothesis

- Economic growth in SADC member states cause reduced overall income inequality.
- Trade openness in SADC member states cause reduced overall income inequality.

1.5 Research questions

The study seeks to answer the following questions;

- Does economic growth in SADC member states cause reduced income inequality?
- Does global trade openness in SADC member states cause reduced income inequality?

1.6 Significance of the study

While the trend in a country's income inequality could be an imperfect indicator of what is happening to the broader goals of a country's development objectives, rising and high levels of income inequality, if persistent, may be a signal of underlying weaknesses in an economy's structure in being able to broadly deliver a higher level of development (Cypher et al., 2004). High unequal societies face more difficulties in collective action, potentially reflected in political and social instability and a general absence of national solidarity. This has been documented as one of the sources of conflicts in some Sub-Saharan African states (Haroon et al., 2017).

A growing body of evidence also suggests that higher inequality has implications on social and political systems and could dampen investment, consumption and consequently growth by fueling economic and political instability (Alesina et al.,1994; Acemoglu et al., 2012; Norris et al., 2015). Additionally, the marginalized who are usually socially excluded become agents through which political violence can easily be fueled and consequently, threaten property rights (Fields, 1998). Some studies also suggest that higher inequalities are not only generally associated with shorter growth durations but also appear to be a major contributing factor (Basdevant et al., 2012).

This research is therefore significant as it will provide empirical evidence on the interaction between inequality, growth and trade openness in SADC and increase the body of knowledge. It may also be useful to decision makers in designing appropriate distributive policy interventions as they seek to promote liberalized trade, economic growth, and a more equal and peaceful society.

1.7 Organisation of the study

This research comprises of six main chapters. Chapter two documents a detailed macroeconomic performance of SADC with special reference to factors influencing income distribution since the early 1980s. An investigative review of critical literature is covered in chapter three, containing a section on theoretical literature review and another on empirical literature review. Chapter four describes the methodology employed in the study while chapter five is dedicated to the presentation of results, empirical analysis and discussion. Chapter six will conclude with policy implications and recommendations.

1.8 Limitations of the study

The subject of income inequality, growth and trade openness has not been extensively studied especially in the African context and SADC in particular due to data challenges, therefore prior published literature that is relevant to this study in the Southern African region may be limited. Data availability for longer periods is also limited. Additionally, the data to be used in this research are national statistics for each country at macro level. For example, inequality measured by Gini coefficient for each year will represent the national estimate, however, this may vary from region to region within the country. Additionally, cross country studies may indicate average trends but individual country experiences may differ quite significantly. Therefore, aggregated data may bias country level heterogeneity for individual countries considered in this study.

CHAPTER TWO

MACROECONOMIC PERFOMANCE OF SADC COUNTRIES

2.1 Introduction

SADC evolved out of the South African Development Coordination Conference (SADCC) of 1980. It was transformed into the development community in 1992. This was a new era for regional cooperation and deeper economic collaboration with the ultimate hope of sustained economic growth and social economic development. This was after the cold war, a troubled colonial past, apartheid rule in South Africa and a decade of economic and military destabilization of SADCC countries (SADC, 2001).

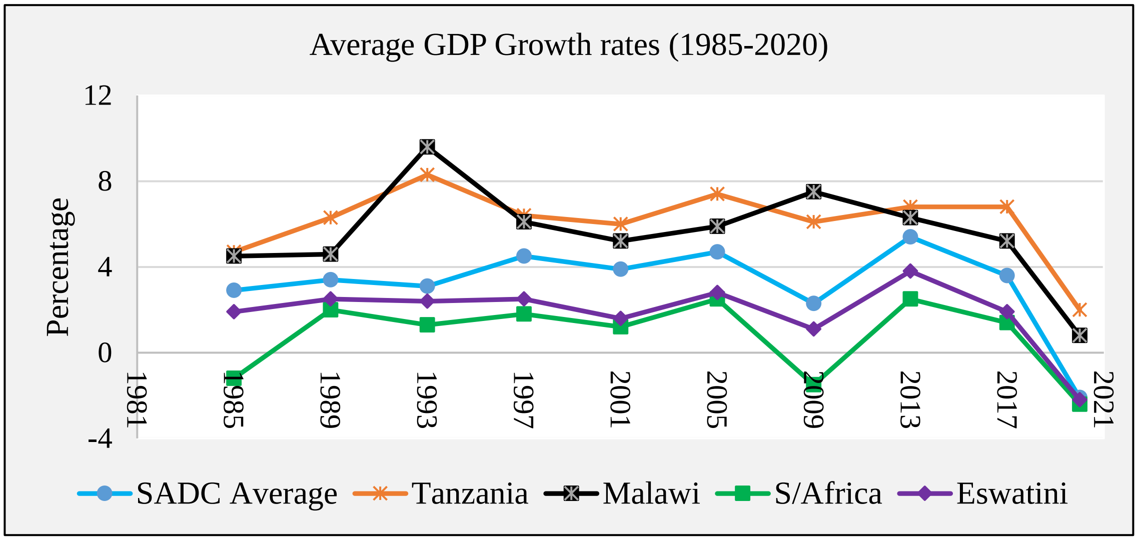
Over time, the regional body has evolved. In its current form, it consists of 16 member states which aim to further social, economic, political and security cooperation and foster regional integration in order to achieve peace, stability and improve the standard of life of its people. This chapter focuses on macroeconomic performance of SADC from 1985-2020. Because of data limitations, our study focusses on 11 SADC countries. These are Botswana, Eswatini, Lesotho, Madagascar, Malawi, Mauritius, Namibia, Seychelles, South Africa, Tanzania and Zambia.

2.1.1 Real GDP Growth and Sectoral Contribution

The economies of SADC region are diverse. They vary from oil-rich and producing countries such as Angola to natural resource abundant countries such as Botswana, Tanzania and Zambia to sector diverse economies such as South Africa. The size of each country's economy also varies greatly. Despite this diversity, the region promotes macroeconomic convergence which advocates for member states to move towards a common macroeconomic climate with similar policies on inflation, trade and gorvnment spending. This is in order to maintain sustainable levels of budget deficits, current account balances and stabilize the regional economy so as to shield it from excessive fluctuations. This stability creates a predictive environment for businesses and investment in individual countries and the region as a whole and fosters economic growth and development (SADC, 2002; Narain et al., 2021).

In terms of economic growth, SADC countries have set the annual convergence target of seven percent for each member state. Despite facing challenges in achieving the set annual growth target by the region as a whole and individual countries in particular, the region has maintained average positive growth rates for nearly three and half decades.

Figure 2.1: Average real GDP growth rates for SADC and selected countries



Source: Author's illustration with data from WDI, SADC and Word Bank

Figure 2.1 shows average growth rates for SADC and the best and worst performing individual member states. Despite some swings in the sample average, there has generally been an upward trend. From 1985-1990, the average growth increased from 2.9 to 3.4 percent. However, from 1990-1993, there was a marginal reduction in growth to an average of 3.2 percent attributed to poor agriculture sector performance as a result of poor rainfall distribution in most of the sample SADC countries (SADC, 2001). There was however, a rebound to an average 4.7 percent by 2005.

A sharp slump to the lowest average growth of 2.3 percent was recorded in 2009. This was attributed to the 2008/2009 financial crisis which had a negative impact on the growth of SADC (SADC, 2011). By 2013, the average growth rose to the highest 5.4 percent for the sample period attributed to improvements in macroeconomic environment, increased investment, improved health care and education system, and an overall improvement in governance systems among others (SADC, 2014). A negative growth averaging 3.1

percent was recorded in 2020 as a result of constrained economic activities due to the Covid 19 pandemic (IMF, 2021).

At country level, the highest growths have been observed in Tanzania and Malawi. Tanzania has maintained an impressive growth for the sample period. From an average of 4.5 percent in 1985, its growth rose to 8.3 percent by 2013, surpassing the convergence target and has largely been above six percent except for the year 2020 due to the Covid 19 pandemic (SADC, 2020). Malawi has also performed well. Its growth reached its peak at 9.4 percent in 1993. It has however fluctuated with the lowest at 0.8 percent in 2020.

The lowest average real growth rates for the sample period have been recorded in Eswatini and South Africa. Eswatini's growth rates have varied between 3.4 percent and -2.2 percent while South Africa's growth has fluctuated between an average of 2.5 percent and -2.4 percent. It must however be noted that South Africa has the largest economy in SADC, therefore the growth rates are relative to the size of its economy.

Table 2.1: Average Sectoral Contribution to GDP (%) for SADC

Sector	1985-90	1991-96	1997-02	2003-08	2009-14	2015-20
Agriculture	9.4	11.8	9.3	10.3	10.1	9.7
Manufacturing	9.1	10.2	12.5	13.0	12.1	12.2
Mining and Quarrying	12.7	11.9	13.2	12.4	13.7	12.5
Services	68.8	65.9	65.1	64.3	64.1	65.6

Source: Author's computation based on AfDB and World Bank estimates

Table 2.1 shows that services dominate the sectoral contribution to GDP in the region with an average of about 65.3 percent for the sample period. Although its contribution has marginally trended downwards, it still remains the major backbone of the region's economy. Mining and quarrying follow the service sector with an average contribution of 12.8 percent. The sector's contribution has however undergone fluctuations as a result of policy uncertainties as well as labour conflicts in some major producing countries such as South Africa and Zambia (AfDB, 2019). Manufacturing is third with an average of 11.8 percent contribution. The sector shows an upward trend but at a slower pace. Agriculture has an average of 10.2 percent contribution. This sector remains the key employer in the region but is increasingly becoming vulnerable due to climate change, low investment and policy inconsistencies in the region (World Bank, 2016).

Table 2.2: Average Sectoral Contribution (%) at Country level (1985-2020)

Country	Agriculture	Manufacturing	Mining & Quarrying	Services
Botswana	3.6	5.3	28.4	62.7
Eswatini	10.7	28.7	4.8	55.8
Lesotho	7.7	11.3	13.2	67.8
Madagascar	28.3	11.8	0.8	58.9
Malawi	29.4	8.8	1.2	59.8
Mauritius	3.9	19.9	0.9	74.9
Namibia	7.2	10.5	16.9	65.4
Seychelles	3.8	13.9	4.5	76.9
South Africa	2.7	13.6	9.8	73.9
Tanzania	25.1	10.1	14.0	51.1
Zambia	7.9	8.4	17.9	65.8

Source: Author's computation based on AfDB and World Bank estimates

Table 2.2 shows country specific average sectoral contribution to GDP. Agriculture contributes the highest average percentage to GDP in Malawi (29.4), Madagascar (28.3) and Tanzania (25.1) as compared to other SADC states. Eswatini has 10.7 percent of its GDP from agriculture while Zambia and Namibia have an average of 7.9 and 7.2 percent respectively. At the bottom is South Africa with an average value of 2.7 percent while Botswana is second from the bottom with 3.5 percent. In terms of regional contribution to GDP, South Africa is considered as the economic power house with its agriculture sector contributing the highest average of 25.9 percent.

In the manufacturing sector, Eswatini dominates with 28.7 percent share of its GDP followed by Mauritius (19.9). Seychelles (13.9) and South Africa (13.6) while Madagascar and Lesotho have each an average of 11.8 and 11.3 percent respectively. The sector's lowest average contribution is recorded in Botswana (5.3). In terms of regional contribution, South Africa leads with 71.2 percent followed by Tanzania at 6.7 percent.

The mining and quarrying sector contribute the highest percentage to Botswana (28.4), Zambia (17.9), Namibia (16.9), Tanzania (14.0), Lesotho (13.2) and South Africa (9.8) and contributes the least to Mauritius. The service sector however, dominates the GDP contribution for all sample countries with Seychelles, Mauritius, South Africa, Lesotho, Zambia, Namibia and Botswana in the lead correspondingly. At regional level, South Africa still leads with the sector contributing an average 63.7 percent to SADC GDP. The sector contributes the least to GDP in Tanzania (51.1) and Eswatini (55.8).

2.1.2 Per capita GDP and trend

At its most basic interpretation, per capita GDP is considered as the proximate gauge of the aggregate material welfare of residents of the country and is widely used for international comparisons (Cypher et al., 2004). This metric has trended upwards.

Table 2.3: Trends in Average Per Capita GDP in SADC (US$)

Period	***1985-90***	***1991-96***	***1997-02***	***2003-08***	***2009-14***	***2015-20***
Country						
Seychelles	6,564.4	8,129.8	9,561.6	9,831.4	11,766.3	14,061.2
South Africa	6,173.0	5,646.5	5,902.7	6,869.5	7,582.7	7,164.2
SADC Average	2,534.2	2,922.8	3,296.9	4,005.5	4,456.9	4,818.2
Madagascar	560.2	491.1	476.5	482.7	470.3	476.7
Malawi	347.7	350.7	383.8	398.4	507.5	493.6

Source: Author's computation with data from WDI and World Bank

From 1985-1990, table 2.3 shows that average per capita income was at US$ 2,534.2. Between 1991-1996, it increased to $2,922.8. The upward trajectory has been maintained throughout the sample period. The highest increase is observed from 2003-2008 when the value rose from US$ 3,296.8 observed in the previous period to US$ 4,005. This period was also characterized by stable macroeconomic environment and higher growth rates (SADC, 2010). The average value increased but at a lower rate between 2015-2020. This is attributed to lower and negative growth in 2019 and 2020 respectively.

At country level, despite South Africa being the largest economy accounting for about 80.5 percent of the total size of the sample countries economy, due to huge variations in population size from its estimated 59.8 million to Tanzania's 59.7 million and the least populated Seychelles' 98,460 people, Seychelles accounts for the highest per capita average for the entire sample period. It's per capital income has been one of the fastest growing in SADC. It has steadily risen from $6,564 (1985-1990) to an average of $14,061 from 2015-2020. This is followed by South Africa whose initial per capita income was relatively high but its growth has been sluggish. Its average for the sample period is US$6,532.8. Mauritius and Botswana have followed in that order with average incomes of $6380 and $6097 respectively. Madagascar and Malawi are in the lowest category with Malawi being at the bottom with an average income of US$409.3 for the sample period.

2.1.3 Openness to Trade and Investment

One of the SADC agenda aimed at reducing inequality and eradicating poverty is the support for free trade (SADC, 2001). Therefore, as part of promoting trade, SADC signed a protocol on trade in 1996 advocating for the harmonization of national trade policies as a way of encouraging liberalisation and greater corporation in finance and investment in the region. Individual countries have also maintained an outward orientation towards trade, progressively opening up their markets to multilateral trade. This has resulted in a higher portion of total volume of trade for SADC and individual countries in particular coming from non-member countries (UNCTAD, 2004).

Table 2.4: Trade Openness (% of GDP) for SADC and some Selected Countries

Period / **Country**	***1985-90***	***1991-96***	***1997-02***	***2003-08***	***2009-14***	***2015-20***
Lesotho	138.58	145.71	152.35	161.76	148.35	135.96
Eswatini	123.00	134.54	153.98	130.26	101.62	91.6
SADC Average	84.25	84.32	88.16	97.68	97.47	88.10
Tanzania	46.48	57.18	28.72	40.14	49.28	39.70
Madagascar	28.12	37.76	41.52	47.14	53.28	56.70

Source: Author's computation with data from WDI and World Bank.

