Trade Balance, Exchange Rate Performance and Economic Growth: Evidence from Southern African Development Community

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This study explores the relationship between trade balance, exchange rate performance, foreign direct investment and economic growth in the Southern African Development Community (SADC) using quarterly data from 1970 to 2022. The results demonstrate that trade balance and exchange rate performance have a positive and significant impact on economic growth. The findings from the Dumitrescu-Hurlin (DH) panel causality tests suggest a bidirectional causal relationship between trade balance and economic growth, as well as between exchange rate performance and economic growth. The study concludes that promoting sound policies to enhance exports, reduce import dependency, and create favorable macroeconomic conditions is essential for achieving sustainable economic growth. Moreover, the study recommends the implementation of policies that optimize the benefits and retention of foreign direct investment (FDI) gains.

Keywords: trade balance, exchange rate performance, foreign direct investment, economic growth, SADC

JEL Classification: *F16, F31, O40*

1. Introduction

The exchange rate holds significant importance in Southern African trade and trade policy, given its impact on economic development (Lioudis, 2022). Exchange rate fluctuations and exports are crucial considerations in government accounting and finance, as depreciation is widely believed to enhance export competitiveness, encourage diversification, protect domestic industries, and improve the trade balance (Etale & Ochuba, 2019). The trade balance, measured by the difference between a country's exports and the value of its imports, indicates a trade surplus when positive and a trade deficit when negative. Improved trade balances, as noted by Stern and Ramkolowan (2021), contribute to GDP growth, indicating a positive correlation.

Furthermore, the trade balance affects currency exchange rates by influencing the supply and demand for foreign currency. When a country's trade account does not balance, and the value of exports differs from imports, it affects the currency's value in the global market (Lioudis, 2022). The exchange rate represents the value of one country's currency relative to another's, and in systems using precious metals or negotiated standards, it is referred to as fixed, with each currency having a specific metal or standard value.

Moreover, the exchange rate is a highly scrutinized economic indicator, closely observed by policymakers, financial market participants, and global trade industries. Khomo and Aziakpono (2016) highlight its substantial influence on economic activities and its reflection of a country's competitiveness in the global market. A devaluation of the national currency is expected to stimulate export demand, reduce imports, and enhance the trade balance. Conversely, currency appreciation is anticipated to decrease export demand, increase import demand, and have a negative impact on the trade balance.

Changes in real exchange rates have a notable impact on trade volumes, although nominal depreciations have limited long-term effects on trade volumes and the balance of trade due to the balancing effects of domestic inflation (Edwards & Garlick, 2018). The appreciation of the exchange rate has both positive and negative consequences, as it reduces South Africa's trade competitiveness but also helps mitigate inflation expectations through its influence on consumer prices. This highlights the ongoing and significant discussion regarding growth through competitiveness and the impact of a weakened currency on inflation, demonstrating its relevance and robustness (Schaling & Kabundi, 2014).

An increase in demand for domestic goods and services leads to a rise in production, which is crucial for boosting exports and improving the gross domestic product in the short run. However, studies have presented varying conclusions regarding the impact of the exchange rate on economic growth. Muzekenyi et al. (2018) found contrasting results in their research. On the other hand, Mtenga (2015) discovered that an increase in exports promotes exchange rate depreciation, particularly in fixed exchange rate systems. The author suggests that the devaluation of the exchange rate makes domestically produced goods and services more affordable compared to foreign-made goods, thereby stimulating demand for domestic products.

According to the traditional explanation by Yehwyis (2006), exchange rate depreciation plays a crucial role in increasing real export volumes and reducing import volumes. This leads to expansionary effects on the overall economy from the demand side. Sianda (2012) also emphasizes that in the long run, exchange rate depreciation has a gradual impact on the economy, resulting in an inflationary environment. As a result, the depreciation of the exchange rate leads to higher prices of domestic goods and services, contributing to import inflation (Mulcher, 2014). Additionally, when the price elasticity of exports and imports is low, the exchange rate can negatively impact international terms of trade by exerting inflationary pressure on local prices.

Related empirical studies have largely focused on the relationship between exchange rate and trade balance (Alessandria & Choi, 2021; Mesagan, Alimi & Vinh Vo, 2022). The current study diifers from existings studies as it investigates the effects of both both exchange and trade balance on economic growth as against Ameziane & Benyacoub (2022) and Mesagan, Alimi & Vo (2022) that examine the effect of exchange on both trade balance and economic growth. More specifically, no known study on this subject matter in the Southern African Development Economic Community. In this paper, the impact of trade balance and exchange rate performance on the Southern African Development Economic Community is investigated. This research contributes to the existing empirical studies in Africa, specifically focusing on the Southern African Development Community and exploring the causal relationship between the variables.

