
Original Paper

Regional Trade, Foreign Direct Investment and Economic Growth in the Southern Africa Development Community Region

Thomas Mwimba¹ & Messomo Elle Serge²

¹ Pan African University Institute of Governance, Humanities and Social Sciences, Cameroon

² Department of Banking and Finance, University of Buea, Cameroon

Abstract

The main objective of this study was to determine the impact of Regional trade on the economic growth in Southern Africa Development Community (SADC) mediated by Foreign Direct Investment (FDI). This study employs the Pooled Mean Group (PMG) estimator on data spanning the period 1990 to 2020 for 9 selected countries in the Southern African Development Community (SADC). The results show that regional trade limits economic growth and FDI in the short run but enhances economic growth and FDI in the long run. Furthermore, FDI is detrimental to economic growth in the long run even though it is not significant. However, in the short run it has a growth enhancing effect even though it is not significant. We therefore, conclude that FDI does not mediate the impact of regional trade on economic growth in the SADC region. Hence, governments in the SADC region should not rely on inward FDI as a means of boosting their economies. The study further recommends that governments in the SADC region should progressively eliminate tariffs and non-tariff barriers to foster intra-SADC trade as a mechanism for achieving sustainable economic growth in the long run.

Keywords: Regional Trade, Foreign Direct Investment, Economic Growth, Pooled Mean Group

1. Introduction

In the past decade, economic growth in the SADC region has been sluggish. The African Development Bank's (2019) economic outlook shows that the Southern African region recorded the slowest economic growth rate in Africa between 2012 and 2019. More specifically, southern Africa was lagging with an average growth rate of 2.2 % compared to North Africa, West Africa, and East Africa, which all grew at an average of 4 %, while Central Africa grew at 2.8 %. Furthermore, regional economic growth in Southern Africa is expected to be the slowest in 2022 on the African continent, with an average growth rate of 2.5 percent (AFDB,2022) even though multiple free trade agreements with foreign direct investment protocols were signed and enforced between 2009 and 2019 in the SADC region (Lipsey, 2019).

It is also understood that SADC countries can bridge the economic growth gap with the developed world through prudent utilization of Foreign Direct Investment (FDI). Arguably, FDI is the most dependable source of private capital flow to developing countries especially those in the SADC region, and the least volatile source of private capital flow to host countries (Lipsey,2019). This is justified by Abor and Harvey (2008) who have proved that increases in productivity and growth rates of industrial production are strongly linked to FDI, skills development, increased employment, and innovation. Furthermore, most reputable investment forms are known to be at the edge of applied science due to the great deal of investment they have injected into research and development. It is therefore expected that most research and development emanate from Multi-National Enterprises (MNEs) leading to higher innovations on host firms in developing countries.

Additionally, in the views of (Mondher and Dreger, 2018; Worth, 2017), FDI facilitates a conducive environment for regional trade to exert a positive influence on economic growth. This is because regional trade widens markets, generates economies of scale, promote the competitiveness of local

firms, and opens up sectors for investment while simultaneously aligning policies for the treatment of foreign investors (Mishkin, 2004). Furthermore, being part of a regional economic community such as the Southern Africa Development Community (SADC), East African Community (EAC) or even the African Continental Free Trade Area (AFCFTA) means that a country has joined forces to create a single market with others to progressively eliminate tariff and non-tariff barriers on regional goods and services. This follows the reasoning that with free trade, markets expand, industrialization advances, trade diversity increases, and at the same time Small and Medium-sized Enterprises (SMEs) experience growth (WTO, 2022).

Several studies have been done on the impact of trade and foreign direct investments on economic growth. More specifically, the studies of Constantina & Fragkiskos (2015), Lui et al., 2019; Miao (2021), Szkorupová (2014), Umit et al., (2015) and Yue (2007). However, neither of these studies focused on regional trade. Instead, they paid attention to trade openness and international trade. This implies that there is a gap in the literature on the precise impact of regional trade on economic growth. Additionally, none of these studies considered the mediation effect of foreign direct investments on the impact of regional trade on economic growth. Further, neither of the above studies utilized the Pooled Mean Group (PMG) estimator to explain the short and long-run impact of regional trade and foreign direct investment on economic growth. Lastly, neither of the above studies focused on the SADC region.

This study will therefore contribute to the body of knowledge by establishing the impact of regional trade on economic growth mediated by FDI in the SADC region in both the short and long run by utilizing the Pooled Mean Group (PMG) estimator. More specifically, this paper will answer the following research questions (1) What is the impact of regional trade on economic growth in the SADC countries? (2) What is the impact of regional trade on foreign direct investment in the SADC countries? (3) What is the impact of regional trade and foreign direct investment on economic growth in the SADC countries?

This article is organized into 6 sections. The leading chapter is the introductory section which focuses on the background of the study and the problem. The second chapter brings out the challenges to economic growth in regionalization. The third section deals with the literature review in which relevant empirical literature. The fourth presents the methodology. The fifth section brings out the presentation and discussion of results. Section six deals with the conclusion and recommendations.

2. Brief Understanding of the key Challenges to Economic Growth in Regionalisation in SADC

Economic growth in the SADC regionalisation agenda is faced with a number of challenges. Among these are. To begin with, Nationalist rivalry is common among SADC states in their agendas to promote economic growth and development which conflicts the spirit of co-operation and unity that SADC espouses and it hampers the development of common values (Chingono & Nakana, 2009). More over nationalism is a has a serious negative impact on regional cooperation's projects aimed at enhancing development. Additionally, poor financial discipline and public debt also make it very difficult for any benefits of regionalisation in Southern Africa to have any significant impact on growth. For instance, in the words of Chingono & Nakana (2009) borrowing remains the greatest challenge to regionalisation as it diverts national resources from productive sectors of the economic to debt servicing.

Furthermore, Lack of macroeconomic convergence as explained in (Abuka C. et al., 2005) is a serious obstacle to economic growth in SADC region. The presence of macroeconomic stability which is currently absent in the will no doubt lead to sustainable fiscal deficits and public indebtedness, external current account deficit, as well as low and stable levels of inflation, which are among the key pre-conditions for achieving strong and sustainable economic growth. Lastly, inadequate infrastructure in Southern Africa hampers the region's growth prospects. This is justified in the sense that meaningful development cannot happen without trade, and trade cannot flourish without adequate and reliable infrastructure.