Table 2.3 shows average trade openness for SADC as well as the most open and the least open individual countries. This is measured as the volume of exports and imports as a percentage of GDP. From 1985-1990, average trade was 84.3 percent and remained largely unchanged through 1991-1996. An increase of about 4.5 percent to 88.2 percent was recorded from 1997-2002. The highest growth was recorded between the periods 2003-2008 when trade increased to an average 97.5 percent of GDP representing 10.6 percent rise from the previous trade level. This was largely maintained through the period 2009-2014. There was however, a slump to 88.1 percent from 2015 to 2020. This is mostly attributed to reduced international trade due to the global economic lockdowns as a result of the Covid 19 pandemic in the years 2019 and 2020 (SADC, 2020).

For sample countries, the main intra SADC trade export items include agricultural products, electricity and some clothing and textile products. The main SADC exports to the rest of the world have been predominantly raw materials such as coal, copper, manganese ores, platinum and some precious metals such as gold and diamond and resource intensive manufactured goods. The Asian Pacific Economic Corporation (APEC), the European Union (EU) and the United States (US) are the major trading partners of SADC countries in that order with very minimal trade with the rest of Africa (AfDB, 2019; Kalaba et al., 2008).

Table 2.5: SADC Inter and Intra-trade as a percentage of total trade

Year	***1985***	***1990***	***1995***	***2000***	***2005***	***2010***	***2015***	***2020***	***2021***
Intra SADC Imports (%)	16.1	17.8	16.9	18.4	19.5	20.2	20.7	19.3	20.4
Extra SADC Imports (%)	83.9	82.2	83.1	81.6	80.5	79.8	79.3	80.7	79.6
Intra SADC Exports (%)	14.6	15.1	15.3	16.2	15.3	18.3	22.1	20.6	19.9
Extra SADC Exports (%)	85.4	84.9	84.7	83.8	84.7	81.7	77.9	79.4	80.1

Source: SADC, COMTRADE DATA-CD ROM and IMF DOT

Table 2.5 reveals that although there is an improvement in intra SADC trade volume from 1985 up to 2021, a larger portion of imports come from outside the region. In 1985, an approximate 83.9 percent of total imports were extra SADC with only 16.1 percent intra SADC. The trade pattern did not change much by the year 2000. In 2021, intra SADC imports stood at 20.4 percent with extra SADC imports at 79.6 percent. Similarly, most of the exports are destined outside the region. In 1985, intra SADC exports were estimated at 14.6 percent while extra SADC exports were at 85.4 percent of total trade. By 2000, there were no remarkable changes with extra SADC exports and intra SADC exports at 83.8 percent and 16.2 percent of total exports respectively. In 2021, 19.9 percent of exports were intra SADC while 80.1 percent were extra SADC.

At country specific level, Lesotho maintained a more open economy with its average trade openness for the sample period at 146.7 percent. This is followed by Eswatini (127), Seychelles (125), Mauritius (116.8), Botswana (97.2) and Namibia (95.3) in that order. Madagascar is the least open economy followed by Tanzania. These economies are also similar in their sectoral composition as they are largely dominated by agriculture and the service sectors.

Investment in SADC countries is another macroeconomic variable identified as crucial for growth, industrialization and creation of employment. This is in order to deal with the persistently higher levels of poverty and inequality in the region (SADC, 2010). The success of the industrialization policy and the increase in economic productivity is also anchored on higher levels of both domestic and foreign direct investment (FDI). Therefore, the SADC protocol on finance and investment encourages member states to implement a favorable investment environment to ease the cost of doing business for private firms investing in SADC. However, sustainable FDI has been traditionally low and there has been slow growth in domestic investment (Dong, 2008; Moyo et al., 2018).

Between 1985 and 1989, fixed investment in SADC slightly increased from 23.6 to 24.7 percent of the region's GDP. However, from 1989-1993, it remained largely unchanged. Figure 2.2 below graphs average investment for SADC as well as the best and the worst performing country for the sample period.

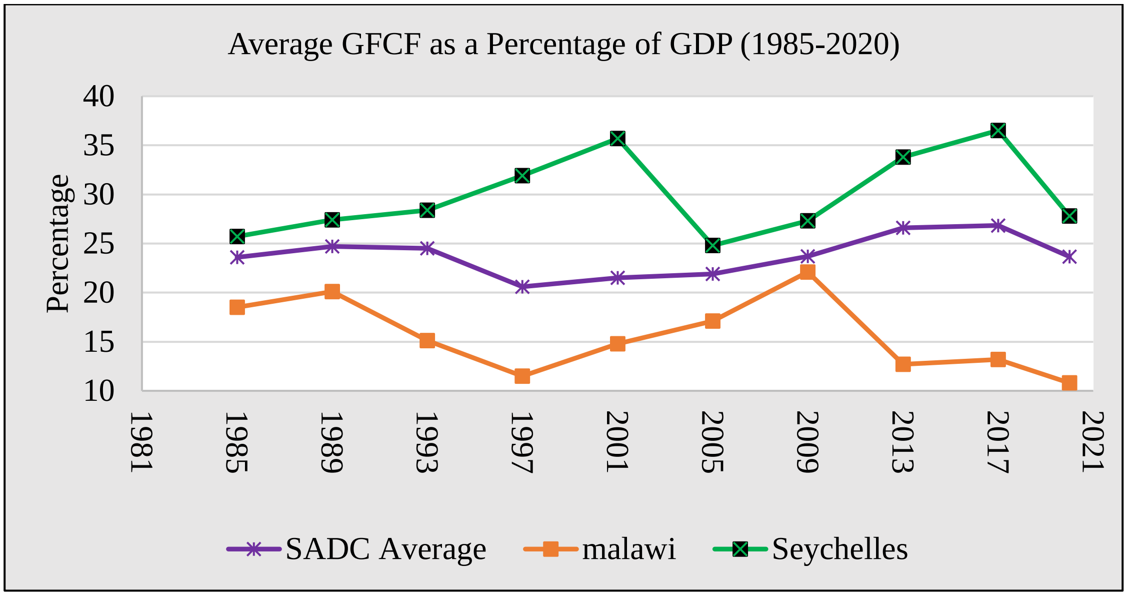


Figure 2.2: Average Investment in SADC and Selected Countries

Source: Author's illustrations with data from WDI

From figure 2.2, it is observed that from 1993-1997, investment slumped to 21.5 percent before rebounding to its pre-1993 levels in the period 2005-2008. A 12.6 percent increase was recorded from 2009-2014 attributed to increased FDIs. This was as a result of improvements in macroeconomic indicators for most SADC countries (SADC, 2010). From 2015-2018, it marginally increased from 26.6 percent to 26.8 percent. This was however followed by a negative growth of about nine percent in the year 2020. Overall, average investment shows a positive trend in the region but with slower growth.

At country level, Seychelles has the highest level of investment with an overall average of 29.9 percent for the sample period. Lesotho is second placed with an overall upward movement in its investment averaging 29.7 percent while Botswana (28.9), Tanzania (27.8) and Zambia (27.2) follow in that order. The improvement in investment from the 1985 levels is attributed to among other things, the adoption of market friendly policies such as privatization and market liberalisation, political stability, tax and investment incentives and the profit opportunities in the wake of collapse of state-run firms (Birdsall et al., 2005). Malawi has the lowest level of investment which peaked from 1997-2008 but reverted back to its downward trend in 2009.

2.1.4 Inflation and the Exchange rates

Inflation in the SADC region has been highly volatile historically. This volatility, has in some instances created macroeconomic instability and worsened the purchasing power especially for the lower income groups (Narain et al., 2021). Following the memorandum of understanding on macroeconomic convergence established in 2002, member states agreed to limit inflation to low and stable levels of between three to seven percent as similarly regulated economies must experience similar levels of inflation as a sign of macroeconomic convergence (SADC, 2002). In the past two decades, SADC has performed fairly well as inflation generally slowed down.

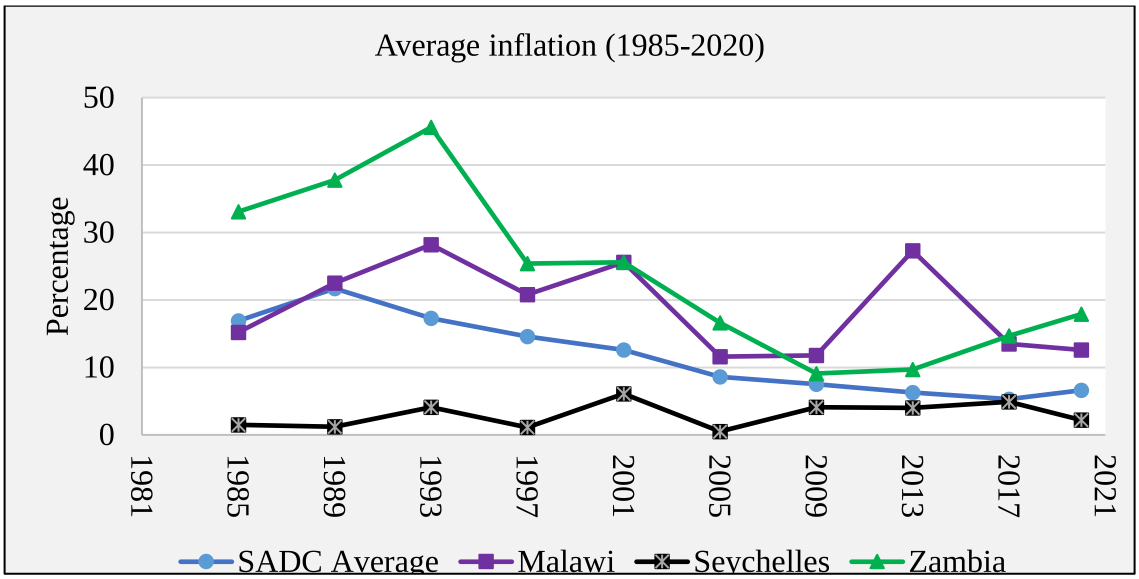


Figure 2.3: Average Inflation for SADC and Selected Countries

Source: Author's illustration with data from WDI and IMF

Figure 2.3 above shows average inflation measured as the rate of price changes for the economy using the annual growth rate of the implicit deflator. It can be observed that steady progress has been made in achieving single digit inflation. From 1985-1989, average inflation worsened from 18.9 percent to 21.6 percent. It however, remarkably fell to an average of 14.6 percent from 1989-1997. The downward trend continued and by 2005, a single digit of 8.6 percent was achieved. This progress is credited to the commitment by member states to macroeconomic convergence and a general improvement in their fiscal consolidation (AfDB, 2019). There was however, a slight upward movement from 2019-2020. This is attributed to the disruption in the supply chain and a deteriorating macroeconomic environment in SADC countries due to Covid 19 pandemic (SADC, 2019; IMF, 2020).

At country level, all the sample countries have generally exhibited a downward trend in their rates of inflation from the 1985 levels. Seychelles has the lowest average percentage (5.1) for the sample period followed by Mauritius (5.4) and Eswatini (5.8) in that order. On the other hand, Zambia and Malawi have the highest inflation levels for the sample period. Malawi has maintained a double digit for the entire study period ranging from 11.6 to 27.3 percent. Zambia on the other hand had the highest inflation in 1985 which worsened to an average of 45.6 percent by 1993.This was also a period of liberalisation and structural changes in the economy. There was however, a sharp decline from 1993 with minor fluctuations along the way to a single digit of 9.1 percent by 2009. It however, started trending upwards from 2013, to reach an average 17.6 percent by 2020.

The SADC region has further moved to liberalize the financial sector in line with the global trends dating back to the 1990s. Individual economies have allowed floating interest rates, facilitated exchange rates and have adopted indirect instruments of monetary policy. Recent reports suggest that these measures have generated positive effects on economic growth in the region (Kalaba et al., 2008; SADC, 2014). SADC has however, generally experienced instability in exchange rates against its major convertibles. This is mainly attributed to the volatility in commodity prices and the uncertainty in emerging markets (AfDB, 2019).

Exchange rate volatility exerts different economic and social effects especially in developing economies such as SADC. An appreciation deteriorates the competitiveness of the tradable sector and decreases exports. This in turn slows growth and increases unemployment. On the other hand, an appreciation reduces the relative cost of imported capital goods and increases wage relative to capital price. This induces a more capitalist production and encourages technological innovations. Therefore, the net effect depends on the relative strength of the direct and indirect effects and the orientation of the economy in terms of imports and exports (Hiranya et al., 2004; Kollie, 2020).

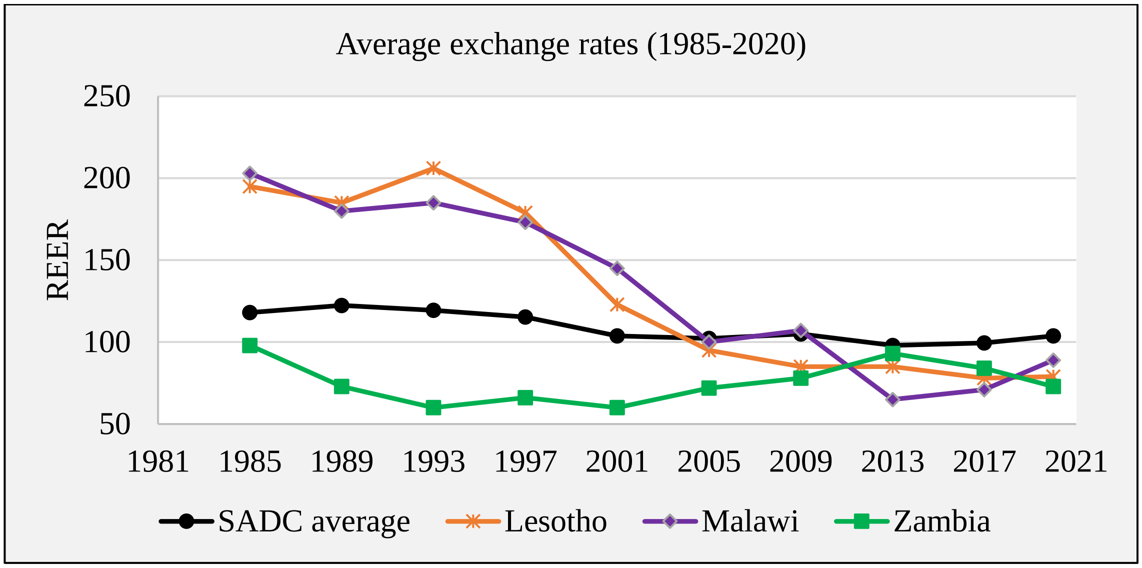


Figure 2.4: Average REER in SADC and Selected Countries

Source: Authors illustration based on data from IMF and World Bank

Figure 2.4 graphs average real effective exchange rate (REER) measured as the nominal effective exchange rate divided by the deflator (IMF, 2020). There is generally a downward trend in the exchange rate which indicates that the currencies of SADC have been depreciating against their major convertibles. This is partly attributed to the exports in the region consistently falling short of the imports (AfDB, 2019).