2. Literature Review

Numerous studies have examined the relationship between trade balance and macroeconomic variables. Andersen and Babula (2009) proposed that trade contributes to economic growth by facilitating the exchange of foreign intermediates, technologies, and knowledge, as well as expanding market opportunities. Additionally, several researchers (Soukiazis et al., 2012, 2014a, 2014b, 2018; Garcimartin et al., 2016 & Kvedaras et al., 2020,) have explored the Thirlwall model from 1979, which establishes a connection between trade balance and economic growth. The Thirlwall model posits that long-term economic growth is influenced by the performance of exports and the behaviour of imports.

The argument has been made that an increase in foreign exchange revenue derived from exports is the most sustainable and effective method for financing the growing demand for imports, while other alternatives

have adverse effects on exchange rate performance. Wagner (2007) suggests that increased exports stimulate competition and enhance productivity, which aligns with the findings of Sun and Heshmati (2010) who emphasize the positive impact of exports on China's economic growth. This viewpoint is also supported by Butkus and Seputiene (2018). Furthermore, Altaee et al. (2016) conducted an empirical study using ARDL and ECM to examine the long-run and short-run effects of exports on economic growth, confirming the earlier argument. Their findings conclude that exports have a positive impact on economic growth, while imports have a negative effect on GDP growth in Saudi Arabia. Similar findings are presented by Bakari (2017), who established that exports and imports serve as sources of economic growth in Germany.

Contrary to previous empirical studies, Bakari and Mabrouki (2017) found no effect of exports and imports on Panamanian economic growth. Similarly, the study conducted by Bakari and Tiba (2019) did not support the findings of previous research, as it indicated a negative impact of exports on economic growth. In a study conducted by Korkmaz (2016) on European developed countries, panel data analyses were employed to examine the correlation between exchange rates and economic growth using annual data from 2002 to 2011. The study revealed a causal relationship between exchange rates and economic growth. It found that a stronger exchange rate negatively affected the growth of each nation's economy, as more expensive exports led to decreased demand for them.

In a study conducted by Stucka (2004), the trade balance response to a permanent national currency devaluation in Croatia was estimated using a reduced-form model technique. The study employed three modelling techniques and two measurements of real effective exchange rates to assess the long-run and short-run impacts. The results showed that, on average, a 1 percent permanent devaluation increased the equilibrium trade balance by approximately 0.94 percent to 1.3 percent, with the new equilibrium reached after about 2.5 years. The study also found evidence of the J-curve phenomenon. Based on these findings and considering the potential negative effects on the rest of the economy, there is a debate on whether a permanent devaluation is desirable for enhancing the trade balance.

In a study conducted by Etale and Ochuba (2019), the impact of exchange rate performance and trade balance on economic growth in Nigeria was investigated. The study analyzed data from 2000 to 2017 using descriptive statistics and multiple regression analysis. The empirical findings revealed that the exchange rate had a significantly positive effect on GDP, while the trade balance had a positive but insignificant impact on GDP. Inflation, on the other hand, had a negative but insignificant effect on GDP. Based on these findings, the study recommended that the country should diversify its economic base to reduce dependence on crude oil exports and implement appropriate policy measures to ensure exchange rate and inflation stability.

In a study conducted by Mujahid et al. (2020), the relationship between export growth and economic growth in Pakistan was examined using time series data from 1971 to 2013. The study utilized the ARDL co-integration approach and the Error Correction Model (ECM) to analyze the data. The findings indicated that the time series variables were stationary, there was a long-run co-integration among them, and the ECM revealed short-term equilibrium adjustment. Based on the results, the study emphasized the importance of reducing trade barriers and restrictions such as import and export quotas in order to promote economic growth.

Ameziane and Benyacoub (2022) conducted a study to explore the influence of currency fluctuations on economic growth across various exchange rate regimes. The research was carried out in 14 developing countries from 1990 to 2020. The study employed GARCH and Panel CS-ARDL models, and data analysis included the Dumitrescu and Hurlin Granger non-causality test. The results indicated that exchange rate volatility has both direct and indirect costs on growth in developing economies. However, when considering different exchange rate systems, the study found that the impact was less significant in countries utilizing intermediate exchange rate systems. These findings suggest that intermediate exchange rate systems, characterized by a balance between stability and flexibility, are more effective in mitigating the adverse effects of currency fluctuations on economic growth.