3. Empirical Relationships among Regional Trade, FDI and Economic Growth

The review of the literature focuses on of tis empirical review namely regional trade and foreign direct investment; regional trade and economic growth; regional trade, foreign direct investment and

economic growth, the different reviews are given below.

3.1 Empirical Relationship between Regional Trade and Foreign Direct Investments

The link between regional trade and foreign direct investments has been investigated by several works of literature with mixed results and submissions. For instance, in one particular case, Baltagi et al. (2008), examines how regional trade agreements influence FDI using spatial HAC estimation techniques for selected developing and developed countries. Evidence shows RTAs enhance foreign direct investments. Another related study by Mondher and Dreger (2018) investigates how the locational features of FDI, Regional Trade Agreements (RTAs) are useful for emerging markets utilizing three panels from Agadir, Mercado Comun Del Sur (MERCOSUR), and ASEAN free trade area (AFTA) agreements. Their analysis provides evidence that openness, external trade and financial markets are the key determinants to attracting FDI, given that the business environment for the host country is friendly. While other variables like the industrial sector, urbanization rates, and external debt appear to be important in some cases. Additionally, Since RTAs influence the market size by reducing trade barriers, their impact operates via GDP growth and openness. Gains from the agreement are striking for Latin America and Asia, but not for Arab States. To attract more FDI, business-friendly institutional reforms and mechanisms to support new firm foundations should be implemented in this region.

Another related study by Davis (2011), which examines regional trade agreements and foreign direct investments using a fixed-effects cross-sectional time series regression examine 109 states from 1980-2005. Findings reveal that multilateral regional trade institutions are more likely to attract FDI inflows, and the gains in FDI inflows are highest in states with the strongest regional economy. Further, regional trade institutions increase the local market size and attract higher foreign direct investment (FDI) inflows. Similarly, Kandiero and Chitiga (2006), investigate the impact of openness to trade on the FDI inflow to Africa. The empirical work uses cross-country data from selected African countries observed over four periods: 1980-1985, 1985-1990, 1990- 1995, and 1995-2001. Evidence shows that the FDI to GDP ratio responds well to increased openness in the whole economy and the services sector in particular.

In another related study, MacDermott (2007), investigates the relationship between regional trade agreements and FDI in OECD countries, utilizing a fixed-effects gravity model to estimate panel data spanning from 1982 to 1997. His findings reveal that trade integration encourages FDI. Additionally, he also finds specific evidence for each of the NAFTA member countries: Mexico, Canada, and the United States. Further, he also finds evidence that FDI will rise with the host and parent country's GDP and fall with distance. Similarly, Bütte and Milne (2008) investigate The Politics of Foreign Direct Investment into Developing Countries: Increasing FDI through International Trade Agreements for 122 developing countries from 1970 to 2000. Evidence shows that developing countries that belong to the WTO and participate in more PTAs experience greater FDI inflows than otherwise, controlling for many factors including domestic policy preferences and taking into account possible endogeneity. Joining international trade agreements allows developing countries to attract more FDI and thus increase economic growth.

Another study by Thangavelu and Findlay (2011), investigates the impact of free trade agreements on foreign direct investment in the Asia-pacific region for panel data comprising 30 Organisation of Economic Development (OECD) source countries and 43 host countries including the 30 OECD countries and 13 non-OECD partners in Asia-- Pacific region from 1986 to 2007. Evidence shows that regional trade agreements do have a positive impact on FDI. Similarly, Park and Park (2009), estimate the investment creation and diversion effects of RTAs by using an extended gravity equation focusing on domestic reform as a commitment device for RTA membership. Evidence shows that: (i) reform creating RTA membership, larger market size, better-skilled labor, and lower trade costs all contribute positively and significantly to inward FDI; and (ii) most of the proposed East Asian RTAs promote intra-bloc FDI. In particular, both South–North, and North–North RTAs prove to be more preferable membership combinations to South–South RTAs in East Asia.

3.2 Empirical Relationship between Regional Trade and Economic Growth

The link between regional trade and economic growth has been investigated by several works of literature with mixed results and submissions. For instance, Bong and Premaratne (2018) examined whether regional integration promotes economic growth in Southeast Asia on panel data on panel data between 1970 and 2013. They utilized a generalized method of moments. Evidence shows that regional integration had a positive significant effect on economic growth. Similarly, Lui (2015), also examines trade agreements and economic growth based on a comprehensive set of 270 RTAs and a large panel data set for 1960–2007, the regression results show that RTAs promote growth for non-WTO members, while their growth effect is weaker and often insignificantly different from zero for WTO members. This implies that, so far, the complementarity between the two approaches of trade liberalization in promoting economic growth is limited.

In another related study, Hur and Park (2012), conducts a study titled do free trade agreements increase economic growth of the member countries? A nonparametric matching approach, which imposes no specific functional forms and was applied to a broad range of data structures, to estimate the FTA effect on growth. Evidence reveals that FTAs exert insignificant effects on aggregated growth from one to 10-year period after launch, but detect a significant upward trend in the gap between the growth rates of per capita GDP within a bilateral FTA. This implies uneven FTA effects across countries within an FTA. Similarly, Jalles (2012), assesses the relationship between regional trade agreements, trade integration, and economic growth in 21 South and South-East Asian countries over the period from 1980 to 2004. The Results show that the openness of either a single country or of its neighbors does not affect a nation's growth and that the impacts of RTA are unclear (if not detrimental to growth in some cases, once endogeneity is accounted for). Panel Granger-causality tests running from openness to growth yield mixed results and some conclusions depend on the particular subsample under scrutiny.

In another related case, Odeleye and Oni (2021), examines the effects of regional economic integration on sustainable growth, with a particular focus on the Arab Maghreb Union between 2005 and 2018. They make use of secondary data sourced from World Development Indicators and UNCTAD and employ the Generalized method of moments (GMM). The empirical results exhibited a mixed relationship, in that regional integration and trade integration had positive effects on sustainable development respectively while productive integration and financial integration exerted negative effects on it respectively. Overall, the study indicated that terms of trade and regional infrastructure are the major drivers of sustainable development/growth in the Arab Maghreb Union. Similarly, Vamvakidis, (1998) based on time series evidence from 1950 to 1992, estimates and compares the growth performance of countries that liberalized and that of those that joined an RTA. The comparison shows that economies grew faster after broad liberalization in both the short run and long run, but slower after participation in RTA. Economies also had higher investment shares after broad liberalization, but lower ones after joining an RTA.