In 1985, the average exchange rate was 118.29. This slightly increased to 122.13 by 1989. A deterioration is observed from 1997-2002 of about 8.4 percent moving the exchange rate index from an average 117.13 to 108.37. A further downward trend was observed from 107.4 in 2009 to 99.5 by 2017 with minor fluactions from 2017-2020. At country level, Lesotho and Malawi's exchange rates have wildly trended downwards from their initial levels in 1985. Zambia had the lowest average exchange rate in 1985 which has fluctuated mildly while Madagascar, Botswana and Mauritius's exchange rates have largely been stable. A general downward trend is observed in sample countries.

2.1.5 Skills development and Unemployment

One of the key factors identified as worsening inequality, poverty and underdevelopment in the SADC region is the low level of skills development. Therefore, in its regional indicative strategic plan, SADC aims to achieve universal education and ensure increased enrolment at all levels. This is under the realization that as the region promotes investment, efficiency and competitiveness in the global economy, an educated and skilled workforce is key (SADC, 2003). In the last two decades, SADC has recorded increased education enrolment at every level from primary through tertially to post graduate for both genders. At primary level, education enrolment increased at an average annual rate of about 1.7 percent with female enrolment increasing at a slightly higher rate of about 1.8 percent, outperforming SSA as a whole. Tertially enrolment was estimated at 7.1 percent with a record improvement on spending to the sector (ibid).

Table 2.6: Average Enrolment (%) in SADC and Selected Countries

Period / **Country**	***1985-90***	***1991-96***	***1997-02***	***2003-08***	***2009-14***	***2015-20***
Seycheles	111.73	113.78	81.84	77.01	77.07	80.55
South Africa	64.04	78.73	83.64	88.71	90.75	99.81
SADC Average	38.30	45.18	48.91	54.28	61.28	65.74
Malawi	16.91	20.53	32.29	29.57	35.96	38.57
Tanzania	4.36	5.36	10.7	22.67	30.94	29.01

Source: Author's computation with data from WDI and World Bank

Table 2.6 shows the percentage of gross enrolment at secondary school, measured as a ratio of total enrollment to the population of the age group officially corresponding to that level of education. This level is particularly important because it completes the provision of basic education that began at primary level and lays the foundation for lifelong learning and skills development (Fields, 1998).

It can be observed that collectively, average secondary enrolment has steadily and progressively risen for the sample period. From 1985-1990, enrolment was 38.3 percent. Between the periods 1990-1995, the value rose to 48.9 percent and has since trended upwards reaching an average of 65.7 percent in the period 2015-2020. The positive trend has been attributed to increased investment and favorable domestic policies in the sector. The region however, still falls behind regional and continental averages (SADC, 2019).

At country specific level, Seychelles had the highest enrolment levels averaging 90.2 percent. This is followed by South Africa which has maintained a fairly constant and predictable upward trend since 1985. Its overall average enrolment is 84.3 percent. Malawi on the other hand is second from the bottom while Tanzania is at the bottom with the lowest initial average enrolment of 4.6 percent in 1985. It has however, trended upwards to an average of 29.1 percent from 2015-2020.

Another macroeconomic variable closely related to high income dispersion and poverty in SADC is unemployment. High unemployment especially among the youths and in some instances inadequate employment characterized by low earnings, poor conditions of service and low productivity remain a huge challenge in the region. Arcoding to the International labour organization (ILO), the rate of unemployment by adults and youths was estimated at 10.1 percent and 24.6 percent respectively with women more affected than men (ILO, 2016).

Table 2.7: Average Unemployment (%) in SADC and Selected Countries

Period / **Country**	***1985-90***	***1991-96***	***1997-02***	***2003-08***	***2009-14***	***2015-20***
Lesotho	36.58	37.78	35.73	30.19	25.77	34.59
South Africa	28.32	30.02	30.86	27.48	24.78	29.83
SADC Average	16.4	17.8	19.1	19.7	21.3	22.5
Seychelles	11.62	10.54	9.96	11.87	9.15	9.83
Mauritius	9.22	9.49	9.33	8.64	7.38	8.96

Source: Author's computation based on WDI, ILO estimates

Table 2.6 shows unemployment rate, measured as the share of the labour force that is without work and available for and seeking employment (ILO, 2016). There is generally an upward trend in the level of unemployment over the sample period. From 1985-1990, the average stood at 16.4 percent. It increased to 17.8 percent by 1996. Between 1997 and 2008, the average percentage of the jobless marginally increased from 19.1 percent to 19.7 percent. This further worsened when the figure rose to an average 22.5 percent from

2015-2020. At country level, Lesotho has the highest unemployment rate with an overall average of 32.5 percent and remained consistently high throughout the sample period. This is followed by South Africa (28.3), Zambia (25.6), Namibia (23.1) and Eswatini (22.4) in that order. Conversely, Mauritius (8.4) and Seychelles (9.3) have the lowest average unemployment rate correspondingly.

Factors contributing to the level of unemployment differ from country to country. In countries such as Botswana, Lesotho and Tanzania, a weak education system which has not been able to equip job seekers with the necessary skills is blamed for high unemployment (Narain et al., 2021). There is however, a general consensus that unemployment in SADC is driven by structural rigidities in the labour market together with unresponsive institutional systems which fail to match the supply of available vacancies to the demand for labour. This explains why youth and graduate unemployment persistently take a larger share of total unemployment (ibid).

2.1.6 Fiscal Policy

Another macroeconomic convergence target for SADC member states annexed to its protocol on finance and investment in 2002 involves maintaining prudent fiscal situation. This is based on avoiding large deficits and high ratios of public and publicly guaranteed debt to GDP which would contribute to inflation (SADC, 2002). Member states have therefore agreed to monitor their annual fiscal balances as a vital indicator of economic health (ibid). Additionally, countries have also agreed to maintain sustainable balances in current accounts and minimize market distortions. On the revenue side, although each member state administers its own taxes, SADC has agreed to corporate and harmonize its tax measures in its memorandum of understanding on corporation in taxation and related matters of 2002. This is in order to have a coordinated tax system that will facilitate trade and encourage foreign investment (ibid).

In order to measure progress, the region has set out targets. Member states were to achieve the ratio of budget deficit to GDP of less than five percent by 2008, decreasing to less than three percent by 2012 and maintaining that ratio through 2018. However, due to the development nature of most countries within the region, fiscal balances have fluctuated wildly. Over the past two decades, SADC has increased its expenditure on infrastructure development, education, health and social service sectors to enhance human capacity and reduce the widening gap between the rich and the poor (Narain et al., 2021). On the other hand, the revenue for most SADC countries has not matched the gorvnment expenditure side, resulting in perpetual budget deficits and debts.

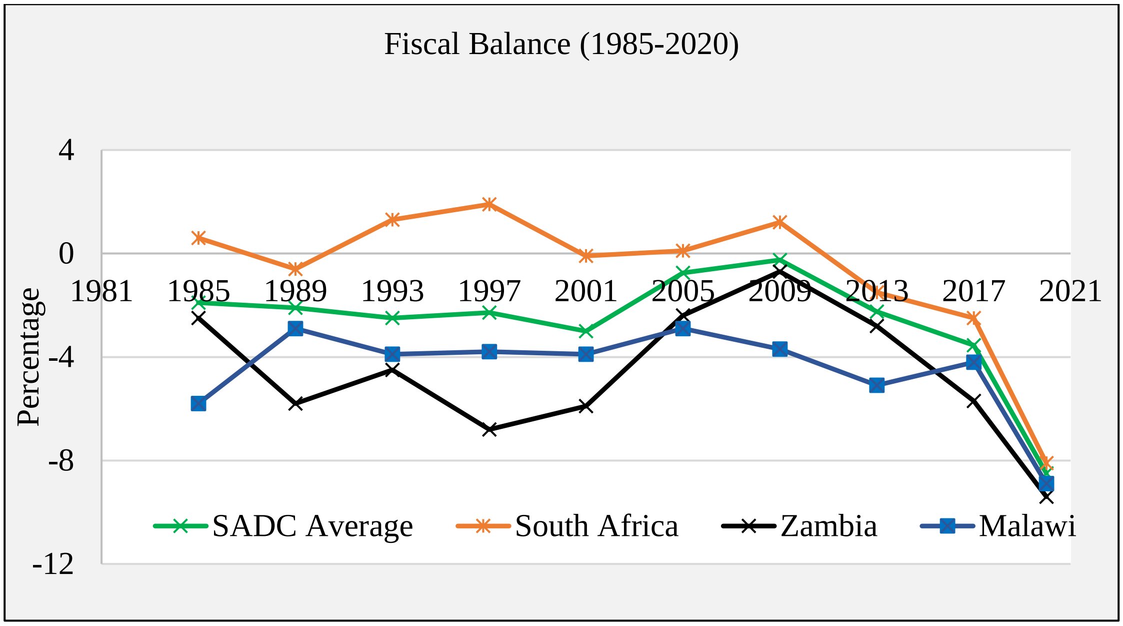


Figure 2.5: Average fiscal balance (% of GDP) for SADC and Selected Countries

Source: Author's illustration with data from IMF

Figure 2.5 above graphs the average deficits for SADC and some selected countries with very low and very high fiscal balances. From 1985-1989, average budget deficit in SADC marginally increased from -1.9 to -2.1 percent. This however worsened in the period 1997-2001 when the deficit rose to -3.2 percent. Improvements were recorded in the period 2002-2009 when the average deficit dropped notably to -0.25 percent. This is also a period characterized by stable macroeconomic fundamentals and growth in SADC. The deficit however continued to widen between 2009-2017 reaching -4.6 percent and surpassing the set target of less than three percent. Between 2017 and 2020, the deficit worsened to the record average of -8.1 percent. This was as a result of governments increased spending to minimize the adverse economic effects of Covid 19 pandemic (SADC, 2020).

At country level, deficits have widened with a general upward trend. Zambia has the highest deficit for the sample period. Its fiscal balance moved from an average of -2.5 percent in 1985 to -5.8 percent by 1989. From 2001-2009, there was a record improvement with the average deficit reducing to -0.6 percent from -5.9 percent in the year 2001. This was mainly attributed to the country's improved fiscal discipline and the attainment of Highly Indebted Poor Country's Initiative (HIPC) completion point in 2005 (IMF, 2007). The deficit has however deteriorated over time, reaching an average of -9.0 percent by 2020. Malawi is second with highest average deficits which have mildly fluctuated over the sample period. On the other hand, South Africa has the lowest average deficits recording some surpluses between 1985-2009. Its highest deficit is -7.8 percent recorded in the year 2020.

2.1.7 Income Inequality in SADC Countries

SADC countries are characterized by heterogeneous social and economic development with unacceptably high levels of inequality. Six out of the seven outlier countries driving income inequality in Africa are the SADC region. These are South Africa, Botswana, Namibia, Lesotho, Zambia and Eswatini (UNDP, 2017).

Table 2.8: Average Gini Index (%) for SADC and Selected Countries

Period	***1985-90***	***1991-96***	***1997-02***	***2003-08***	***2009-14***	***2015-20***
Country						
Namibia	60.9	62.1	61.7	60.8	60.1	60.5
South Africa	59.0	59.2	59.6	59.8	60.3	60.9
SADC Average	49.6	50.5	50.7	50.9	51.6	52.1
Seychelles	38.1	38.9	39.8	40.5	41.1	43.0
Mauritius	36.5	36.8	36.6	36.5	37.5	38.9

Source: SWIID, WIID, World Bank estimates

Table 2.7 shows average income inequality measured by Gini coefficient. This is one of the most utilized measures of income inequality and is generally considered as superior to other measures (Cypher, et al., 2004). It ranges from 0 to1 (0-100 percent) with 0 indicating perfect equality while one will indicate perfect inequality. From the average values, it is observed that income inequality has been rising steadily over the last three decades in SADC. From 1985-1990, the average index was 49.6 percent. It increased to 50.5 percent from 1991-1996. The coefficient has maintained an upward trend, rising to an average 52.1 percent from 2015-2020. This is much higher than the average value of 43.1 percent in SSA (UNDP, 2016).

At country level, Namibia and South Africa have the highest levels of income inequality while Mauritius and Seychelles have the lowest Gini coefficients in that order. Acording to the UNDP (2016) income classification, five categories exist. These are; 0-0.399 as very low inequality, 0.4-0.449 as low inequality, 0.45-0.529 as middle inequality, 0.53-0.599 as high inequality and 0.60 and above as very high Inequality. Therefore, at country level, Namibia and South Africa are in category five classified as very high inequality while Mauritius is the only country in SADC classified in very low inequality category.

2.2 Conclusion

It is noted from the background that the economies of SADC countries are diverse in size and composition. They have also experienced different growth rates. However, except for the year 2020, SADC as a whole has been on a positive growth path for the entire sample period despite fluctuations. The average percapita income has also steadily increased. Improvements have been scored in other macroeconomic variables such as investment with a record reduction in inflation rate to a single digit and an impressive rise in the percentage of school enrolment. The sample economies have also progressively removed barriers to multilateral trade as evidenced by the increase in the volume of trade. On the other hand, instability in exchange rates has been observed while fiscal deficits have fluctuated over the years with a general upward trend. The average unemployment and inequality have also worsened. The region however, remain with potential for improved macroeconomic performance and a more equitable distribution of resources.

CHAPTER THREE

LITERATURE REVIEW

3.1 Introduction

The subject of economic growth and income inequality has been studied extensively in developed countries. The recent availability of reliable data has ignited interest in investigating and establishing the causal relationship that exists in developing countries. On the other hand, the increasing relaxation of barriers to international trade by regions and individual countries and the rise in global trade has necessitated studies on the impact of such developments on the distribution of income within and among trading nations.

This chapter reviews relevant theoretical and empirical literature on economic growth, trade and inequality nexus. It contains two sections; section 3.2 presents the theories concerning economic growth, trade openness and income inequality while section 3.3 analyses the most relevant work that has been done in this field. The first part will therefore provide the theoretical basis for this study while the second part will provide an insight on how the subject matter can be investigated.

3.2 Theoretical Literature Review

3.2.1 Kuznets Inverted U Hypothesis

One of the leading theories that relate income inequality to economic growth is called the Kuznets hypothesis developed by Kuznets (1955). He examined the historical relationship between income per capita and income distribution. His fundamental questions were; Does inequality in the distribution of income increase or decrease in the course of a country's economic growth? What factors determine the secular level and trends in income inequalities? His analysis suggested that at low-income levels, economic growth and rising average income tends to create more income inequality as measured by Gini coefficient. However, as per capita income continues to increase, a critical threshold level of income is reached and further economic growth and even higher average income tend to reduce a nation’s overall income inequality (Kuznets, 1955).

Therefore, Kuznets postulated that income inequality will initially rise as economic growth takes off, then stabilizes when per capita income reaches a threshold level before exhibiting a downward trend.