Schaling and Kabundi (2014) conducted a study utilizing a Vector Error Correction Model to examine the interplay between the currency rate, trade balance, and the j-curve effect in South Africa from 1994 to 2011. The findings revealed significant long-term evidence that a relatively low currency rate positively impacts net exports. However, this effect is not sustained in the short term. The study also provided empirical evidence confirming the existence of the J-curve phenomenon in South Africa.

In their study, Schaling and Kabundi (2014) explored the relationship between the currency rate, trade balance, and the j-curve effect in South Africa during the period of 1994 to 2011. By employing a Vector Error

Correction Model, they found compelling evidence that a lower currency rate has a statistically significant positive impact on net exports in the long run. However, this effect is not sustained in the short term. Moreover, their study confirmed the presence of the J-curve phenomenon in South Africa, providing further empirical support for this economic concept.

Ratombo (2019) conducted a study using the ARDL technique to assess the impact of global trade on economic development in South Africa from the first quarter of 2000 to the fourth quarter of 2017. The findings revealed that exports exhibited an inverse relationship with GDP, whereas exchange rates and imports were positively correlated with GDP. As a result, the study proposed that the South African government should prioritize the promotion of domestic trade in goods and services rather than relying heavily on exporting primary products to other countries, as this approach could have adverse effects on the country's economy. Additionally, the study recommended aligning manufacturing and export activities with sector-specific demands to foster the nation's growth and prosperity. Nasir and Leung (2021) analysed quarterly data for the US from 1994Q1 to 2018Q1 based on non-linear ARDL and came to the conclusion that there is a relationship between the exchange rate and the US trade balance in the short- and long-run. They also discovered that productivity and financial restraint had an impact on the trade balance. From 2000 Q1 to 2016 Q1, Nasir and Jackson (2019) concentrated on trade surplus and deficit economies. They proposed that current account balances for surplus and deficit countries are impacted by exchange rate misalignment from equilibrium based on the structural vector auto-regressive technique. Nasir and Vo (2020) used monthly data for the UK for the period of October 1976 to September 2017. They came to the conclusion that a real effective exchange rate shock deteriorated the trade balance in Canada based on the TVSVAR technique and evidence for a J-curve in the UK. Additionally, they demonstrated how the trade balance reacted to New Zealand's actual effective exchange rate volatility.

3. Methodology

3.1 Data Sources

The impact of trade balance and foreign exchange performance on economic growth in the Southern African Development Community (SADC) is investigated in this study. Using panel data from 1970 to the last quarter of 2022, the relationship between these variables was analyzed. Economic growth was measured by the logarithm of GDP, while trade balance was calculated as the difference between exports and imports as a percentage of GDP. The study encompasses a range of SADC countries, including Angola, Botswana, Comoros, Congo, Eswatini, Lesotho, Madagascar, Mozambique, Malawi, Mauritius, Namibia, Seychelles, South Africa, Tanzania, Zambia, and Zimbabwe.

In 1980, the Southern African Development Community (SADC) was founded as the Southern African Development Coordination Conference (SADCC), and it became a development community in 1992. Through effective productive systems, deeper cooperation and integration, good governance, and long-lasting peace and security among the fifteen member states of Southern Africa, this intergovernmental organisation seeks to promote sustainable and equitable economic growth and socio-economic development.

3.2. Econometric Techniques

The econometric analysis in this study employs linear panel model estimation and panel causality tests to examine the relationship between economic growth in SADC and factors such as trade balances, exchange rate performance, and foreign direct investment. The traditional panel data models, specifically the Pooled Ordinary Least Squares (POLS), were utilized. In the context of POLS, the effects of time and individuals are typically considered insignificant. The general form of the POLS model is as follows:

$$y_{it} = \alpha + \beta x_{it} + u_{it} \qquad (1)$$

The parameters α and β represent the common effects parameter and slope, respectively, while u_it follows a normal distribution with a mean of zero. Several assumptions are typically made about the parameters, errors, and exogeneity of the regressors. It is important to note that the assumption of no individual effects and parameter homogeneity is often made, although it is rarely observed in real-life situations. Therefore, we typically assume that the error term consists of two distinct components: the individual-specific component that remains constant over time. This is referred to as the unobserved effects model and can be stated as follows:

$$y_{it} = \alpha_i + \beta x_{it} + u_{it} + \varepsilon_{it} \quad (2)$$

The choice of analysis techniques for this model is typically determined by the characteristics of the two error components. The idiosyncratic error term ε_it is commonly assumed to be well-behaved and independent of the independent variables. Conversely, the individual component can either be independent of the explanatory variables or exhibit correlation with them. When the individual component is correlated, the OLS estimator of β becomes inconsistent. In such cases, the error term u_it is typically treated as an additional set of n parameters to be estimated. This approach is known as fixed effects estimation. On the other hand, if the individual component u_it is uncorrelated with the explanatory variables, it is referred to as a random effect. In this scenario, the OLS estimator of the parameter β remains consistent.