In a similar study, Dava (2012), employed the difference-in-difference technique to analyze the effect of trade liberalization on the growth of real GDP in a sample of seven SADC countries using a yearly data set that spans from 1980 to 2008. Evidence suggests that the mean growth rates of exports, imports, and FDI inflows have also increased. Therefore, trade liberalization appears to have had a positive and significant impact on the change in the growth rate of the SADC sample countries. Additionally, Country-specific analysis has revealed differences in growth, exports, and imports performances, but it has also found a similar pattern in the effect and dynamics of FDI inflows on growth. In another study, Gupta and Chen (2006) examines the impact of trade openness on economic growth for the SADC region in Africa from 1990 to 2003. The results demonstrate the role of education in strengthening the effect of openness on sustainable growth, via better absorption of knowledge and technological spillovers from trade liberalization.

In another related study, Tahir and Azid (2015), studied the relationship between trade openness and economic growth using the GMM technique on a panel of 15 developing countries from 1990 to 2013. Findings suggest that trade openness and economic growth are positive and statistically significant for developing countries. Besides trade openness, other determinants of economic growth such as investment and labor force are also significantly related to economic growth and carry expected

coefficients. Further, it is found that frequent fluctuations in prices are detrimental to long-run economic growth. Similarly, Guei and Roul, (2019) used the autoregressive distributed lag (ARDL) bound testing approach and the pool mean group (PMG) model to assess the link between trade openness and GDP per capita in 15 ECOWAS member countries over the period 1990–2016. Findings indicate the existence of a long-run relationship between the variables except for Ghana, Guinea-Bissau, Mali, Senegal, and Togo. Additionally, the estimation reveals that trade openness hurts GDP per capita in the long run.

3.3 Empirical Relationship between Regional Trade, Foreign Direct Investments and Economic Growth

The nexus between regional trade, foreign direct investments, and economic growth has been investigated by several works of literature with mixed results and submissions. For instance, Liu et al (2019) investigated the causal links between trade, FDI, and economic growth in Asian economies. This study examines empirically the interplay between exports, imports, FDI, and economic growth for nine Asian economies by conducting multivariate causality tests in the vector error correction model (VECM) framework. The results reveal two-way causal connections between trade, inward FDI, inward mergers and acquisitions (M&As), and growth for most of the sample economies. There is a unidirectional causal link running from outward M&As to growth and trade. These findings suggest that export expansion, import liberalization, FDI inflows, and inward M&As are integral elements of the growth process in Asian economies.

Another related study by Yue (2020), used GMM to establish the relationship between trade, foreign direct, and growth in Asian countries. His findings proved that have been pursuing an increasingly outward-oriented, export-led, and foreign direct investment-led development strategy. This has contributed to high growth performance and structural transformation in recent decades, as trade and FDI enable these economies to overcome the constraints of small domestic markets and narrow resource bases; exploit comparative advantage and scale economies; access foreign capital, technology, and managerial and marketing expertise. In another similar study Jayachandran and Seilan (2018), titled a causal relationship between trade, foreign direct investment, and economic growth for India for a period between 1970 and 2019. Findings show that the cointegration analysis suggested that there is a long-run equilibrium relationship. The results of the Granger causality test showed that there is a causal relationship between the examined variables. Economic growth, trade, and FDI appear to be mutually reinforcing under the open-door policy.

Another similar study by Lee (2020), titled foreign direct investment and regional trade liberalization: A Viable Answer for Economic Development indicated that regional trade liberalization and foreign direct investment (FDI) have facilitated industries for development and promoted economic development without initial economic welfare losses associated with state industrial promotion and trade protection. Similarly, Meerza (2019) also studies the Causal links between trade, foreign direct investment, and economic growth for Bangladesh for the period 1973 to 2018 using Johansen cointegration and granger causality. His findings suggest that there is a long-run equilibrium relationship among the variables. The results of the Granger causality test identify that there is a causal relationship among the mentioned variables. According to the study, the economic growth of Bangladesh leads to both FDI and export growth and there is a unidirectional causal relationship between FDI and export with direction from export to FDI.

Additionally, Szkorupov á (2014) in explaining the link between foreign direct investment, economic growth, and export in Slovakia on quarterly data for the period 2001-2010. The study utilized a vector error correction model was applied. The results reveal a positive impact of foreign direct investment on economic growth. In a similar study, Akinlo (2004), investigates the impact of foreign direct investment (FDI) on economic growth in Nigeria, for the period 1970–2001. The results seem to support the argument that extractive FDI might not be growth-enhancing as much as manufacturing FDI. Finally, the results show that the labor force and human capital have a significant positive effect on growth. These findings suggest the need for labor force expansion and education policy to raise the stock of human capital in the country. Likewise, Belloumi (2014), Examined the relationship between foreign direct investment (FDI), trade openness, and economic growth in Tunisia utilizing the bounds testing (ARDL) approach for the period from 1970 to 2008. The bounds tests confirm the existence of

cointegration among the variables. The results also indicate that there is no significant Granger causality from FDI to economic growth, from economic growth to FDI, from trade to economic growth, and from economic growth to trade in the short run. The result further confirms that FDI does reduce growth.

4. Materials and Methods

This paper uses econometric methods to analyse the finding secondary data from 9 countries in the SADC Region collected from the World Bank 2021 dataset. The area of study was limited to the SADC region with the aim of establishing the empirical relationship between regional trade, foreign direct investments and economic growth.

4.1 Spatial Area, Research Design and Variables Description

The study focuses on the SADC region. Currently, it has 16 member states and these include Angola, Botswana, Democratic Republic of Congo, Lesotho, Madagascar, Malawi, Mozambique, Mauritius, Namibia, Seychelles, Swaziland, Tanzania, South Africa, Comoros, Mauritius, Zambia, and Zimbabwe (SADC, 2021). The economies of the SADC region are diverse. They vary from oil-rich producers such as Angola, natural resource abundant such as the Democratic Republic of Congo, Mozambique, and Botswana, and diverse sector economies such as South Africa. Further, SADC countries have a combined land size of 556,781 km² a population of 380 million, and a combined annual GDP of 850 million dollars (Worldbank, 2021).