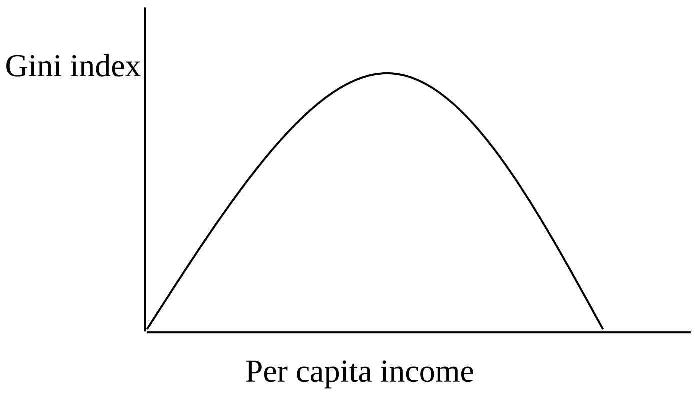


Figure 3.1: Kuznets inverted U curve

Source: Simon Kuznets (1955)

Figure 3.1 shows the relationship between income inequality and per capita income. According to Kuznets, development involves a shift from a low wage rural agricultural sector to a high wage urban industrial sector. While there is little variation in the agricultural income, industrialization leads to large differences in income. Therefore, in the early stages of development, movements from agriculture sector to the industrial sector would increase income disparity between the rural agriculture population and the urban industrial population and consequently the overall inequality. As the economy experience growth, mass education provides greater opportunity and the labour force in the industrial sector increase while that in the agriculture sector decrease (Ibid).

The theory of Kuznets therefore clearly points to the differences in income between traditional agriculture and the industrial sector as the primary cause of initial inequality. This theory is also often interpreted to mean that there is a threshold level of income and by extension, economic growth that a country must achieve before greater equality and higher levels of development can be attained. Once that threshold is reached, further increases in income contribute to more equality. Additionally, the theory views development as a transition of the economy from a traditional agriculture sector to a modern industrial sector through massive industrialization, democratization and the rise of a welfare state. Therefore, rising inequality is viewed as a phase in the process which is expected to pass once a critical threshold is reached (Cypher et al., 2004).

3.2.2 Classical and Neoclassical Theories of Functional Income Distribution

The classical theory of functional income distribution is attributed to Ricardo (1817). He differentiated three social classes upon which national income is distributed. Landlords receive rent, capitalists receive profits and workers receive wages. He postulated that profits tend to fall while rent and wages as a share of national income have a tendency to increase in the long run although the real wage is kept constant at subsistence level. Profits are not determined independently, they are defined as residues and the natural rate of wage is a subsistence wage, therefore, increase in rent comes at the expense of profits.

Ricardo relied on Malthus theory of population, which states that a wage rate above the natural rate will raise birth rate and labour supply. In the long run, it will lead to the increase in rent, population, wage fund and rising prices (Bigsten, 1983; Dunhaupt, 2013). Therefore, Ricardo's theory can be split into two broad principles; the marginal principle which is the share of rent and the surplus principle which is the residue shared between wages and profits (Kaldor, 1955).

Another classical theory of distribution is attributed to Karl Marx (1887). The value of each commodity is determined by the labour contained in it, measured in labour time. Workers only possess labour power and its value is determined by the time required for its reproduction, therefore resting on subsistence level that only allows the worker to do their work. Capitalists own the means of production. At the onset of production, the capitalist invests constant capital and variable capital, which is labour. In the process of production, the value of the commodity created will exceed the original value by a surplus. The degree of exploitation is then given by the surplus value (Dunhaupt, 2013). In determining the distribution, although the wage relates to a subsistence level, it is also determined by the relative bargaining power of the capitalists and the working class.

Therefore, for both Ricardo and Marx, sources of income flows relate exactly to their social classes. Landlords receive rent, capitalists receive profits and workers receive wages. For Marx, it is the distribution between capital and labour and between capitalists and workers. He believed that change in the structure of distribution can only happen with changes in the production relations and when capitalism itself collapses (Bigsten, 1983).

The neoclassical or marginal productivity theory of distribution rests on the microeconomic foundations that can be traced back to Walras (1834). The theory rests on three main pillars; preferences, production functions and factor endowments. Households maximise their utilities, firms maximise their profits and each agent receive the amount of income corresponding to their level of contribution to total output. The profit-maximizing firm hires an additional worker only if the marginal product of labour exceeds the real wage. It employs additional capital if the marginal product of capital exceeds the interest rate. Therefore, in equilibrium, the marginal product of labour is equal to the real wage rate and the marginal product of capital is equal to the interest rate. Thus, the distribution of income is regarded as part of the general pricing process.

3.2.3 Theories of Size Distribution of Income

Friedman (1912) referred to this theory as the individual choice theory. This postulates that being a risk taker is what explains why a small group in society can receive a large proportion of total income since, as in the lottery, the amount of money that many can lose is small in comparison to the large amount that a few individuals can win (Bigsten, 1983). The risk averse individual will take less risky choices. As a consequence, a society composed of risk averse individuals will generate less inequality compared to the one composed of risk-taking individuals (ibid).

Cline (1975) highlights the work by Mincer (1958) among those economists who support the human capital approach. This approach focuses on the explanation of job earning differentials. The model is based on the idea that occupations requiring longer training periods pay higher earnings to compensate for the foregone income during training. More precisely, the present discounted value of earnings is equated among all occupations. All incomes are in reality equal. Observed differences are merely statistical illusions stemming from the fact that the high-income individual has been on the job a shorter time than his low-income counterpart (Cline, 1975). Abilities and stochastic forces have also been used as explanations for inequalities in the distribution of income.

3.2.4 International Trade and Income Distribution

The Heckscher–Ohlin (H–O) theory presents what can be termed as the modern theory of international trade. It presents two theorems, the first deals with and predicts the pattern of trade. This theorem states that a nation will export the commodity whose production requires the intensive use of the nation’s relatively abundant and cheap factor and import the commodity whose production requires the intensive use of the nation’s relatively scarce and expensive factor. The second theorem deals with the distribution of income for trading countries called factor price equalization theorem. It states that international trade will bring about equalization in the relative and absolute returns to homogeneous factors across nations. Trade is therefore, seen as a substitute for international mobility of factors. This was rigorously proved by Paul Samuelson, hence sometimes referred to as the Heckscher–Ohlin–Samuelson theorem (Salvatore, 2013).

Another theory of international trade from the framework of H-O is the Stolper-Samuelson theorem. This theorem links wages to traded prices and shows how international trade affects real wages and the real income of labour in relation to real interest rates and the real income of the owners of capital within each trading nation. It postulates that an increase in the relative price of a commodity raises the returns or earnings of the factor used intensively in the production of that commodity. Arcoding to this theorem, since labor and capital are assumed to remain fully employed before and after trade, the real income of labor and the real income of owners of capital move in the same direction as the movement in factor prices (Acemoglu et al., 1997).

Arcoding to Stolper-Samuelson theorem, if the capital abundant and labour scarce nation imposes a tariff on its labor-intensive commodity, the price ratio of its labour intensive to its capital-intensive commodity rises for domestic producers and consumers. This means that the real wage of labour, a scarce factor for the nation will also rise. Because labour productivity also increases in the production of both commodities, not only will money wages increase but also real wages in the nation. With full employment of labour, the total earnings of labour and its share of national income are now greater and this creates a wider redistribution of resources (Taylor et al., 2011).

The H-O and Stolper-Samuelson theories have important implications for income inequality especially in developing countries. Both theories predict that greater openness boosts the demand for unskilled labour relative to skilled labor. This raises their wage and share of national income. Given that unskilled labor is a more equally distributed asset than skilled labour in these countries, this reduces overall income inequality (ibid). Additionally, the H-O theory predicts that international trade will cause the wages of labor with the same level of training, skills, and productivity to be the same in all trading nations and that it will equalise the returns to capital of the same productivity and risk (Feenstra et al., 1997; Salvatore, 2013).

It is also important to acknowledge that both the H-O and Stolper-Samuelson theories hold under specific economic assumptions. These include constant returns to scale, perfect competition and that all resources are fully employed in each nation among other assumptions. Some scholars have however, questioned the validity of the H-O theorem since the classical Leontief paradox and have called it inadequate as an explanation for modern trade patterns (Feenstra et al.,1997). The Stolper-Samuelson theorem is also under scrutiny by some scholars. This is because trade liberalisation in some developing countries assumed to be labour intensive, particularly in Latin America has infact increased wage inequality (Acemoglu et al., 1997).

3.3 Empirical Literature Review

Economic growth and income inequality have become topical issues in both developed and developing countries. This is also true for the nexus between trade openness and inequality. This section, will therefore, review empirical studies pertinent to this study. This is aimed at providing an in-depth understanding of the study from the global, regional and country perspective. The first part of this section will review global studies done at cross country level, which considered all the three variables, economic growth, trade and income inequality at once. This will be followed by studies which dealt with economic growth and inequality or trade openness and inequality only. The second part will review country specific studies following the same pattern as the first part while the last part will focus on studies related to the SADC region.

The subject of economic growth, trade openness and income inequality has been studied broadly at cross county level. These simultaneous investigations seek to establish whether there is a causal relationship by considering several countries at once. Dollar and Kraay (2000) considered a sample of 101 countries including 73 developing countries between 1975-79 and 1995-97. They employed Ordinary Least Squires (OLS) estimation technique to establish the link between growth, trade openness and inequality. The dependent variable was Gini coefficient while the regressors were per capita income and trade openness. Other control variables included gorvnment consumption, inflation, financial development and the rule of law. Their findings indicated that openness led to declining inequality between countries and reduced poverty within countries. They also found that rapid growth had resulted in dramatic reduction in inequality and poverty. Inflation worsened inequality while government expenditure had an equalizing effect.

Dollar and Kraay's findings proved to be very influential with many of its conclusions widely quoted, particularly in support of the open market policies of the Washington consensus as the standard reform package. Some critics however, argue that the study lacked good quality data and the theoretical structure supporting the specification of the equations. They therefore questioned the robustness of the results for policy conclusions. The study also used large cross-sectional samples which are usually associated with problems in drawing conclusions (Persaran et al., 2015).

Meschi et al., (2007) adopted a dynamic specification to estimate the distributive consequences of trade flows and the level of development on within country income inequality. They considered 70 developing countries from 1980-1999. Countries were further divided into two groups; middle income and lower income. Variables incorporated include household income inequality, openness to trade, per capita GDP, education and inflation. The Least Squares Dummy Variable (LSDV) corrected estimator was employed. This was considered as the best method to deal with their unbalanced data. Their findings indicated that trade openness was weakly related to income inequality.

However, once they disaggregated total trade flows arcoding to their areas of origin, trade with high income countries worsened income distribution in developing countries. Per capita GDP and education had a negative impact on inequality while inflation worsened the distribution. These findings support the hypothesis that technological differentials between trading partners are important in shaping the distributive consequences of trade openness (Cornia et al., 2001).

Neagu et al., (2016) analysed the phenomenon of income inequality between 2000 and 2014 in ten central and eastern European countries by considering two aspects, firstly the link between economic growth and income inequality and secondly, the effects of trade openness on income inequality. A multivariate analysis was employed using the Random Effects (RE) model. Variables incorporated included Gini coefficient, trade openness and growth proxied by per capita income. Other control variables included foreign direct investment, market capitalization and secondary education. The results showed that trade openness aggravated income inequality while market capitalization and FDI had an equalizing impact. A positive association was also found between inequality and per capita income in the countries examined. Although the study did not have a longer time series component, its findings provided a new look at trade and growth in Europe. This was because of the undesired effects of the two variables on income distribution.

Other cross-country studies have however, focused only on growth and inequality or international trade and inequality. Deininger and Squire (1996) used household survey data for 108 countries over the period 1960-1974. They defined the sample into sub-samples in terms of country characteristics such as rich or poor, equal or unequal. They adopted a simple relationship between current as well as lagged gini and per capita income. Their findings showed no systematic relationship between growth and changes in aggregate inequality. According to their analysis, for a group of 43 countries, periods of aggregate growth were associated with increased inequality while for the other 45, periods of aggregate growth were associated with a decrease in inequality. Additionally, periods of negative growth were associated with increased inequality in five countries and with a more equitable distribution in two countries. Although the study could be cited for omitted variable bias, it provides a good starting point of analysis for our study.

Following the findings of Deininger and Squire (1996), Forbes (2000) conducted a similar study on 45 countries. He argued that the most likely reasons for the contradiction of results are country specific, omitted variable bias, data quality issues and length of period under consideration. In order to deal with these issues, Forbes used the Fixed Effects (FE) and Random Effects (RE) model. He found a positive relationship between inequality and growth. The author's conclusion was that in the long run, the relationship is negative while it is positive in the short run.

Barro (2000) used data for 84 countries from Deininger and Squire (1996) data set in investigating the relationship between inequality and growth. He used Three Stage Least Squares (3SLS) arguing that the use of FE eliminated cross-sectional variation in the data. The variables of interest used were per capita GDP, Gini coefficient, gorvnment consumption, inflation rate, years of schooling and the growth rate of terms of trade. The results from the RE model showed no significant relationship between inequality and growth for the whole sample. However, when the sample was divided into sub-samples of poor and rich countries, economic growth caused reduced income inequality in the sample of poor countries but increased inequality in the sample of rich countries. In the case of transition economies, there was clear evidence that growth had a negative and significant effect on inequality. His main conclusion was that inequality and growth relationship is sensitive to specific choice of sample countries. The results were also sensitive to the use of different specifications and estimation methods.

Calderon and Chong (2001) used dynamic panel data for 102 developed and developing countries for the period 1960 to 1995 to establish the relationship between inequality and trade openness. Their variables included Gini coefficient as a dependent variable while per capita income, trade openness, inflation, education, real effective exchange rate and terms of trade were used as regressors. They employed the Generalized Methods of Moment (GMM) for dynamic panel data models in order to deal with the problem of endogeneity. Their findings indicated that trade openness was associated with changes in income distribution. The real exchange rate had a negative impact on inequality, as the depreciation of the local currency decreased Gini coefficient due to increased competitiveness of exports. They also found that education is an important factor in reducing inequality while inflation worsened the distribution. When they disaggregated trade between exports and imports, their findings indicated that export orientation towards primary commodities worsened inequality while exports of manufactured goods improved the distribution.

Dong (2008) considered 32 countries, both developed and developing in investigating whether trade openness contributed to improved income distribution. His analysis used the instrumental variable threshold regression approach of Caner and Hansen (2004) in order to deal with the problem of autocorrelation in his specification. The variables included Gini index, trade openness, inflation, growth, investment, productivity growth and per capita income. His findings indicated that greater trade openness had strong beneficial effects on real income for the developed countries but significantly negative effects for the developing countries. These findings suggest that greater international trade and integration may promote uneven development and hence, contribute to more inequality in less developed trading economies (Bukhari et al., 2016).