However, the presence of a common error component across individuals can induce a correlation among the composite error terms, resulting in the inefficiency of OLS estimation. In such cases, feasible generalized least squares (GLS) estimators may be more appropriate. These estimators consider the estimation of the variance of the two error components. The study compares the results obtained from all the mentioned methods. Static panel analysis is employed due to the large number of periods (T) and the small number of cross-sectional units (N). Additionally, Dumitrescu-Hurlin (DH) panel causality tests are used to examine the causal relationships between the variables. Accepting the null hypothesis confirms the absence of a causal relationship while rejecting the null hypothesis indicates the presence of a causal relationship among the variables.

4. Empirical Analysis

Table 1 presents the descriptive characteristics of the variables, indicating their level of volatility as reflected by the standard deviation. Furthermore, the descriptive statistics reveal that all the variables follow a normal distribution, which was indicated by the acceptance of the null hypothesis of the Jacque Berra statistic.

Table 1. Summary statistics of economic growth, trade balance, exports and foreign direct investment

Statistics	GDP	TB	EXR_P	FDI
Mean	2.51	0.57	19.62	1.85
Median	10.01	1.12	35.72	10.03
Maximum	15.09	4.53	45.5	14.53
Minimum	4.65	7.43	11.79	7.43
Std. Dev.	0.66	0.026	0.15	0.36
Skewness	0.15	0.13	0.39	0.25
Kurtosis	1.64	2.74	3.46	1.64
Jarque-Bera	19.9	32.9	20.94	21.6
Probability	0.60	0.54	0.260	0.23
Observations	2512	2512	2512	2512

Moving to Table 2, the unit root tests (LLC, IPS, ADF, and PP) demonstrate that all the variables are stationary at the level. Based on this finding, we proceed to estimate the linear panel model.

Table 2. Panel unit root test

Variable	level	LLC	P-v	IPS	P-v	ADF	P-v	PP	P-v
lnGDP	0	479	0.00*	-4.66	0.00*	318	0.00*	193	0.00*
	1	-315	0.00*	-73.4	0.00*	274	0.00*	386	0.00*
lnFDI	0	-3.11	0.00*	0.73	0.00*	27.8	0.00*	29.1	0.00*
	1	-3.52	0.00*	-8.17	0.00*	155	0.00*	203	0.00*
lnTB	0	-0.21	0.00*	0.29	0.00*	41.5	0.00*	45.8	0.00*
	1	-9.43	0.00*	-10.4	0.00*	202	0.00*	450	0.00*
lnEXR_P	0	-3.72	0.00*	1.11	0.00*	40.9	0.00*	46.5	0.00*
	1	-5.79	0.00*	-7.39	0.00*	146	0.00*	311	0.00*

Note: * represents 1% level of significance, while P-v indicates the probability value

The findings from the panel regression analysis, as presented in Table 3, reveal the impact of various factors on the Southern African Development Community (SADC) economic growth. Across all three estimated models (Pooled Regression, Fixed Effect, and Random Effect), it is observed that foreign direct investment (FDI) has a consistently positive impact on the SADC region. Similarly, trade balance is found to have a significant positive influence on economic growth in all three models. Moreover, the exchange rate performance is also identified as having a significant positive effect on the economic growth of the SADC. However, it is important to note that the significant positive impact of FDI is observed in only one of the three estimated models.

The results from the FGLS estimation, as shown in Table 4, exhibit a similar pattern to the panel OLS results. Both the human trade balance and exchange rate performance variables are found to have significant impacts on economic growth. The Hausman Test, which is typically conducted to choose between the fixed effect and random effect models, yields a significant p-value. Consequently, the null hypothesis of the random effect model is rejected in favour of the fixed effect model. Therefore, the analysis and conclusions drawn are based on the fixed effect model. In line with previous findings, FDI is also found to have an insignificant impact on the growth of the SADC region. Various factors have been identified in the literature as contributing to these findings. Poor infrastructure, profit repatriation, corruption, political and economic instability, and insecurity are among the factors discussed. The trade balance is shown to have a significant positive impact on economic growth. Increased trade leads to higher demand for domestic products, resulting in various positive economic outcomes such as foreign exchange earnings and job creation. This aligns with findings from previous empirical studies, including those by Sibanda (2012), Mogoe and Mongale (2014), which have also highlighted the positive influence of trade balance on economic growth.