As for the research design, this study adopted a panel (also known as longitudinal) research design, a sub-category of the descriptive research design. This is because this study makes repeated observations of variables from 9 different countries over a period of 30 years. Thus, the panel dataset consists of both time series and cross-sectional data. In the words of Molem et al. (2020), the longitudinal design has the following advantages. First, it facilitates the analysis of the duration of a particular phenomenon. Second, it allows the measurement of differences or changes in the variable from one period to another. Lastly, it facilitates the prediction of future outcomes based on earlier factors.

The dependent variable in this study's economic growth is represented by the proxy Gross Domestic Product Per Capita Growth (GDPPCG) of the 9 SADC countries. Further, merchandise imports and exports within the SADC region are used as a proxy to create the primary independent variable Regional Trade (RT). The mediator variable in this study is called Foreign Direct Investments which is represented by proxy of foreign direct investments, net inflows (% of GDP). The control variables used in this study are annual population growth and the official exchange rate. These variables are included to take care of their confounding effects on economic growth in the SADC region. Table 1 provides the summary of variables adopted and their sources.

Insert Table 1

4.2. Estimation Technique

The main objective of this study was to determine the impact of regional trade on economic growth SADC mediated by foreign direct investments. To estimate the four models, the study employed the dynamic Autoregressive Distributed Lag (ARDL) panel model known as the Pooled Mean Group (PMG) estimator. This estimation technique allows us to estimate both the short and long-run impact of the key variables of interest on economic growth in SADC. In panel data estimation, aggregation can lead to biased estimates especially when the slope coefficients vary across the cross-sectional units (Pesaran & Smith, 1995). One plausible way to resolve this problem is to use an estimator based on the so-called "Pooled Mean Group" method. In this case, the long-term coefficients are uniform but the short-term coefficients are allowed to be heterogeneous across panels.

Further, this method makes it possible to establish a distinction between short-term dynamics and long-term dynamics and considers the heterogeneity of the countries. The method also resolves the endogeneity problem in a dynamic specification (Pesaran et al., 1999). Moreover, the validity, consistency, and efficiency of the estimates from the PMG model depend on the following conditions: (1) the existence of a cointegration relationship between the dependent and the independent variables (2) no serial correlation resulting from the residuals in the error correction model (3); the number of years

(T) should be above the number of cross sections (N). According to Johansen (1995), Phillips & Hansen (1990), the existence of a long-run relationship among the variables is only valid when the variables are integrated in the same order. However, Pesaran et al. (1999) argued that panel ARDL can be used even if the variables are integrated with different orders, irrespective of whether they are integrated of I (0) or I (1) or a mixture of both.

4.3 Model Specification

Baron and Kenny (1986) proposed a three-step approach for testing mediation as demonstrated in the studies of (Hayes, 2013; Mackinnon, 2008; Mackinnon et al., 2007). In this study, we use the PMG estimation technique to estimate the three steps. In step 1, we regress regional trade on the growth rate of per capita gross domestic product. In step 2, we regress regional trade on the growth rate on Foreign Direct Investment Inflows. In step 3, we regress Regional trade and FDI on the growth rate of per capita gross domestic product. The variables population growth and exchange rate only come in as control variables. But before we show the regressions, we first bring out the general specification of the pooled mean group estimator as shown in equation below.

$$\Delta y_{it} = \phi_i [y_{it-1} - \delta'_i X_{it}] + \sum_{j=1}^{p-1} \phi_{i,j} \Delta y_{i,t-j} + \sum_{j=0}^{q-1} \beta'_{i,j} \Delta X_{i,t-j} + \theta_i + \mu_{i,t} \dots \dots \dots \text{Equation 1.}$$

Source: Pesaran et al., (1999)

Where y_{it} is the dependent variable for the country I at time t, X_{it} is the vector of independent variables for country i at time t

Mathematically the first equation is stated as follows,

$$GDPPCG = f(RT, PG, lnEXR) \dots \dots \dots \text{Equation 2}$$

Econometrically it is expressed as follows:

$$\Delta GDPPCG_{it} = \phi_i [GDPPCG_{it-1} - \delta'_i RT_{it}] + \sum_{j=1}^{p-1} \phi_{i,j} \Delta GDPPCG_{i,t-j} + \sum_{j=0}^{q-1} \beta'_{i,j} \Delta RT_{i,t-j} + \phi_i [GDPPCG_{it-1} - \delta'_i PG_{it}] + \sum_{j=1}^{p-1} \phi_{i,j} \Delta GDPPCG_{i,t-j} + \sum_{j=0}^{q-1} \alpha'_{i,j} \Delta PG_{i,t-j} + \phi_i [GDPPCG_{it-1} - \delta'_i lnEXR_{it}] + \sum_{j=1}^{p-1} \phi_{i,j} \Delta GDPPCG_{i,t-j} + \sum_{j=0}^{q-1} \beta'_{i,j} \Delta lnEXR_{i,t-j} + \theta_i + \mu_{i,t} \dots \dots \dots \text{Equation 3.}$$

Where

$\Delta GDPPCG_{it}$ = first difference of Gross Domestic Product Per Capital Growth Rate Annual

RT = Regional Trade

$POPGR$ = Population Growth Rate

$lnOER$ = Log of official exchange rate

θ_i , δ'_i and ϕ_i are constants

μ is the error term

Mathematically the second equation is stated as follows,

$$FDI = f(RT, PG, lnEXR) \dots \dots \dots \text{equation 4.}$$

Econometrically it is expressed as follows:

$$\Delta FDI_{it} = \phi_i [FDI_{it-1} - \delta'_i RT_{it}] + \sum_{j=1}^{p-1} \phi_{i,j} \Delta FDI_{i,t-j} + \sum_{j=0}^{q-1} \beta'_{i,j} \Delta RT_{i,t-j} + \phi_i [FDI_{it-1} - \delta'_i PG_{it}] + \sum_{j=1}^{p-1} \phi_{i,j} \Delta FDI_{i,t-j} + \sum_{j=0}^{q-1} \alpha'_{i,j} \Delta PG_{i,t-j} + \phi_i [FDI_{it-1} - \delta'_i lnEXR_{it}] + \sum_{j=1}^{p-1} \phi_{i,j} \Delta FDI_{i,t-j} + \sum_{j=0}^{q-1} \beta'_{i,j} \Delta lnEXR_{i,t-j} + \theta_i + \mu_{i,t} \dots \dots \dots \text{Equation 5.}$$

Where

FDI = Log of Net Foreign Direct Investment Inflows

RT = Regional Trade

PG = Population Growth Rate

$\ln EXR$ = Log of official exchange rate

β'_i and $\beta'_{i,j}$ are coefficients

θ_i and φ_i are constants

μ is the error term

Mathematically the fourth equation is stated as

$GDPPCG = f(RT, FDI, RT, \ln OER)$ Equation 6.