Boulila et al., (2013) focused exclusively on the causality between income inequality and economic growth in nine countries of the Middle East and North Africa (MENA) for the period 1960-2011.Their variables included income inequality measured by a traditional proxy, Gini coefficient, trade openness, secondary enrolment and gross fixed capital formation. They employed cointegration techniques using the bivariate Vector Autoregressive model (VAR) and Granger causality tests. Their findings indicated that Granger causality existed both in the short and long run. Income inequality did not seem to affect postively the long run economic growth. The results however, clearly indicated strong evidence in favor of a reverse causation running from growth to inequality in four countries. For countries where cointegration was not established, Granger causality tests were carried out with first-differenced VAR model to check the causality problem in the short run. Results indicated that there was a bidirectional causality and causality running from growth to inequality.

Malvika (2016) used system GMM to investigate the effects of trade openness on income inequality in four countries namely Brazil, Russia, India and China (BRIC). He considered the period 1991-2013. Gini coefficient was the dependent variable while per capita GDP, openness to trade, inflation, education, exchange rate and terms of trade were independent variables. His findings were that trade openness had actually worsened income distribution in these countries. Exchange rate was positively related to inequality while increase in per capita income had an equalizing impact. As expected, education had a negative impact on inequality.

There are however, some studies on economic growth, trade and income inequality nexus that have exclusively focused on individual countries. Nasfi et al., (2011) looked at the nature of the relationship between economic growth, trade and inequality in Tunisia using the dataset from 1984-2011. Income inequality measured by Gini index was the dependent variable while annual growth rate of GDP, openness to trade, fertility rates, money supply (M2), human capital and exchange rates where the regressors. They used the OLS method. The main results showed that both economic growth and openeness to trade had positive effects on income inequality. However, human capital had an equalizing effect.

Shahbaz et al., (2011) conducted a study on Pakistan's economy to establish the impact of trade, growth and financial development on income inequality. They used the data from 1971- 2005. The variables included Gini index as a dependent variable while the regressors included GDP per capita as a proxy for growth, trade openness, inflation, government expenditure, financial instability and manufacturing value added. They employed Autoregressive Distributive Lags (ARDL) model. Their findings indicated that financial development reduced income inequality while financial instability worsened it. The study also found that economic growth and openness to trade further deteriorated income distribution.

Madhu et al., (2013) conducted a similar study on India for the period 1982-2012. They focused on the effects of economic growth and trade openness on inequality. In their model specification, Gini coefficient was a dependent variable while the regressors included financial development, real per capita GDP as a proxy for the growth momentum of GDP, consumer price index as a proxy for consumer price and trade as a percentage of

GDP. Following the methodology of Clarke et al., (2003), a linear and nonlinear specifications were considered to test Greenwood and Jovianvich (GJ) hypothesis. The study employed Autoregressive Distributive Lags (ARDL) bounds testing approach to cointegration to examine the long run relationship and the Error Correction Mechanism (ECM) for short run dynamics. The results revealed that there was cointegration and further suggested that financial development, economic growth and inflation aggravates income inequality in both the long run and short run. However, trade openness had an equalizing effect. The study did not establish evidence in support of the GJ hypothesis.

Davuthan et al., (2015) undertook an empirical analysis to determine the impact of economic growth and trade openeness on income inequality for the Turkish economy. The aim of the study was to investigate the validity of Kuznets inverted U hypothesis using the data for Turkey. The study also examined the impact of trade openness on income inequality. Variables incorporated in the study included Gini coefficient as a dependent variable, trade openness, and per capita income as a proxy for the level of development. Other control variables included inflation, human capital and financial development. Johansen cointegration method and Granger causality test based on Vector Error Correction Model (VECM) were employed to test the relationships among economic growth, trade openness and income inequality. Empirical results established that there was a long run relationship among the variables. They also confirmed the existence of Kuznets inverted U hypothesis for the Turkish economy in the long run. The results also showed that trade openness decreased income inequality in the long run. The long run causality running from economic growth and trade openness to income inequality was detected.

Hanson and Harrison (1999) focused only on trade and inequality. They conducted a study on the Mexican economy to assess the extent to which increased wage gap was related to the sweeping trade reforms of the 1985. They examined data for manufacturing plants from 1984-1990 and the Mexican industrial census data from 1965-1988. The reduction in tariffs was used as their measure of trade openness. Their findings indicated that inequality widened and coincided with heavy trade liberalisation of 1985. The study also found that an increase in trade with countries more abundant in low skilled labour than Mexico further hurt the low skilled workers by decreasing their demand. The study suggested that goods from these local manufacturing plants may have fallen in prices because of increased competition from economies with reserves of cheap unskilled labor larger than Mexico's. Therefore, the consequent increase in the relative price of skill-intensive goods could explain the increase in wage inequality.

Although there are limited studies specific to SADC, researchers have recently taken interest in studying the nexus between growth, trade and inequality in the region following improvements in the availability of reliable data in Africa and the SADC region in particular and the growing attention to the subject in the region (Haroon et al., 2017).

One such study was undertaken by Antwi (2017). His focus was on 37 SSA countries which included some SADC countries. He investigated the relationship between economic growth and income inequality for the period 1960 to 2012. He employed the ARDL model. Based on the theory that inequality mostly features at the early stages of development but that the situation improves at later stages, he modelled two equations to consider the linearity and nonlinearity of this relationship. His findings were that out of the 37 countries, 24 supported Kuznets hypotheses. Real GDP per capita was positively related to inequality measured by Gini index. Unemployment had a positive impact while human capital had a negative impact. He however found mixed results for the impact of trade on income inequality. The nonlinear square term of real per capita GDP was negative and statistically significant, confirming the inverted U hypothesis.

Zungu et al., (2021) conducted a nonlinear econometric analysis to investigate the relationship between economic growth and income inequality and to test the validity of Kuznets and the tribble theories in 13 SADC countries from 1990-2015. Furthermore, the study wanted to determine the threshold level at which excessive growth hampers inequality. Gini coefficient was a dependent variable while GDP per capita was used as a proxy for economic growth. Other control variables included government expenditure, gross fixed capital formation and population growth. They adopted the panel smooth transition regression model (PSTR) and applied the Langrage multiplier (LM) test to identify appropriate transition variable amongst all candidate variables, to assess the linearity between economic growth and income inequality and to find the sequence for selecting the order of the transition function. Their findings indicated that at lower growth, income inequality tends to be lower, while if growth increases above US$8,969, inequality tends to increase in the SADC region. Their findings are in contrast with Kuznets inverted U hypothesis.

3.4 Summary and Conclusion

The chapter has reviewed both theoretical and empirical literature. On the theoretical side, the classical, neoclassical and size distribution theories have to a large extent been acknowledged at micro level without much debate as they are socially observable on how income is distributed amongst the economic agents. Kuznets hypothesis is however, observed as a major theory of income distribution at macro level which has attracted much of the empirical work. The H-O and Stolper-Samuelson theories of trade have also been in the spot light in recent years as other scholars argue that they are based on a number of simplified assumptions which might not hold in the real world given the complexity of international trade (Giovanni et al., 2003; Moyo, 2018).

From the empirical perspective, it has been established that the causal relationship between growth, trade openness and income inequality has been vastly researched at cross country level with varying methodologies. Key variables observed to influence income inequality and frequently employed in empirical studies include per capita income which is used as a proxy for growth momentum of GDP, trade openness, investment, education, inflation, unemployment, gorvnment expenditure and financial development among other variables. The empirical findings on the other hand are varied and without convergence.

To the author's knowledge, very limited studies have been conducted on SADC as a region to assess the causal relationship between growth, trade openness and income inequality. Additionally, arguments about the reverse causation or feedback effect of growth and trade openness on inequality have been largely ignored in most of the empirical studies. This study therefore seeks to adopt a multivariate approach in investigating the subject and will take into account the reverse causation possibility in the SADC region.

CHAPTER FOUR

METHODOLOGY

4.1 Introduction

This chapter outlines the methods and procedures that were followed to achieve the stated research objectives. For simplicity and clarity, the chapter has been subdivided into four sections. Section 4.2 presents the theoretical framework underpinning the investigations while section 4.3 specifies the augmented model. Section 4.4 details the estimation techniques. The chapter is summarized in a conclusion in section 4.5.

4.2 Theoretical framework

The investigations on income inequality by researchers are largely influenced by the stylized facts presented by Kuznets (1955). He developed the basic framework linking income inequality to the long run process of economic development. The basic framework is presented in equation one.

$$Gini = f(GDPpc, OT) \qquad \text{……}\textit{Equation 1}$$

Gini represents income inequality while *GDPpc* is initial per capita GDP, a proxy for the growth momentum of GDP which also represents the level of economic development of a country (Kuznets, 1955). The trade theories of H-O and Stolper-Samuelson further postulates a link between inequality and openness to trade (*OT*) through the redistributive consequences of trade. The basic linear functional formulation of the model is presented in equation two below;

$$Gini = \beta_0 + \beta_1 GDPpc + \beta_2 OT + u \qquad \text{……}\textit{Equation 2}$$

Where β_0 represents the constant, β_1 and β_2 are the coefficients of per capita GDP and trade openness respectively while u is the error term.

4.3 The Augmented Model

This study adopts an augmented model in investigating the causal relationship between growth, trade and inequality in SADC following the works of Shahbaz et al., (2011), Madhu et al., (2013), Malvika (2016) and Antwi (2017). These scholars adopted a combined model and incorporated other variables in their investigations apart from the traditional variables identified by Kuznets and the trade theories of H-O and Stolper-Samuelson. The method of analysis and the techniques employed are influenced by Pesaran and Shin (1999). The following is the linear specification of the model;

$$\begin{aligned} GINI_{i,t} = \alpha_1 + \alpha_{11}GDPPC_{i,t} + a_{12}OT_{i,t} + a_{13}GFCF_{i,t} + a_{14}INFL_{i,t} \\ + a_{15}EDU_{i,t} + a_{16}REER_{i,t} + a_{17}UNEMP_{i,t} + a_{18}GS_{i,t} \\ +\omega_i + \varepsilon_i \qquad \text{……Equation 3} \end{aligned}$$

Where;

Gini	= *Gini coefficient measuring the level of income inequality*
GDPPC	= *Percapita income which is used as a proxy for economic growth*
OT	= *Openness to trade as the sum of exports and imports (% GDP)*
GFCF	= *Gross Fixed Capital formation (% GDP), proxy for investment*
REER	= *Exchange rate measuring the value of a currency against others*
INFL	= *Inflation measuring the rate of price changes for the economy*
EDU	= *Education measured by the percentage of secondary enrolment*
UNEMP	= *Unemployment measuring the percentage of labour force without work*
GS	= *Government expenditure for purchases of goods and services*
ω_i	= *Group specific fixed effect*
i and *t*	= *Country and time period respectively,* ε_i *is the error term*

Equation three is augmented to include important control variables which are believed theoretically to explain the distribution of income in society and are used extensively in empirical work (Barro, 2000; Dollar et al., 2000; Elena et al., 2007; Bukhari et al., 2016).

According to Kuznets (1955) and the growth models of Solow and Swan, higher real GDP growth and hence, higher per capita income will have a negative impact on inequality (Romer, 2012; Piketty, 2015). The trade theories of H-O and Stolper-Samuelson also predict a negative relationship between openness to trade and income inequality but the empirical literature is mixed (Rivera et al., 1991; Norris et al., 2015). According to the growth theories of Harrold and Domer, higher gross fixed capital formation enhances the productive capacity of an economy and increases the employment prospects, hence it is expected to be negatively related to inequality (Fosu, 2010; Romer, 2012). The impact of real effective exchange rate can go either way, depending on the orientation of the economy and its competitiveness to trading partners (Hiranya et al., 2015; Kollie, 2020).

Inflation checks the macroeconomic environment which affects income distribution. Empirical evidence suggests that higher inflation is generally associated with higher inequality, therefore it is expected to be positively related to Gini index (Dollar et al, 2000; Atkinson, 2015). Education is taken into account because an increase in the level of skills implies an increase in the supply of skilled labour and employability of individuals, hence it is expected to be negatively related to income inequality (Aghion et al., 1998). Unemployment is expected to worsen income distribution while gorvnment spending is expected to have a negative impact (Chu et al, 2000; Giovanni, 2003).

Equation three will be transformed into a log linear form for interpretive reasons. This is because the estimated coefficients of the transformed variables will represent elasticities. The non-normality in the data may also be prevalent due to variations in sample countries. Therefore, transforming the variables will inherently help to deal with the outlier values. This is also in line with other scholars who conducted similar investigations and transformations (Madhu et al., 2013; Shahbaz et al., 2011; Abdulkadir et al., 2013; Dimitrios et al., 2021; Genesis, 2022). The transformed equation is presented below;

$$LGINI_{i,t} = \alpha_1 + \alpha_{11}LGDPpc_{i,t} + a_{12}LOT_{i,t} + a_{13}LGFCF_{i,t} + a_{14}LINFL_{i,t} + a_{15}LEDU_{i,t} + a_{16}LREER_{i,t} + a_{17}LUNEMP_{i,t} + a_{18}LGS_{i,t} + \omega_i + \varepsilon_i \quad \text{……Equation 4}$$

Where;

L= represents the log transformation of the variables

Researchers also consider a nonlinear relationship between growth and inequality as economic growth proceeds and in line with Kuznets hypothesis. Therefore, equation four will be transformed into equation five by introducing a square term of percapita income. This is in order to observe if there is a nonlinear relationship between per capita GDP and income inequality in SADC as income continues to grow (Clarke et al., 2003; Shahbaz et al., 2011; Antwi, 2017).

$$LGINI_{i,t} + \alpha_1 + \alpha_{11}LGDPpc_{i,t} + a_{12}LGDPpc^2_{i,t} + a_{13}LOPEN_{i,t} + a_{14}LGFCF_{i,t} + a_{15}LINFL_{i,t} + a_{16}LEDU_{i,t} + a_{17}LREER_{i,t} + a_{18}LUNEMP_{i,t} + a_{19}LGS_{i,t} + \omega_i + \varepsilon_{i,t} \quad \text{……Equation 5}$$

Equation four is our main estimable regression for investigating the causal relationship between economic growth, trade and income inequality in SADC. The focus of equation five will be to observe the significance and direction of causality for the square term of per capita GDP if the nonlinear relationship exists at all. This can only be established if $\alpha_{11} > 0$ and $\alpha_{12} < 0$, or if $\alpha_{11} < 0$ and $\alpha_{12} > 0$ conditions hold.

4.4 Estimation Techniques

4.4.1 Cointegration with Panel ARDL Model

To empirically examine the long run relationship and the dynamic interaction between income inequality, economic growth and trade, equations four and five are estimated by Panel Autoregressive Distributive Lags (ARDL) procedure developed by Pesaran and

Shin (1999). This method is preferred over other methods for three main reasons. Firstly, it is a superior method applicable even when the variables have different orders of integration. This is unlike other techniques which require that all variables be integrated of the same order otherwise they will lose their predictive power (Pesaran et al., 1999; Huag, 2002). This implies that ARDL procedure can be adopted when the variables are all stationary at level I(0) or first difference I(1) or a combination of both. The only exception is when they are stationarity at second difference I(2).