Furthermore, improved exchange rate performance, particularly currency appreciation, is found to have a significant impact on the region's economic growth. This finding is consistent with studies conducted by Wang (2005) and Yiheyis (2006). This finding is also consistent with Nasir. and Jackson (2019). A more stable exchange rate fosters economic activities and encourages domestic investment, ultimately driving economic growth.

Table 3. Panel Model Results

Variables	Pooled Regression	Fixed Effect	Random Effect
GDP			
TB	0.0167	0.2893	0.9561
	0.0017 *	0.00031 **	0.000105 **
EXR_P	0.00037	0.00126	0.132106
	1.4e-16 ***	5.1e-16 ***	4.1e-16 ***
FDI	0.03667	0.151016	0.0156738
	0.56321	0.088660	0.074533
Intercept	9.82134	-	21.3261
	1.456e-13 ***	-	9.347e-10 ***
observations	2512	2512	2512
R^2	0.2171	0.1465	0.1675
Hausman Test	524.49(1.50e-16 ***)		

Table 4. Panel Model Results (FGLS)

Variables	Fixed Effect FGLS	Random Effect FGLS
GDP		
TB	0.02713	0.01349
	4.1e-16 ***	7.2e-16 ***
EXR_P	0.668134	0.51248
	2.2e-16 ***	2.2e-16 ***
FDI	0.01899357	0.024211
	0.8821	0.7631.
Intercept	-	12.6215794
	-	6.409e-08 ***
observations	2512	2512
R^2	0.23162	0.15208
Hausman Test	729.99(1.e-16 ***)	

Table 5. Breusch-Godfrey/Wooldridge test for serial correlation in panel models

	Chisq Statistic	p-value
Fixed Effect	287.71	0.3124
Fixed Effect FGLS	435.32	0.8192

The estimation process concludes with the application of the Dumitrescu–Hurlin (DH) panel causality tests and the results are presented in Table 5. The findings reveal the presence of a bi-directional causal relationship between trade balance and economic growth. This result is consistent with expectations, as trade balance and economic growth are expected to mutually reinforce each other.

Table 6. *Breusch-Godfrey/Wooldridge test for serial correlation in panel models*

Variables	**Dumitrescu–Hurlin Causality Pattern**
TB → GDP	Bidirectional causality
EXR_P → GDP	Bidirectional causality
FDI → GDP	No causality

Similarly, a bi-directional causal relationship between exchange rate performance and economic growth is established (Table 6). This finding suggests that changes in exchange rate performance can have a significant impact on economic growth, and conversely, economic growth can also influence exchange rate performance. However, in line with previous studies, no causal link is found between foreign direct investment (FDI) and economic growth in the Southern African Development Community. This result implies that FDI may not play a significant role in driving economic growth in the region, highlighting the need to explore other factors or policies that can stimulate economic development.

5. Conclusion

This empirical study examines the effects of trade balance and exchange rate on economic growth in the Southern African Development Community (SADC). The analysis utilizes quarterly data spanning from 1970 to 2022. The empirical findings reveal that both trade balance and exchange rate performance have positive and significant impacts on economic growth, which aligns with the existing literature. However, it was found that foreign direct investment (FDI) has an insignificant effect on economic growth within the SADC region. This suggests that other factors or policies may play a more prominent role in driving economic development.

The Dumitrescu–Hurlin (DH) panel causality tests conducted in this study revealed evidence of bidirectional causality between trade balance and economic growth in the SADC community could not be established. In contrast, bidirectional causality was found between exchange rate performance and economic growth. This indicates that changes in exchange rate performance can influence economic growth, and vice versa. Based on the findings, it can be concluded that a positive trade balance and the growth of the economy mutually reinforce each other, with the benefits from one factor enhancing the other. Consequently, it is essential to implement sound policies that promote exportation and reduce reliance on imports to create favourable macroeconomic conditions that drive economic growth and improve exchange rate performance. Furthermore, it is recommended to implement policies that maximize the benefits and retention of FDI gains to further support economic development in the SADC region. The major limitation of the study is the number of variables included in the study. The study suggests that future studies on the subject matter should include more variables, especially more macroeconomic variables such as inflation, interest rate, among others. Future studies in other African regional blocks such as ECOWAS is strongly encourgaged for meaningful comparative analysis in the African continent across the regional blocks.

Conflicts of Interest: The authors state that they have no conflicts of interest.

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