Econometrically it is expressed as follows,

$$\Delta GDPPCG_{it} = \varphi_i [GDPPCG_{it-1} \delta'_i RT_{it}] + \sum_{j=1}^{p-1} \varphi_{i,j} \Delta GDPPCG_{i,t-j} + \sum_{j=0}^{q-1} \beta'_{i,j} \Delta RT_{i,t-j} + \varphi_i [GDPPCG_{it-1} \delta'_i FDI_{it}] + \sum_{j=1}^{p-1} \varphi_{i,j} \Delta GDPPCG_{i,t-j} + \sum_{j=0}^{q-1} \beta'_{i,j} \Delta FDI_{i,t-j} + \varphi_i [GDPPCG_{it-1} - \delta'_i PG_{it}] + \sum_{j=1}^{p-1} \varphi_{i,j} \Delta GDPPCG_{i,t-j} + \sum_{j=0}^{q-1} \alpha'_{i,j} \Delta PG_{i,t-j} + \varphi_i [GDPPCG - \delta'_i \ln EXR_{it}] + \sum_{j=1}^{p-1} \varphi_{i,j} \Delta GDPPCG_{i,t-j} + \sum_{j=0}^{q-1} \beta'_{i,j} \Delta \ln EXR_{i,t-j} + \theta_i + \mu_{i,t} \dots \dots \dots \text{Equation 7}$$

Where

$\Delta GDPPCG_{it}$ = first difference of Gross Domestic Product Per Capital Growth Rate Annual

FDI = Log of Net Foreign Direct Investment Inflows

RT = Regional Trade

PG = Population Growth Rate

$\ln EXR$ = Natural log of official exchange rate

5. Presentation and Discussion of Results

In this section we present; Descriptive statistics, matrix correlation, the Im-Pesaran-Shin for the unit root of all the variables; the Hausman test, and finally display the PMG estimates of all the models adopted in this study.

5.1 Results

5.1.1 Summary of Descriptive Statistics

The results presented in Table 2 below show the summary of descriptive statistics for the variables GDP per capita growth, regional trade, foreign direct investment, population growth, and official exchange rate. The results show that GDP per capita growth has a mean value of 0.729 and a standard deviation of 4.718, regional trade has a mean value of -0.255 and a standard deviation of 0.967, foreign direct investment has a mean value of 3.572 and standard deviation of 6.177, population growth has a mean value of 2.723 and a standard deviation of 0.615 while the log of the exchange rate has a mean of 1.828 and a standard deviation of 2.718. Table 2 summarizes descriptive results.

Insert Table 2

From Table 2, The lower standard deviations of GDPPCG, RT, FDI, and In EXR, respectively below their means, indicate that SADC countries are not so heterogeneous in terms of their performance relative to these variables. In the contrast, the mean value PG has a higher standard deviation above its mean values implying that SADC countries are widely dispersed in terms of their performance relative to population growth.

5.1.2 Test for Multicollinearity

The study carries out the matrix of correlations to test for multicollinearity on all the explanatory variables that have been used in this study. The results of the multicollinearity test for gross domestic product per capita growth, regional trade, foreign direct investments, population growth, and official exchange rate are summarized in Table 3. From Table 3, we observe that all the elements of the correlation matrix show that there is no problem of multicollinearity in our independent variables since all the pairwise correlations elements are less than 0.8.

Insert Table 3

The elements of the correlation lead our analysis to Unit Root Test. Its results are presented in Table 4.

5.1.3 Unit Root Test

In the words of Darné and Diebolt (2005), one of the problems of macroeconomic data is that it contains a unit root (also known as a non-stationarity problem). For this reason, the study employed the Im-Pesaran-Shin (IPS) popularized by Pesaran et al. (1997) to test for unit roots in the variables gross domestic product per capita growth, regional trade, foreign direct investments, population growth, and official exchange rate. The results of the unit root test are summarized in Table 4.

From Table 4, we observe that FDI is stationary at level with a constant however it is not stationary at level with a trend and a constant. As for the variables GDP per capita growth, regional trade, natural log of the exchange rate, and population growth, they are all stationary at the level with the constant and also with the constant and the trend. Further, they are still stationary after taking the first difference. This implies that the variables in this study have a combination of I (1) and I (0), therefore will have to estimate the results using dynamic panel ARDL models of either Pooled Mean Group (PMG), Mean Group (MG) or Dynamic Fixed Effects Model (DFE). But it will be up to the Hausman test to decide which estimation technique will be appropriate for each model between the two techniques. The results of Unit Root are in Table 4.

Insert Table 4

The results of Unit Root test lead us to the Hausman test to know the nature of the effect. the results of the Hausman Test are provided in Table 5.

5.1.4 Hausman Test

Table 5 presents the results of the Hausman Test for models 1, 2 and 3 respectively. From the table, the results show that for model 1, the Hausman test favors the PMG model as opposed to the MG model since the probability value of the Chi-square statistic is statistically insignificant. Similarly, the Hausman test gives courtesy to the PMG model as opposed to the MG model even for model 2 since the probability value of the Chi-square statistic is not significant. The same is also true for model 3 since the probability value of the chi-square value is statistically not significant. Therefore, the study concluded that the PMG model best suits model 1, model 2 and model 3 for the estimation as shown in Table 5.

Insert Table 5

Following the results of the Hausman Test, we are now moving to the presentation of results of the three models adopted the results are provided in Table 6, 7 and 8 respectively.

5.1.5 PMG Regression Results for the Impact of Regional Trade on Economic Growth in the SADC Region

The results showing the impact of regional trade, population growth, and exchange rate on economic growth in the SADC region are presented in table 6. Noticeable is the fact that, in the short run, the variables of regional trade and official exchange rate have a negative statistically significant impact on economic growth. This means that, on average, holding other factors constant, a one percent increase in regional trade will lead to a 1.42 percent reduction in the growth rate of per capita gross domestic product. Likewise, a one percent increase in the official exchange rate will lead to a 6.68 percent decline in the growth rate of per capita gross domestic product. Population growth has a positive non-statistical impact on growth in the short run. This means that population growth does not influence economic growth in the short run in the SADC region.