Secondly, it is a recommended estimation technique for heterogeneous panel data with cross-section units less than the time series component (Pesaran et al., 2001; Roadman, 2009). Since our data set is a balanced panel consisting of a sample of 11 countries with each of the nine variables observed for 36 years, where N = 11 is much less than T = 36, the application of this method is appropriate and justified. Additionally, other estimation procedures such as the GMM only captures the dynamics of the short run. Moreover, in the case where N is much less than T, the GMM is not appropriate as it is likely to suffer from an autocorrelation problem in the residues of the first difference estimation (Pesaran et al., 1995; Abdulkadir et al., 2013).

Thirdly, the macro panel ARDL analysis method is robust and produces efficient estimates even in cases of relatively small sample size (Pesaran, 2015). Additionally, it provides three estimation options depending on the characteristics of the sample. These include the Mean Group (MG), Pooled Mean Group (PMG) and the Dynamic Fixed Effects (DFE) estimator and simultaneously estimates both the short run and long run coefficients (ibid).

Therefore, once it is established that none of the variables is integrated of the second order I(2), the generalized panel ARDL (p,q..…q) will be specified with optimal lags (p,q…q) determined by Akaike Information Criteria (AIC) using the following generalized equation;

$$LGini_{i,t} = \sum_{j=1}^{p} \delta i \, LGini_{i,t-j} + \sum_{j=0}^{q} \beta'_{ij} \, X'_{i,t-j} + \varphi_i + e_{it} \qquad \ldots\ldots Equation\ 6$$

Where;

$Gini_{it}$ = *Gini coefficient which is a dependent variable*

X'_{it} = *is a k*1 vector of variables that are allowed to be purely I(0) and I(1)*

δ_{ij} = *is the coefficient of lagged dependent variable called scalars*

β'_{ij} = *are k*1 coefficient vectors*

φ_i = *is the group specific fixed effect*

e_{it} = *idiosyncratic error term*

p = *are the lags of the dependent variable Gini*

q = *are the lags of the regressors*

The reparametrized ARDL (p, q…q) Error Correction Model (ECM) will be estimated as follows;

$$\Delta LGini_{i,t} = \phi_i\left[LGini_{i,t-j} + \lambda_i X'_{i,t}\right] + \sum_{j=1}^{p-1} \xi_{ij} \, \Delta LGini_{i,t-1} + \sum_{j=0}^{q-1} \beta'_{ij} \, \Delta X'_{i,t-j}$$

$$+\varphi_i + e_{it} \qquad \ldots\ldots Equation\ 7$$

Where;

Δ = *denotes the difference operator*

ϕ_i = $(1 - \delta i)$ *speed of adjustment coefficient (expected that* ϕ_i*<0)*

λ_i = *are long run coefficients*

ξ_{ij}, = *coefficients of the lagged dependent variable*

β'_{ij} = *short run dynamic coefficients and other symbols as prescribed above*

Equation seven is our main panel ARDL framework in which the linear and nonlinear specifications will be estimated. It simultaneously estimates the short run and the long run coefficients as well as the group specific speed of adjustment coefficient. The reparameterized ECM also incorporates a difference operator. This differencing results in the loss of a lag for the dependent variable and the regressors. The estimator also takes into account the group specific fixed effects when estimating the parameters of the model.

4.4.2 The Pooled Mean Group (PMG) Estimation

The study will adopt the PMG estimator under the panel ARDL. This is an intermediate estimator between MG and DFE. It involves both pooling and averaging the sample and restricts long run equilibrium coefficients to be homogenous across countries while allowing for heterogeneity in the short run for individual countries. This is unlike the MG which assumes parameter independence by calculating heterogenous coefficients both in the short and long run for individual countries and does not recognize the fact that certain parameters may be the same across the group (Pesaran et al.,1999). It also differs from the DFE estimator which restricts the speed of adjustment, slope coefficients and short-run coefficients to exhibit non-heterogeneity across countries. DFE models are therefore subject to a simultaneous equation bias from the endogeneity, hence, accepting this estimator as the main analysis tool requires the strong assumption that countries responses are the same in the short-run and long-run, which is less attractive and compelling (Huag, 2002).

One of the key requirements for the validity, consistency and efficiency of the PMG estimator is that the variables of interest must be cointegrated. This means that a long run relationship among the variables must be established. Secondly, an important assumption for consistency of this estimation technique is that the resulting residue of the error correction must be serially uncorrelated and the explanatory variables must be treated as exogenous. This means that there must be no endogeneity otherwise we may generate inefficient estimates. For the second assumption to hold, inclusion of lags for both the dependent and independent variables as specified in equation seven must be sufficient to deal with the problem (Pesaran et al., 1999; Im et al., 2010).

Thirdly, PMG is useful in countries where there are reasons to expect long run equilibrium relationship between variables to be similar because of similar levels of income, common technologies, similar monetary structures and openness of the economies with a tendency towards convergence. Short run adjustments and relationships may however be country specific due to widely different impact of vulnerability to financial crisis, external shocks, stabilization policies as well as other factors (Abdulkadir et al., 2013; Dimitrios et al., 2020).

For our study, the assumption of long run homogeneity and short run heterogeneity for SADC is very reasonable. This is because the homogenous nature exists in the countries under review in terms of economic growth, trade policies, inequality levels, investment, unemployment and inflation among many other variables (Kalaba et al.,2008; Moyo et al.,2018; Narain et al., 2021). However, the consistency and efficiency of the PMG as an estimator for this study in relation to other estimators and the assumption of long run homogeneity and short run heterogeneity will be validated using Hauseman (1978) test.

4.5 Granger Causality analysis

Arcoding to Granger (1988), if two variables have a long run relationship, then one should test for Granger causation in atleast one direction. This analysis will be conducted to check if reverse causation exists from growth to inequality and from openness to inequality (Madhu et al., 2013). To conduct Granger causality analysis, Dumitrescu and Hurlin (2012) will be employed which provides an extended methodology of Granger (1969) designed to detect causality in panel data (Dumitrescu et al., 2012; Persaran, 2015). The specification takes the following form;

$$y_{i,t} = \alpha_i + \sum_{k=1}^{k} \beta_{i,k}\, y_{i,t-k} + \sum_{k=1}^{k} \delta_{i,k}\, x_{i,t-k} + \varepsilon_{i,t} \qquad \dots\dots equation\ 8$$

Where $x_{i,t}$ and $y_{i,t}$ are the observations of two stationary variables for country *i* in period *t*. Coefficients are allowed to differ across countries but are assumed to be time invariant.

The lag order k, is assumed to be identical for all countries and the panel must be balanced as is our dataset (Im et al., 2003; Dumitrescu et al., 2012).

4.6 Conclusion

It is clear from above that this research follows a panel ARDL methodology. The theoretical basis for analysis rests on the relationship between income inequality and growth at different levels of economic development as hypothesized by Kuznets (1955) as well as the trade theories such as the one developed by H-O and Stolper-Samuelson. The empirical specification of the augmented model follows scholars such as Shahbaz (2011), Malvika (2013), Madhu et al., (2013) and Antwi (2017). The heterogeneous panel data analysis methods to be used in this study follows the path recommended by Pesaran and Shin (1999). Therefore, in order to proceed with the long run estimation, cointegration among the variables must be established. Identification of the appropriate estimator within the panel ARDL model must be established. Granger Causality analysis are to be conducted using Dumitrescu et al., (2012) recommended for panel data.

CHAPTER FIVE

RESULTS AND EMPERICAL ANALYSIS

5.1 Introduction

In this chapter, we present the results and undertake an empirical analysis of the major findings of the study. Section 5.2 presents diagnostic test results and analysis while section 5.3 presents the main findings of the study. Section 5.4 provides post diagnostic test results while 5.5 gives a comprehensive discussion of the major findings of the study. Section 5.6 concludes the chapter.

In SADC, the mean per capita income is about US$ 3658.1 with a standard deviation of 3301.Trade openness is averaged at 89.79 percent of GDP with a standard deviation of 42.33 while Gini index has a mean of 50.9 percent with a standard deviation of 8.4.

5.2 Results and Analysis

5.2.1 Correlation test

The first test is conducted to check the level of linear dependence among the variables.

Table 5.1: Correlation results

	GINI	GDPC	OT	GFC	EDU	INFL	UNE	RER	GS
GINI	1.000								
GDPC	0.007	1.000							
OT	0.033	0.399	1.000						
GCF	-0.141	0.137	0.287	1.000					
EDU	0.116	0.005	0.258	0.005	1.000				
INFL	0.006	-0.312	-0.191	-0.195	-0.392	1.000			
UNE	0.754	0.078	0.295	-0.080	0.251	-0.032	1.000		
RER	-0.189	-0.016	0.042	0.132	-0.161	-0.148	0.008	1.00	
GS	0.264	0.311	0.518	0.153	0.400	-0.216	0.047	0.44	1.0

Source: Author's computation based on dataset

Analysis of correlation results in table 5.1 shows that none of the variables contain the exact similar information. Most of the variables indicate very low levels of correlation, therefore we have no problem of perfect collinearity in our data set.

5.2.2 Unit Root Tests

In order to apply panel ARDL model, all the variables must be stationary either at level, first difference or a combination of both, but not at the second difference. This is established through testing for unit root and by extension, the order of integration. Unit root tests are also important in order to avoid spurious regression (Huag, 2002). Im, Pesaran, Shin (IPS) which is an improvement of the first-generation test developed by Levin and Lin (1993) is adopted. The lag length selection is based on Akaike Information Criteria (AIC).

Table 5.2: IPS Unit Root Test Results

Variable	Level	First difference	Order (I)
Log Gini	3.499	-1.737**	I(1)
Log GDP per Capita	4.265	-9.113***	I(1)
Log Openness to trade	-1.926**	NA	I(0)
Log capital formation	-1.198	10.260***	I(1)
Log Inflation	-4.653***	NA	I(0)
Log Education	-4.499***	NA	I(0)
Log Exchange rate	-2.676***	NA	I(0)
Log Unemployment	-1.224	-5.764***	I(1)
Log Gvt Spending	-1.295*	13.076***	I(1)

Note: (*), (**), (***) represents significance at 10%, 5% and 1% respectively

Analysis of unit root test results in table 5.2 shows that all the variables are stationary either at level or first difference and none is integrated of the second order. The combination of stationarity in this order allows us to proceed with panel ARDL estimation procedures.

5.2.3 Panel Cointegration Tests

With all the variables stationary at level and first difference, the next step is to conduct panel cointegration test. This is in order to establish if there is a long run relationship among the variables. This is necessary in order to be able to estimate the long run coefficients. Pedroni and Kao residue cointegration tests are adopted. These are usually used together for robustness purposes (Dimitrios et al., 2020). The null hypothesis for both tests is that there is no cointegration among the variables.

Table 5.3: Pedroni Cointegration Test Results

Tests	Statistic	Group Statistic
Panel v-Statistic	-2.504**	
Panel rho- Statistic	3.533**	4.452**
Panel t-Statistic	9.416***	3.876**
Panel adf-Statistic	8.667***	4.186**

***Note**: *, **, *** indicates rejection of the null hypothesis at 10%, 5% and 1% respectively*

Table 5.4: Kao Residue Cointegration Test Results

	t-Statistic	Prob.
ADF	-2.504775***	0.0062
Residue Variance	0.061255	
HAC Variance	0.156987	

***Note**: *, **, *** indicates rejection of the null hypothesis at 10%, 5% and 1% respectively.*

Table 5.3 shows Pedroni test results. It is divided into two dimensions; the within dimension for pooled coefficients across the countries and the between dimension based on individual coefficients for each country in a panel. The results for both the within and between dimension provides enough statistical evidence to reject the null hypothesis of no cointegration. This is because all the statistic criteria used are statistically significant.

Kao cointegration test results in table 5.4 also confirms the existence of a long run relationship at a one percent level of significance.

5.2.4 Cross Sectional Dependence Test

Another test we conduct is the cross-sectional dependence (CD). Panel data estimation assumes that the disturbances are cross sectionally independent. However, with cross country influences, cross sectional links may arise (Pesaran, 2015). This dependence might be caused by similar geographic location, political or economic factors. Therefore, shocks in one country might affect other countries with shared characteristics. Correction of CD if it exists is important. This is because its presence leads to the loss of estimator efficiency and the t-statistics may be invalid (ibid). The test is conducted under the null hypothesis that there is no cross-sectional dependency.

Table 5.5: Panel Cross Sectional Dependence Test Results

Test	Statistic	d.f.	Prob.
Breusch-Pagan LM	58.26914^{++}	55	0.3560
Pesaran Scaled LM	-0.73718		0.4611
Pesaran CD	-0.85221		0.3941

Note: $^{++}$ *indicates t-statistics used for conclusions*

This study settles for Breusch-Pagan LM test statistic for analysis and making the conclusion. The rationale for the decision is based on the type of data set used in the study. Pesaran (2015) recommends this test for a panel in which T is larger than N as is the case with our data set. Analysis of the results in table 5.5 do not provide enough statistical evidence to reject the null hypothesis. This is because the probability value is not statistically significant.

5.2.5 Hauseman (1978) test

The final test we conduct before estimating the model is the Hauseman (1978) test. This is in order to determine the most appropriate estimator between MG, PMG, and DFE within the panel ARDL model. Pesaran et al., (2001) recommends performing this test in order to establish the appropriateness of each of the three estimators. The null hypothesis for MG and PMG is that both are not statistically different. PMG is more efficient. The DFE and PMG null hypothesis also states that both DFE and PMG are not statistically different. PMG is more efficient.

Table 5.6: Hauseman Test Results

	Prob > chi2
Ho: MG and PMG are not significantly different	0.723
Ho: DFE and PMG are not significantly different	0.321

Note: **, **, *** indicates rejecting the null hypothesis at 10%, 5% and 1% respectively*

The results in table 5.6 indicate that for both hypotheses, the probability values are not statistically significant. This means that we cannot reject the null hypothesis that the PMG is the most efficient estimator in both cases. PMG restricts long run equilibrium to be homogenous across countries while allowing for heterogeneity in the short run.

5.3 Model Results

The empirical findings of the study are presented in this section. Two regressions were run using the reparameterized panel ARDL model (equation 7) and adopting the PMG estimator. The linear specification is our main estimable equation for the study while the nonlinear specification checks the nonlinear relationship between per capita GDP and Gini coefficient. The lags for the selected panel ARDL model (1,1,1,1,1,1,1,1,1,1) were determined by Akaike Information Criteria (AIC). The dependent variable had one lag and each of the independent variables also had one lag. The long run homogenous estimates are presented in table 5.7 while the short run average estimates for the panel and the group specific speed of adjustment coefficient are presented in table 5.8.

Table 5.7: Panel ARDL Estimation of Long Run Results

Dependent Variable = Log GINI

Variable	**Linear Model**	**Non-Linear Model**
LGDPPC	0.651***	0.674***
	(0.000)	(0.000)
LGDPPC^2	-	-0.042***
		(0.000)
LOT	0.068**	0.062**
	(0.018)	(0.011)
LGFCF	0.084**	0.071**
	(0.022)	(0.049)
LREER	-0.074**	-0.056**
	(0.021)	(0.049)
LINFL	0.025*	0.157**
	(0.075)	(0.0186)
LUNEMP	0.115***	0.139***
	(0.000)	(0.009)
LEDU	-0.159***	-0.169***
	(0.000)	(0.004)
LGS	-0.148***	-0.165***
	(0.000)	(0.005)

Note: *p-values are in parenthesis. *, **, *** indicate significance at 10%, 5% and 1% respectively*

Table 5.8: Short Run Results

Variable	Linear Model	Non-Linear Model
COINTEQ 01	-0.467***	-0.521***
	(0.000)	(0.007)
D(LGDPPC)	0.084*	0.053*
	(0.097)	(0.071)
D(LOT)	-0.007***	-0.006***
	(0.005)	(0.001)
D(LGFCF)	-0.002	-0.001
	(0.244)	(0.588)
D(LREER)	-0.001	-0.001
	(0.603)	(0.868)
D(LINFL)	0.000**	0.000**
	(0.045)	(0.049)
D(LUNEMP)	0.006	0.003
	(0.631)	(0.315)
D(LEDU)	0.000	0.000
	(0.773)	(0.431)
D(LGS)	-0.005*	-0.004*
	(0.075)	(0.059)
CONSTANT	0.264**	0.421**
	(0.047)	(0.039)

Note: *p-values are in parenthesis. *, **, *** indicate significance at 10%,5% and 1% respectively*

Table 5.7 reports the empirical findings of the study. The homogenous results show a long run positive and statistically significant causal relationship between percapita income, trade openness and Gini index. The significance of a square term of per capita GDP confirms the existence of a nonlinear relationship with Gini. In Table 5.8, the error correction term is statistically significant and negative. This implies that the model is stable and reverts back to its long run equilibrium path after disturbance. The average short run results in table 5.8 reveals a negative relationship between Gini and trade.

5.3.1 Granger Causality Analysis

The test is conducted to check if there is a feedback causal nexus running from inequality to growth (Madhu et al., 2013). Dumitrescu et.al., (2012) causality test is adopted. The test is conducted under the null hypothesis that there is homogenous non-causality (HNC) between the variables. In order to select the appropriate lag, the likelihood ratio (LR) sequential modified test, Hannan-Quinn information criterion (HQ), Schwarz information criterion (SC) and Akaike information criteria (AIC) are employed.

Table 5.9: VAR Lag Selection Criteria

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-120.51	NA	1.65e-08	7.61844	8.0224	7.7562
1	238.47	506.79	1.53e-15	-8.7341	-4.6930	-7.3555
2	360.27	107.46*	4.31e-16*	-11.1330*	-3.4563*	-6.5150

Note*: * indicates the selected lag length.*

Table 5.10: Granger causality results (Dumitrescu and Hurlin test)

Null hypothesis	**W-Stat.**	**Zbar-Stat**	**Prob.**
LGDPPC does not homogenously cause LGINI	4.13812	2.85266***	0.0043
LGINI does not homogenously cause LGDPPC	3.57476	0.2473	0.8049
LOT does not homogenously cause LGINI	3.8396	2.4239**	0.0154
LGINI does not homogenously cause LOT	2.7428	0.3857	0.6997
LOT does not homogenously cause LGDPPC	9.0816	4.4357***	9.E-06
LGDPPC does not homogenously cause LOT	3.9963	0.5676	0.5702

Note: *, ** *and* ***** *indicate significance at 10, 5 and 1 percent respectively.*

The results in table 5.9 indicate two as an appropriate lag selected. Table 5.10 reveals that there is a one-way causality running from per capita income (LGDPPC), openness to trade (LOT) to income inequality (LGINI) and not vice versa. These findings are consistent with Madhu et.al., (2013) in the case of India and Boulila et.al., (2013) in MENA countries.

5.4 Post Diagnostic tests

In order to establish the reliability of the findings, diagnostic tests are performed on individual countries using the model employed in the panel ARDL analysis as recommended by Persaran et al., (2001) and in line with the panel ARDL, PMG analysis undertaken by Moyo, (2018). The tests include normality, serial correlation, heteroscedascity and Ramsey Regression Specification Error (RESET) tests.

Table 5.11: Diagnostic Tests Results

Country	Normality		Serial Correlation		Hetero scedasticity		RESET Test	
	JB	**Prob.**	**F-stat**	**Prob.**	**F-stat**	**Prob.**	**F-stat**	**Prob.**
Botswana	0.118	0.942	2.404	0.126	0.832	0.652	0.480	0.496
Eswatini	0.881	0.643	2.403	0.152	1.287	0.340	1.622	0.139
Lesotho	5.823	0.050	0.201	0.821	0.441	0.949	0.322	0.753
Madagascar	0.635	0.727	0.199	0.634	1.317	0.316	0.032	0.974
Malawi	0.437	0.803	2.615	0.101	1.880	0.099	0.162	0.872
Mauritius	0.702	0.703	0.479	0.626	0.408	0.837	0.955	0.924
Namibia	1.771	0.412	1.583	0.228	0.919	0.586	0.088	0.930
Seychelles	0.062	0.969	0.299	0.605	1.665	0.157	2.091	0.053
S. Africa	0.439	0.802	1.266	0.339	1.859	0.183	1.082	0.310
Tanzania	1.306	0.315	2.205	0.149	0.209	0.998	1.445	0.170
Zambia	1.1551	0.561	2.949	0.104	0.459	0.942	0.626	0.541

***Note**: Conclusions are made at 5% level of significance*

As can be observed in table 5.11, except for Lesotho, residual normality is detected in all the countries as the probability values are not statistically significance. There is no country that shows evidence of serial correlation or heteroscedasticity. The Ramsey RESET test suggests that there is no problem of model misspecification and important variable are not omitted. Therefore, the overall pass of these tests provides an indication that the PMG model is adequate for analysis and the results can be reliable.

5.5 Discussion of the Results

Table 5.7 presents the long run results. The direction of the variables is the same for both linear and nonlinear models. This partly suggests that the estimates are efficient. In the linear model, the findings suggest that GDP per capita has a positive causal impact on income inequality. A one percent increase in real per capita GDP leads to an average increase of about 0.65 percent in income inequality, *ceteris paribus*. These results are statistically significant at a one percent level and consistent with the findings of Forbes (2000) on 45 developing countries, Antwi (2017) on 24 SSA countries, Neagu et al., (2016) on ten European countries and Shahbaz et.al., (2011) in the case of Pakistan. The results are also consistent with Iris et al., (2012) who found that a one percent increase in per capita GDP increased income inequality by about 0.71 percent in the case of Asian countries. The implication of these findings is that the benefits of growth tend to concentrate on a few wealthy people and to the exclusion of the lower income groups.

The above empirical results can partly be attributed to the sectoral orientation of SADC economies. The manufacturing sector's contribution to GDP still remains low. This sector is known for employment creation and high-income earnings compared to the traditional agriculture sector which remains a key employer in the region to date. Although agricultural contribution to GDP growth marginally increased for the sample period, it is unlikely that an increase in demand for agricultural workers raises the subsistence income in line with the increase in export receipts. This is due to the labour surplus prevalent in most rural labour markets in SADC (Giovanni, 2003).

Openness to trade is also found to have positive causal effect on income inequality in the long run. The results are statistically significant at five percent level. *Ceteris paribus*, a one percent increase in trade openeness increases income inequality by about 0.068 percent on average. These findings are in line with the findings of Hanson and Harrison (1999) on Mexico, Elena et al., (2007) in the case of 70 developing countries, Dong (2008) on 32 developed and developing countries and Malvika (2016) in the case of BRIC countries. Shahabaz et al., (2011) also found that a one percent increase in trade openness increased income inequality by 0.091 percent in the case of Pakistan.

The above findings can be attributed to increased access to previously restricted technologies through trade liberalisation, therefore increasing the imports of capital-intensive investment goods. As a result of capital skill complementarities, this kind of skill-enhancing trade has caused an increase in the demand for and wages of skilled workers and a fall in the demand for and wages of unskilled workers (Dong, 2008).

Secondly, SADC exports are predominantly primary commodities prone to considerable price shocks as a result of sudden global demand variations. This has in some instances, induced employment cuts in the export sector resulting in growing income inequality (Birdsall et al., 2002). Thirdly, asymmetric trade liberalisation and persistent protectionism among Organisation for Economic Corporation and Development (OECD) countries affects low technology SADC countries in terms of growing their exports. The latter nations have also not abandoned the subsidies to their agriculture sector which they later export to developing countries at lower prices than their cost of production, hence ultimately worsening inequality in these countries (Giovanni, 2003).

Gross fixed capital formation was surprisingly found to have a positive distributive consequence on income inequality at a five percent level of significance, contrary to *apriori* expectations. A one percent increase in gross fixed capital formation leads to a 0.08 percent increase on average in income inequality, holding all other variables constant. These findings are also consistent with the findings of Alarcon et al., (1996) in the case of Brazil and Mexico and Antwi (2017) on 19 out of 37 SSA countries.

Perhaps, capital accumulation in the SADC region benefits a few rich individuals at the expense of the poor majority. These findings could also be attributed to the sectoral composition of capital formation. As observed by Hanson et al., (1999), the theoretical distributive advantages of increased investment which postulates raising demand for labour and wages are more often observed in labour intensive manufacturing branches such as textiles, food processing, assembly operations and other similar branches, but are less prevalent in the capital-intensive manufacturing, utility and mining sectors. Production in these sectors requires huge capital, some unskilled labour and a few skilled workers, resulting in reduced demand and wages of unskilled workers.

Real effective exchange rate has a negative impact on income inequality. Holding all other variables constant, a one percent increase in real effective exchange rate reduces income inequality by an average of 0.074 percent. These findings are significant at a one percent level and in line with the findings of Malvika (2016). The results explain import dependence of SADC countries. The appreciation of a local currency reduces the prices of imported goods which low-income groups can afford (Lestari et al., 2018). As *apriori* expected, education has a negative impact on income inequality. Holding other variables constant, a one percent increase in the level of education reduces income inequality by about 0.15 percent on average. These findings are statistically significant at one percent level and consistent with the findings of Calderon and Chong (2001) and Elena et al., (2007) in developing countries.

Unemployment worsens income inequality in SADC. A one percent increase in the level of unemployment leads to an average 0.11 percent increase in income inequality, holding all other variables constant. These findings are statistically significant at a one percent level and in line with the findings of Lestari et al., (2018) on Indonesia. Government spending has an equalizing effect on income inequality in the region. Holding all other variables constant, a one percent increase in gorvnment spending reduces income inequality by about 0.14 percent. These findings are also statistically significant at a one percent level and similar to the findings of Alesina et al., (1994) on developing countries and Iris et al., (2012) on Asian countries.

The cointegrating equation (Cointeq01) which represents the error correction term indicates that inequality has a long run equilibrium and is stable. It further confirms the joint causality of the variables on Gini coefficient. This is because it is statistically significant at one percent level and negative. Therefore, when inequality deviates from its long run equilibrium path, it will converge monotonically with a speed of adjustment of about 47 percent in the first year.

The results of a nonlinear model incorporate the square term of per capita GDP. This is to observe if the nonlinear causality between income inequality and economic growth exists and the direction. The findings are statistically significant at a one percent level and confirms the existence of this relationship in line with theory. Holding other variables constant, a one percent increase in per capita GDP will on average lead to a 0.042 percent reduction in income inequality. Therefore, higher growth in real GDP and per capital income will lead to the reduction in income inequality. The model is also stable and reverts back to its long run equilibrium path after a disturbance at an adjustment speed of about 52 percent in the first year. These findings are similar to the ones found by Antwi (2017) on 24 SSA and Shahbaz et al., (2010) in the case of Pakistan.

In the short run, per capita GDP maintains a positive relationship with Gini. The results can however, only be accepted at a ten percent level of significance. Trade openness has a negative and statistically significant relationship with Gini index. However, its impact on inequality is minimal. A one percent increase in trade openness will reduce income inequality by an average of 0.007 percent, holding all other variables constant. This is expected as inequality does not dramatically change over a short period of time (Acemoglu et al., 1997). The short run findings could be attributed to cheaper imports, increased wages in the export sector and increased business opportunities allowing low-income groups to be engaged in retail trade of imported goods in the short run (Dollar et al., 2003). Inflation becomes statistically significant at a five percent level and as *apriori* expected, positively related to income inequality but with a negligible impact.

5.6 Conclusion

The investigation on growth, openeness to trade and income inequality nexus in 11 SADC member states was based on two main objectives. The first was to empirically examine the relationship between economic growth and income inequality and the second was to determine the relationship between income inequality and trade openness. Two hypotheses were tested. The first was a null hypothesis that economic growth causes reduced income inequality against the alternative that the opposite is true. The second was a null hypothesis that trade openness reduces income inequality against the alternative that the opposite is true. Arcoding to literature, per capita income is used as proxy for growth momentum of GDP. This was also adopted in the study.

The null hypothesis that economic growth causes reduced income inequality is rejected in favor of the alternative. Evidence suggests that in the long run, economic growth worsens income distribution in SADC. Similarly, the null hypothesis that openness to trade causes reduced income inequality in SADC is rejected in favor of the alternative hypothesis. A unidirectional causality running from per capita GDP to inequality and from trade openness to inequality is also established. The nonlinear relationship between inequality and per capita GDP as postulated by theory is confirmed through the inclusion of a square term of per capita GDP.

CHAPTER SIX

POLICY IMPLICATIONS AND RECOMMENDATIONS

6. I Introduction

This chapter discusses policy implications and recommendations based on the findings of this study. It is organized in three sections. Section 6.2 offers policy implications while section 6.3 concludes the chapter. Recommendations for further research are provided in section 6.4.

6.2 Policy Implications

6.2.1 Economic Growth Policy

Despite SADC member states collectively registering positive trends in growth for the study period, the findings indicate that economic growth worsens income distribution, perhaps giving credence to the assertion by Kuznets (1955) that at low levels of income, economic growth and rising average income creates more inequality. Evidently, the economies of SADC have also not considerably transitioned from their traditional low wage rural agriculture sector to the industrial and manufacturing sector known for higher income and employment opportunities (Cypher et al., 2004; Atkinson, 2015).

The nonlinear and negative relationship established between percapita GDP and Gini index implies that higher percapita income and by extension, higher real growth will lead to declining levels of income inequality (Antwi, 2017; Shahbaz et al., 2007). Therefore, SADC countries need to target higher economic growth than the current growth rates. Policy interventions must focus on creating resilience to internal and external shocks that might disrupt the desired growth targets. Deliberate policies must also be developed with special focus on providing opportunities for lower income groups to participate in the process of economic growth and development (Todaro et al., 2012). Additionally, the promotion of diversified growth will enhance the participation prospects of the less skilled and lower income groups which will raise their income (Piketty, 2015).