Additionally, in table 6, we observe that the ECT is negative (-0.933) and is statistically significant at a one percent level because it is greater than -2. This implies that there is the existence of a long-run relationship among the variables of interest. The constant is also statistically significant. This entails that on average, the per capita GDP growth rate will be around 4.18 percent assuming that there is no change in regional trade, population growth, and official exchange rate *ceteris paribus*.

As shown in Table 6, in the long run, the variables regional trade and official exchange rate have a positive statistically significant relationship with economic growth. This means that on average, *ceteris Paribas*, a one percent increase in regional trade will lead to a 1.83 percent increase in the growth rate of per capita gross domestic product and vice versa. Similarly, a one percent increase in the official exchange rate, on average, will lead to a 0.23 percent increase in the growth rate of GDP per capita holding other factors constant, the opposite is also true. In contrast, population growth has a negative statistically significant impact on economic growth. This implies that on average, a one percent increase in the population will lead to a 1.15 percent decrease in the growth rate of per capita gross domestic product. the results are presented in Table 6.

Insert Table 6

The results of Table 6 lead us to Table 7. The analysis of their results are given below:

5.1.6 PMG Regression Results for the Impact of Regional Trade on FDI inflows in the SADC Region

Table 7 depicts the impact of regional trade, population growth, and exchange rate on FDI inflows in the SADC region. In the short run, the variables official exchange rate and population growth have a significant positive impact on foreign direct investments. This means that a one percent increase in the population will lead to a 6.45 percent increase in FDI inflows and vice versa holding other factors constant. Likewise, a one percent increase in the exchange rate will lead to a -3.12 percentage decrease in foreign direct investments and vice versa holding other factors constant. Regional trade has a growth-limiting effect on foreign direct investment in the short run in the SADC region albeit its effect is not significant.

In addition, Table 7 shows that the ECT is negative (-0.641), statistically significant at one percent, and above -2. This signifies the existence of a long-run relationship among the variables of interest. The constant is also statistically significant as well. This suggests that on average, FDI inflows will stand at 1.56 percent assuming that there is no change in regional trade, population growth, and official exchange rate all things being equal. From Table 7, observable is the fact that, in the long run, regional trade and official exchange rate have a positive statistically significant impact on FDI inflows while population growth exerts no significant influence on FDI inflows. This means that on average, a one percent increase in regional trade will lead to a 0.6 percent increase in FDI inflows, *ceteris paribus*, and vice-versa. In the same line of thought, holding other factors constant, a one percent increase in the exchange rate increases foreign direct investments by 0.13 percent on average.

Insert Table 7

The results of Table 7 enable us to move to the third model made up regional trade, FDI and economic growth. This is shown in Table 8.

5.1.7 PMG Regression Results for the Impact of Regional Trade and FDI on Economic Growth in the SADC Region

Table 8 depicts the joint impact of FDI and regional trade on economic growth in the SADC region. In the short run, regional trade and official exchange rates are negative and statistically significant. This means that, on average, a one percent increase in regional trade will result in a 1.6 percent reduction in economic growth holding other factors constant and vice versa. Likewise, a one percent increase in the official exchange rate will lead to a 6.96 percent decrease in economic growth on average, keeping other factors constant and vice versa. As for the variables of net FDI inflows and population growth, they exert no influence on growth in the short run. Besides the ECT is negative (-0.917), statistically significant, and greater than -2 implying the existence of a long-term relationship among the variables of interest. The constant is also statistically significant and positive. This implies that on average, the per capita GDP growth rate will be around 4.59 percent holding other variables constant.

In the long run, as shown in Table 8, the variables regional trade and exchange rate have a positive statistically significant impact on economic growth. This means that, on average, *ceteris paribus*, a one percent increase in regional trade will lead to a 1.85 percent increase in growth and vice versa. Correspondingly, a one percent increase in the official exchange rate will lead to a 0.24 percent increase in economic growth and vice versa. In the same vein, a one percent rise in the population will

result in a 1.22 percent reduction in the growth of the economy. The variable FDI is not statistically significant.

Insert Table 8

The above leads us to discussion of results. This discussion considers past studies in SADC.

5.2 Discussion of Results

The results in Table 6 acquiescently show that regional trade limits growth in the short run but enhances growth in the long run. This result is consistent with the findings of (Bong and Premaratne, 2018; Dava, 2012; Guei and Roul, 2019; Mumuni and Mwimba, 2022; Hur and Park, 2006). This result insinuates that the removal of tariffs tends to be harmful to SADC countries in the short run but fosters growth in the long run. This is not surprising because in the SADC region, in the short term, efforts to enhance regional trade usually result in tax revenue losses from lower import tariffs (Abrego et al., 2020). Additionally, trade integration efforts take long periods to materialize because of implementation challenges among existing member states. However, the impact of regional trade on economic growth is positive in the long run because any revenue losses from tariffs are likely to be offset eventually by higher tax revenue from increased consumption and income, as a result of reduced trade barriers, especially Non-Tariff Barriers (NTBs.) as explained by (Savatore, 2011).

Furthermore, increased intra-regional trade leads to the expansion of markets, utilization of economies of scale, diversification of export base, encourages industrialization and promotes export diversity over time. This is why regional trade has a positive impact on growth in the long run. Another possible explanation to support the result that regional trade initially worsens growth but later acts as a precursor for growth, in the long run, is explained by the higher unemployment immediately resulting from the emergence of few poles of industrialization and the polarization of investment towards the larger and more diversified economies of the region (Chauvin and Gaulier, 2002). This is very true, especially in the SADC economy where regional policies are not accompanied by reforms in labour markets to make it flexible and workers more mobile to grasp new opportunities (Abrego et al., 2020). Given the gradual nature of trade barrier reduction envisaged by the SADC agreement, countries should have time to mitigate these potential costs in the long run.

Furthermore, Jenkins (2001) points out that while exposure to South African competition will inevitably eliminate some production and create unemployment in other SADC states in the beginning, it will create more efficient firms with improved productivity and output over time. Moreover, exposure to South African competition will help prepare smaller countries for greater integration into the world economy, by enhancing both quality and productivity thereby promoting competitiveness within the SADC region. This is why regional integration is positive in the long run. The results in table 7 also strongly assert that regional trade boosts foreign direct investments in the long run even though it has a harmful but non-significant impact on growth in the short run. This concurs with the results of (Davis, 2011; MacDermott, 2007; P ez, 2008; Thangavelu, and Findlay, 2011). This result is justified by the fact that regional trade magnetizes investments and higher total factor productivity growth from better access to technology in the long run compared to the short run.

Further, within the SADC region, many countries have very low tariffs on capital goods (notably South Africa, Botswana, Namibia, Zambia, and Mozambique) regional trade moves towards the lowest group-wide tariffs per sector. This makes it easy for all SADC member states to benefit from lower-priced capital goods, hence stimulating investment in the long run (Tsikata, 1999). Moreover, more rational tariff regimes might encourage greater partnerships in trade and will enhance economic growth in the SADC region over time. Additionally, the smaller countries are likely to face improvement in their total factor productivity growth as a benefit of South Africa's more advanced technological knowledge. Another argument put forward to explain why regional trade eventually promotes foreign direct investments in the SADC region is that regional trade agreements facilitate the useful economic purpose by reducing uncertainty and improving the business environment for the private sector to plan and invest. Furthermore, the formation of regional bodies like SADC tends to increase trade between its members. Hence, the deepening of regional trade would stimulate intra-regional investment. This is why regional trade in the end encourages FDI inflows in the SADC

region.

On the contrary, the results in table 8 demonstrate that FDI has a contracting effect on economic growth in both the short run and long run even though not significant. This finding is in collaboration with the studies of (Akinlo, 2004; Belloumi, 2014; Mumuni & Mwimba, 2022). Such a result is not surprising as evidence from the 2019 edition of the Development Policy Research Unit report (DPRU, 2019) clearly shows that SADC countries except for South Africa and Botswana allow 100 percent repatriation of FDI profits. With such a vulnerability in the investment policy of the SADC region, it is therefore not shocking that the impact of FDI on economic growth in the SADC region is harmful. In addition, SADC economies offer incentives such as tax heavens, capital, other allowances, and customs discounts to attract foreign direct investments (DPRU, 2019). This argument also explains why FDI has a detrimental effect on per capita GDP in the SADC region.

Another argument to justify why FDI inflows limit economic growth in SADC countries is that there is a loophole in the cooperate tax system of most SADC countries which makes the region prone to tax evasion and illicit financial transactions by large multinational corporations (Robinson, 2021). Governments, in the SADC region and other regional bodies, of course, fail to account for such lost taxes because of weak institutional structures in their governance architecture. To solidify the above arguments, the study takes into consideration the Zambian example. Evidence from the War on Want (2021) reports calculates that a staggering sum of \$3 billion a year is lost by the government of Zambia to tax avoidance and tax evasion by multinationals. Furthermore, overly generous tax incentives provided to companies by the Zambian government have also played a role. The situation is also not different from the neighbouring democratic republic of Congo, Mozambique, Tanzania and Malawi. Since the tax policy is similar in SADC then it makes sense as to why FDI retrains economic growth in the SADC region.

The results in table 6 and table 8 strongly show that the exchange rate initially has a contracting effect on economic growth but over time it enhances economic growth. Such a result is in line with studies (Musonda, 2018; Oladimeji et al., 2021; Olamide et al., 2022). This result does not come as a shock since most SADC countries are import oriented. Therefore, a depreciation or devaluation of currency will lead to a high cost of imports which distorts business planning, production patterns, and consumption patterns. The overall result as postulated in the study of Mishkin (2004) is that economic growth declines in the short run when the exchange rate increase (depreciates). Another argument to support the fact that exchange rates negatively influence growth in the short run is explained by exchange rate volatility in SADC especially Zambia, Zimbabwe, Malawi, and Mozambique (Musonda, 2018). Therefore, we can argue that in southern Africa, exporters may be risk averse and so would negatively react to exchange rate volatility by substituting foreign trade with domestic production. This would harm export growth and in turn, reduces economic growth in the short run.

From the above argument, it is clear that instability in the exchange rate will erode the external competitiveness of the export sector because it undermines the incentive structure. The results are positive in the long run because the exchange rate tends to stabilize in the long run. This boosts export growth and allows businesses to expand production, creates jobs, and contributes positively to economic growth (Mishkin, 2004). The results of the study also divulge that the exchange rate hurts FDI in the short run albeit the result is positive in the long run. In the short run exchange rate instability worsens the macroeconomic environment and in turn affects investor confidence (Musonda, 2018). This reason justifies why the result is negative in the short run. However, in the long run, the macroeconomic environment tends to improve with the stability of exchange rate and inflation and henceforth stimulates FDI inflows over time.

The results of this study also prove that population growth promotes economic growth in both the long run and limits growth short run. This does not do not come as a shock because most of these SADC economies have in the past decades invested adequately in human capital (education and training). This has contributed to economic growth however the effects of training on human capital may not be effective in the short run due to time delays required for the economy to absorb the skilled workers but in the long run, the economy adjusts and picks up (Bucci et al., 2019). Availability of knowledge does not just provide opportunities, but it also leads to innovations and the creation of new knowledge and

opportunities. Nevertheless, there's still a long way to go as only an estimated 45% of Africans graduate from secondary school (UNDESA,2021). Additionally, gross capital formation enhances growth only in the short run. This is because in Africa additions to inventories of fixed assets occur due to foreign direct investments and other capital formation injections.

The results in table 7 also signify the existence of the positive impact of population growth on FDI. This is because population growth provides labour to be used in enhancing investments and income growth. Formal education in developing countries particularly those in the SADC region has become widespread over the past three decades, leading to improved human capita which ensures that the population is skilled enough to provide skilled labor for foreign direct investments (Naroş, 2019). This explains why population growth has a growth-enhancing effect on foreign direct investments. This result is in line with (Klasen & Lawson, 2019; Lui et al., 2019)

6. Conclusions and Policy Implications

The main findings are that, in the SADC region, regional trade limits economic growth and foreign direct investments in the short run. Nonetheless, regional trade promotes economic growth and foreign direct investment in the long run. Similarly, foreign direct investment harms economic growth in the short and long run. Foreign direct investments do not mediate the impact of regional trade on economic growth in the SADC region in both the short and long run. The study further revealed that, in the SADC region, the exchange rate has a contracting effect on economic growth in the short run but accelerates economic growth in the long run. Additionally, the exchange rate limits foreign direct investment inflows in the short run but magnifies foreign direct investment inflows in the long run. The study also found evidence of growth subtracting effects from population growth in the long run, but population growth supplements economic growth efforts in the short run. Lastly, the study also found that population growth enhances foreign direct investment in the short run.