6.2.2 Trade Policies

The long run homogenous results indicate that trade openness worsens income distribution in SADC. Although the static and dynamic gains for trading countries cannot be underscored, it must be noted by policy makers that the theories of trade such as the Herscher Ohlin and Stolper-Samuelson hold under restrictive assumptions. The reality however, is that trade takes place in a more complex multi nation, multi goods and multi factors environment in which most of the standard theory assumptions may not hold (Giovanni, 2003). Therefore, carefully thought-out trade policies must be developed in individual member states. These policies must take into account the institutional weaknesses, structural rigidities, asymmetric information and incomplete markets among other bottlenecks which are prevalent in SADC (Moyo et al., 2018; Giovanni, 2003).

Trade policies must be carefully developed to minimize distortions while ensuring that openness does not unnecessarily disadvantage small and emerging local enterprises especially in less technological sectors. This is because greater openness in such sectors has to some extent worsened inequality in developing countries (Taylor, 2011). Additionally, since unemployment in the region remains high and has been established in the study to worsen the levels of inequality, improvements on the volume of exports which have consistently been lower than imports in the region could improve the employment prospects of the tradeable sector. Moreover, since an increase in exchange rate reduces income inequality in SADC as established in the study, increased exports will help stabilize these exchange rates which have trended downwards (Dong, 2008).

6.2.3 Fiscal Policy

The negative relationship between income inequality and gorvnment expenditure in the long run is a good sign that fiscal policy is performing its redistributive functions (Alesina et al., 1994). Therefore, increased government expenditure in SADC should be used as a short-term measure to increase the volume of resources available for redistribution spending. The region can raise these resources in a progressive manner that help fight inequality by reinforcing wealth taxes and increasing income tax rates for those who can best afford them. This is because many SADC countries are also among other countries with high wage inequalities which have also contributed to the overall income inequality (Aghion et al., 1998; Giovanni, 2003; Fosu et al., 2010).

A sustained long run path to reducing inequality will be an increase in education and skills development. This is because education is found to have a redistributive consequence on income inequality in the long run. Therefore, increased government spending on education will help in human capital formation, innovation and will increase the prospects of higher future incomes of the poor (Norris et al., 2015; Narain et al., 2021).

6.2.4 Investments policies

Fixed capital investment in the region has traditionally been dominated by mining and quarrying (Fields, 1998). However, in the past two decades, there has been steady growth in infrastructure investment (Narain et al., 2021). This study has established that fixed investment worsens income distribution in the region. As observed by Haroon et al., (2017), the extractive industry in southern Africa has often exacerbated inequality and poverty largely due to limited mechanisms to promote public participation. Therefore, SADC needs to develop deliberate policies which incentivize investment in other non-extractive sectors. There is also need to promote investment models which encourages local partnerships, technology transfer and capacity building (Narain et al.,2021).

6.3 Conclusion

This research investigated the causality between economic growth, trade and income inequality in 11 SADC countries. It was an important investigation because policy makers have in the recent past emphasized and devoted much of their effort to growth and liberalisation of international trade without paying particular attention to its impact on the welfare of the majority in society. To a large extent, they have relied on conventional theoretical wisdom that the benefits of growth and trade will naturally trickle down to the masses in form of employment, reduced income inequalities and improved standard of living. The findings of this study, however, reveal that in the long run, income inequality is widening as economic growth proceeds. The same is also true as SADC countries relax their barriers to international trade.

The above scenario requires appropriate policy intervention by individual governments as it may be a recipe for instability as a result of discontentment by the marginalized. Policy interventions include the promotion of inclusive and higher growth than the current growth rates, revision of trade policies to respond to realities as opposed to over reliance on theoretical postulations and a more responsive fiscal policy. Attention must also be given to the sectoral composition of investment with a view to promoting other sectors which may play a vital role in arresting high unemployment levels in the region, absorb excess and low productivity labour prevalent in the agriculture sector and consequently reduce income disparities.

6.4 Recommendations for further research

This study has established that there is a positive and statistically significant relationship between income inequality and per capita GDP in SADC. It has also established that a nonlinear relationship exists. This implies that there is a threshold beyond which higher growth will result in a negative relationship between the variables. However, the study did not establish the per capita GDP threshold value beyond which further growth will result in the reduction in income inequality. It is the recommendation of this study for future researchers to establish the threshold value.

The study employed macroeconomic data at national level to analyze the causality between economic growth, trade and income inequality. The causality can further be refined by taking a micro analysis of drivers of income inequality for different regions or provinces within the country in order to deal with the heterogeneity which may exist across different regions. Another area which may require further inquiry is the impact of exports and imports separately on inequality in SADC. Trade can also be disaggregated between developed and developing countries and observe the impact on inequality.

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APPENDICES

APPENDIX A: E-views Regression Output

Linear Regression Output

Dependent Variable: D(LGINI)
Method: ARDL
Date: 06/23/22 Time: 12:57
Sample: 1986 2020
Included observations: 370
Maximum dependent lags: 1 (Automatic selection)
Model selection method: Akaike info criterion (AIC)
Dynamic regressors (1 lag, automatic): LGDPPC LOT LGFCF LREER LINFL LUNEMP LEDU LGS
Fixed regressors:
Number of models evaluated: 4
Selected Model: ARDL(1, 1, 1, 1, 1, 1, 1, 1, 1)
Note: final equation sample is larger than selection sample

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
		Long Run Equation		
LGDPPC	0.650768	0.026243	24.79823	0.0000
LOT	0.068189	0.028722	2.374096	0.0183
LGFCF	0.083536	0.036225	2.306059	0.0218
LREER	-0.074272	0.031970	-2.323212	0.0209
LINFL	0.024790	0.013871	1.787203	0.0750
LUNEMP	0.115125	0.017808	6.464938	0.0000
LEDU	-0.159321	0.001351	-11.02891	0.0000
LGS	-0.148042	0.030679	-4.825502	0.0000
		Short Run Equation		
COINTEQ01	-0.466872	0.007837	-5.607654	0.0000
D(LGDPPC)	0.084209	0.011059	1.460355	0.0977
D(LOT)	-0.007392	0.003279	-3.254672	0.0049
D(LGFCF)	-0.002472	0.002118	-1.167094	0.2442
D(LREER)	-0.000642	0.003903	0.264480	0.6031
D(LINFL)	0.000461	0.000340	2.061741	0.0447
D(LUNEMP)	0.006240	0.012965	0.481314	0.6307
D(LEDU)	0.000117	0.000372	0.288598	0.7731
D(LGS)	0.005395	0.003022	1.785307	0.0753

Mean dependent var	0.001702	S.D. dependent var	0.005101
S.E. of regression	0.004068	Akaike info criterion	-7.948475
Sum squared resid	0.004650	Schwarz criterion	-6.856136
Log likelihood	1649.004	Hannan-Quinn criter.	-7.515379

*Note: p-values and any subsequent tests do not account for model

Nonlinear Regression Output
Dependent Variable: D(LGINI)
Method: ARDL
Date: 06/23/22 Time: 13:44
Sample: 1986 2020
Included observations: 370
Maximum dependent lags: 1 (Automatic selection)
Model selection method: Akaike info criterion (AIC)
Dynamic regressors (1 lag, automatic): LGDPPC LGDPPC^2 LOT LGFCF
LREER LINFL LUNEMP LEDU
LGS

Fixed regressors:
Number of models evaluated: 4
Selected Model: ARDL(1, 1, 1, 1, 1, 1, 1, 1, 1, 1)
Note: final equation sample is larger than selection sample

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
		Long Run Equation		
LGDPPC	0.673948	0.118414	6.451526	0.0000
LGDPPC^2	-0.041732	0.008660	-4.818878	0.0000
LOT	0.061781	0.093254	2.496340	0.0114
LGFCF	0.071230	0.061067	2.075161	0.0492
LREER	-0.055618	0.092542	-2.039312	0.0497
LINFL	0.157366	0.066488	2.366846	0.0186
LUNEMP	0.139723	0.107602	2.599600	0.0098
LEDU	-0.169684	0.002432	-2.871463	0.0044
LGS	-0.164501	0.229407	-2.853005	0.0047
		Short Run Equation		
COINTEQ01	-0.521434	0.004152	-2.419366	0.0073
D(LGDPPC)	0.053363	0.300093	1.776991	0.0767
D(LGDPPC^2)	-0.031117	0.018409	-1.690351	0.0921
D(LOT)	-0.006789	0.001923	-3.530242	0.0005
D(LGFCF)	-0.001059	0.001950	-0.542847	0.5877
D(LREER)	-0.000549	0.003289	-0.166920	0.8676
D(LINFL)	0.000493	0.000319	2.045310	0.0494
D(LUNEMP)	0.003318	0.013225	1.007097	0.3148
D(LEDU)	0.000476	0.000665	0.714932	0.4753
D(LGS)	-0.004386	0.003001	-1.935226	0.0597

Mean dependent var	0.001702	S.D. dependent var	0.005101
S.E. of regression	0.003823	Akaike info criterion	-7.874653
Sum squared resid	0.003932	Schwarz criterion	-6.659809
Log likelihood	1646.683	Hannan-Quinn criter.	-7.392986

*Note: p-values and any subsequent tests do not account for model selection.

APPENDIX B-Causality Regression Output

Pairwise Dumitrescu Hurlin Panel Causality Tests
Date: 06/06/22 Time: 20:13
Sample: 1985 2020
Lags: 2

Null Hypothesis:	W-Stat.	Zbar-Stat.	Prob.
LGDPPC does not homogeneously cause LGINI	4.13812	2.85266	0.0043
LGINI does not homogeneously cause LGDPPC	3.57477	0.28526	0.8049
LOT does not homogeneously cause LGINI	3.83962	2.42394	0.0154
LGINI does not homogeneously cause LOT	2.42835	0.38576	0.6997
LGFCF does not homogeneously cause LGINI	8.06351	10.7977	0.0000
LGINI does not homogeneously cause LGFCF	1.22437	0.24336	0.8077
LREER does not homogeneously cause LGINI	4.71554	5.63104	2.E-08
LGINI does not homogeneously cause LREER	1.68036	0.94707	0.3436
GS does not homogeneously cause LGINI	5.51293	6.86160	7.E-12
LGINI does not homogeneously cause GS	5.65685	0.08370	0.8712
EDU does not homogeneously cause LGINI	4.10087	4.68247	3.E-06
LGINI does not homogeneously cause EDU	0.85504	-0.32658	0.7440
UNEMP does not homogeneously cause LGINI	4.09330	4.67079	3.E-06
LGINI does not homogeneously cause UNEMP	0.57013	-0.76626	0.4435
INFL does not homogeneously cause LGINI	1.32090	3.39234	0.0008
LGINI does not homogeneously cause INFL	1.23729	0.34977	0.6578
LOT does not homogeneously cause LGDPPC	9.08163	4.43565	9.E-06
LGDPPC does not homogeneously cause LOT	3.99637	0.56761	0.5702
LGFCF does not homogeneously cause LGDPPC	2.30015	1.90355	0.0570
LGDPPC does not homogeneously cause LGFCF	2.78558	0.65268	0.5480
LREER does not homogeneously cause LGDPPC	0.77725	-0.44663	0.6551
LGDPPC does not homogeneously cause LREER	2.47399	2.07182	0.0119
GS does not homogeneously cause LGDPPC	0.74874	-0.49064	0.6237
LGDPPC does not homogeneously cause GS	3.22486	0.33059	0.5779
EDU does not homogeneously cause LGDPPC	0.89156	-0.27023	0.7870
LGDPPC does not homogeneously cause EDU	0.77070	-0.45674	0.6479
UNEMP does not homogeneously causeLGDPPC	1.73691	1.03433	0.3010
LGDPPC does not homogeneously causeUNEMP	1.43921	2.57492	0.0093
INFL does not homogeneously cause LGDPPC	0.40509	-1.02096	0.3073
LGDPPC does not homogeneously cause INFL	7.06856	9.26229	0.0000

LGFCF does not homogeneously cause LOT	1.23763	0.26383	0.7919
LOT does not homogeneously cause LGFCF	4.21284	4.85526	1.E-06
LREER does not homogeneously cause LOT	2.73963	2.58176	0.0098
LOT does not homogeneously cause LREER	1.57835	0.78964	0.4297
GS does not homogeneously cause LOT	1.74016	1.03936	0.2986
LOT does not homogeneously cause GS	2.14279	1.66070	0.0968
EDU does not homogeneously cause LOT	1.54224	1.90683	0.0542
LOT does not homogeneously cause EDU	1.33765	0.41819	0.6758
UNEMP does not homogeneously cause LOT	1.45494	1.14243	0.2132
LOT does not homogeneously cause UNEMP	4.11539	4.70488	3.E-06
INFL does not homogeneously cause LOT	1.47394	1.25819	0.1407
LOT does not homogeneously cause INFL	2.71176	0.53875	0.6111
LREER does not homogeneously cause LGFCF	3.52828	3.79883	0.0001
LGFCF does not homogeneously cause LREER	0.37645	-1.06516	0.2868
GS does not homogeneously cause LGFCF	1.89388	1.27659	0.2017
LGFCF does not homogeneously cause GS	1.61401	0.38790	0.7169
EDU does not homogeneously cause LGFCF	2.50623	0.76480	0.4572
LGFCF does not homogeneously cause EDU	1.52603	0.70890	0.4784
UNEMP does not homogeneously cause LGFCF	1.97804	1.40646	0.1596
LGFCF does not homogeneously cause UNEMP	2.66965	2.47377	0.0134
INFL does not homogeneously cause LGFCF	2.77979	0.64374	0.5482
LGFCF does not homogeneously cause INFL	1.84398	1.19957	0.2303
GS does not homogeneously cause LREER	1.30260	0.36410	0.7158
LREER does not homogeneously cause GS	1.18121	1.80645	0.0651
EDU does not homogeneously cause LREER	2.27002	1.85705	0.0633
LREER does not homogeneously cause EDU	1.03060	-0.05566	0.9556
UNEMP does not homogeneously cause LREER	2.47459	0.17275	0.7998
LREER does not homogeneously cause UNEMP	1.60752	0.83466	0.4039
INFL does not homogeneously cause LREER	1.79607	1.21209	0.1875
LREER does not homogeneously cause INFL	2.15409	1.67814	0.0933
EDU does not homogeneously cause GS	2.15945	1.68642	0.0917
GS does not homogeneously cause EDU	2.68829	2.50253	0.0123
UNEMP does not homogeneously cause GS	2.37155	2.01374	0.0440
GS does not homogeneously cause UNEMP	1.26870	0.31178	0.7552
INFL does not homogeneously cause GS	0.81851	-0.38296	0.7017
GS does not homogeneously cause INFL	3.19883	3.29042	0.0010
UNEMP does not homogeneously cause EDU	1.50745	0.68023	0.4964
EDU does not homogeneously cause UNEMP	2.51279	2.23170	0.0256

INFL does not homogeneously cause EDU	0.93116	-0.20911	0.8344
EDU does not homogeneously cause INFL	1.97130	0.6554	0.6731
INFL does not homogeneously cause UNEMP	0.92475	-0.21901	0.8266
UNEMP does not homogeneously cause INFL	1.95467	1.45685	0.0986