As for the policy implications, First, the study calls for governments in the SADC region to progressively reduce tariffs and non-tariff barriers on goods and services traded within the SADC region. This will minimize the immediate negative impact of regional trade on economic growth. Second, the study recommends that revenue authorities in each SADC nation should immediately begin to diversify their domestic revenue sources to reduce reliance on customs taxes. This will leave the economies in a much better state when tariffs are progressively eliminated. Third, the study suggests that governments in the SADC region should not rely on FDI as a source of capital but must instead focus on encouraging private domestic investment. This is because FDI harms growth in the SADC region. Fourth, the study also endorses strengthening the institutions tasked with fighting tax evasion on behalf of governments in the SADC region. This will pave the way to curb illicit financial transactions, which worsen the impact of FDI on economic growth.

Additionally, the study recommends that policymakers within the SADC region should immediately revamp their FDI and tax policy rules and improve the loopholes to reduce exploitations by large multinational corporations. Lastly, the study advocates for the establishment of a regional institution under SADC supervision to coordinate tax compliance mechanisms to curb tax evasion and illicit financial transactions.

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Table 1: Summary of Variables, Description, and Sources

Variable	Description	Source
GDPPCG	Gross Domestic Product Per Capital Growth Rate Annual	World Development Indicators 2022
RT	Merchandise imports and exports within the region	World Development Indicators 1990 - 2022
FDI	Foreign direct investments, net inflows (% of GDP)	World Development Indicators 1990 - 2022
PG	Population Growth Rate Annual	World Development Indicators 1990 - 2022
lnEXR	Natural Log of Official Exchange Rate	World Development Indicators 1990 - 2022

Table 2: Summary of Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
GDPPCG	279	.729	4.718	-26.412	15.558
RT	279	-.255	.967	-1.656	2.35
FDI	279	3.572	6.177	-10.725	40.167
PG	279	2.723	.615	.251	4.011
Ln EXR	279	1.828	2.718	-8.621	14.374

Source: From World Bank Indicators Analyses (1990-2022)

Table 3: Matrix Correlation

Variables	(1)	(2)	(3)	(4)	(5)
GDPPCG	1				
RT	0.264	1			
FDI	0.166	0.187	1		
PG	-0.066	-0.052	0.121	1	
lnEXR	0.279	0.108	0.027	-0.138	1

Source: From World Bank Indicators Analyses (1990-2022)

Table 4: Results of Unit Root Tests using Im-Pesaran-Shin (IPS)

Variables	Level		First Difference	
	Constant	Constant and Trend	Constant	Constant and Trend
GDPPCG	-4.3230 ***	-1.5375**	-15.0042 ***	-15.4487***
RT	-4.1710***	-2.7580 ***	-9.8123 ***	-8.8198 ***
FDI	-2.4510***	-0.8392	-12.2743***	-11.3452***
PG	-8.7813***	-6.1562 ***	-2.6538***	-0.5387***
lnEXR	-5.0247***	-4.4533***	-6.3468***	-5.2331***

Note: *, ** and *** denotes the absence of a unit root at 10%, 5%, and 1% significance levels, respectively. **Source:** From World Bank Indicators Analyses (1990-2022)

Table 5: Results of the Hausman Test for The Three Models

Choosing between models	PMG & MG	PMG & MG	PMG & MG
	Model 1	Model 2	Model 3
P value	1.012	1.089	1.116
Model Chosen	PMG	PMG	PMG

Source: From World Bank Indicators Analyses (1990-2022)

Table 6: PMG Estimates for the Impact of Regional Trade on Economic Growth

d.GDPPCG			
Short Run			
Variable	Coefficient	Standard Error	P value
d.RT	-1.420*	0.860	0.099
d.PG	10.063	7.669	0.189
d.lnEXR	-6.676**	3.132	0.033
Long Run			
Variable	Coefficient	Standard Error	P value
ECT	-0.933***	0.143	0.000
RT	1.833***	0.436	0.000
PG	-1.153**	0.581	0.047
lnEXR	0.229***	0.077	0.003
Constant	4.184	0.768	0.000
Observations	279		
Number of countries	9		

Note: significance of estimates is denoted at 1%,5% and 10% by *** p<0.01, ** p<0.05, * p<0.1

Source: From World Bank Indicators Analyses (1990-2022)

Table 7: PMG Estimates of the impact of Regional trade on Foreign Direct Investment

d.FDI			
Short Run			
Variable	Coefficient	Standard Error	P value
d.RT	-0.853	0.852	0.317
d.PG	6.447*	3.791	0.089
d.lnEXR	-3.122*	1.820	0.086
Long Run			
Variable	Coefficient	Standard Error	P value
ECT	-0.641***	0.113	0.000
RT	0.601**	0.304	0.048
PG	0.249	0.396	0.529
lnEXR	0.125**	0.060	0.038
Constant	1.555***	0.355	0.000
Observations	279		
Number of countries	9		

Note: significance of estimates is denoted at 1%,5% and 10% by *** $p<0.01$, ** $p<0.05$, * $p<0.1$

Source: From World Bank Indicators Analyses (1990-2022)

Table 8: PMG Estimates for the Impact of regional trade and FDI on Economic Growth

d.GDPPCG			
Short Run			
Variable	Coefficient	Standard Error	P value
d.RT	-1.606*	0.898	0.074
FDI	0.075	0.170	0.658
d.PG	9.741	7.571	0.198
d.lnEXR	-6.956**	3.266	0.033
Long Run			
Variable	Coefficient	Standard Error	P value
ECT	-0.917***	0.148	0.000
RT	1.853**	0.422	0.000
FDI	-0.069	0.044	0.116
PG	-1.220**	0.579	0.035
lnEXR	0.235**	0.074	0.002
Constant	4.586***	0.904	0.000

Observations	279		
Number of countries	9		

Note: significance of estimates is denoted at 1%,5% and 10% by *** $p<0.01$, ** $p<0.05$, * $p<0.1$

Source: From World Bank Indicators Analyses (1990-2022)