Eurasian Journal of Economics and Finance, 9(2), 2021, 79-88
DOI: 10.15604/ejef.2021.09.02.002

EURASIAN JOURNAL OF ECONOMICS AND FINANCE

www.eurasianpublications.com

TRADE AND INVESTMENT-LED GROWTH IN SOUTHERN AFRICAN DEVELOPMENT COMMUNITY (SADC)

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Received: March 19, 2021 Accepted: May 3, 2021

Abstract

The growth in the gross domestic product (GDP) has been below zero within the Southern Africa Development Community (SADC) region in recent years. Some member states have consistently experienced negative growth rates for an extended period which has contributed to low growth for the region on average. The lack of consensus on the findings in literature requires further research work to be done to guide policymakers on the potential sources of growth. This study examines the contribution of trade and investment on growth in the context of SADC. It applies the autoregressive distributed lag (ARDL) model to test relationships in both short and long run using annual data for the period 1994 to 2019. Findings confirm the existence of the trade and investment-led growth hypothesis. There is a short run, long run, and joint causality from both explanatory variables to economic growth. Cointegration between growth, trade, and investment is confirmed. Specifically, an increase in investment spurs growth in both the short and long run. Investment expenditure seems to double the growth potential in the long run. Additionally, the study shows that an increase in trade openness retards growth which is consistent with the Prebisch-Singer hypothesis. Results suggest that policies that focus on the development and improvements in fixed investment, locally, help to drive the growth potential. The improvement of capitalization by manufacturing-oriented firms, as opposed to primary product-oriented firms, is ideal.

Keywords: Trade, Investment, Economic Growth, SADC

JEL Classifications: E22, F13, F43

1. Introduction

This study examines the applicability of the trade and investment-led growth hypothesis within the context of the Southern African Development Community (SADC). The analysis seeks to understand the interplay among variables in both the short and long run. It is against the evidence in past studies (Asiedu, 2002; Zahonogo, 2016; Rodrik, 2018) that suggests that trade and investment still explain growth in developing nations. As much as there are studies that support the trade-led growth hypothesis, there are others that suggest otherwise (Melitz and Trefler, 2012, Dix-Carneiro and Kovak, 2017). The arguments posited indicate that protectionism has increased over the years that may outweigh benefits from trade. The trade in primary products, particularly by developing nations, is only of benefit when they are exchanged for capital goods which drive

growth over the long term. The continuous reliance on transactions in primary products results in net losses from trade as prices are susceptible to external shocks. There has been rising trade uncertainty in recent years that has been linked to changes in prices (Karabulut *et al.* 2020). For the same reasons, governments tend to institute protectionist policies to restrict imports. This underscores the benefits of free trade and the desire by countries to strengthen integration efforts. An increase in imports drives competition in the local economy and assists companies to innovate, be more productive, and consumers benefit from low costs as companies improve in efficiency. In addition, exports widen the scope of local firms to enter foreign markets. This brings growth, more profits, and hence employment. More so, the inward investment grows the economy and creates more jobs. It contributes to the technical know-how and the means with which countries improve their productive capacity.

Past studies are still not clear on the effect of trade openness on growth. For example, some studies suggest that trade openness promotes growth (da Silva and do Carmo Hermida, 2018; Coban *et al.* 2020), while others suggest that it reduces growth (Kim and Lin, 2009; Musila and Yiheyis, 2015). More so, there is no consensus on the effect of investment expenditure on growth. Some previous studies suggest an investment-led growth hypothesis (Makuyana and Odhiambo, 2016; Epaphra and Massawe, 2016), while others provide evidence that it negatively affects growth (Saleem and Zaheer, 2018) or it has no effect on growth (Olatunji and Shahid, 2015). Given the above discussions, this study seeks to examine the trade-investment-led growth hypothesis in the context of SADC. In this endeavor, the study examines both short- and long-run dynamics to inform policymakers at both country and regional levels.

The study confirms the existence of the trade and investment-led growth hypothesis. There is a short run, long run, and joint causality from both explanatory variables to growth. In addition, findings suggest that trade openness retards growth both in the short and long run which is consistent with the Prebisch-Singer hypothesis. The rest of the study is organized as follows: Section 2 examines evidence from past studies, Section 3 provides justification on the methodology applied, Section 4 presents and discusses findings, and section 5 concludes the study and provides some policy implications.

2. Literature review

The connection between trade and growth has been examined by several studies, albeit with mixed findings. Previous studies (Lawal *et al.* 2016; Ali and Xialing, 2017; Boakye and Gyamfi, 2017; Mustafa *et al.* 2017; Kabuga and Ismail, 2018; da Silva and do Carmo Hermida, 2018; Su *et al.* 2019; Kalai and Zghidi, 2019, Coban *et al.* 2020) support the trade-led growth hypothesis in which all measures of trade employed promote growth. Keho (2017) further opines that more trade openness has a positive effect on growth in both the long and short run. In addition, Busse and Königer (2012) show that the effect of trade on growth, using dynamic panel estimations, depends on the specification of the trade variable. For example, exports have a positive effect on growth in the long run, while the total volume of trade and imports have an insignificant effect (Jawaid, 2014). The volume of exports and imports as a percent of GDP has a positive effect on growth. Nguyen (2020) shows that exports have a positive effect, while imports have a negative but insignificant effect on growth. Manwa and Wijeweera (2016) argue that the effect of openness on growth is country-specific, and Irwin (2019) opines that trade reforms can reduce tariffs and promote growth differently across countries. Were (2015) suggests that while trade openness has a positive effect on growth in developed and developing countries, it has an insignificant effect in least developed countries.

Farahane and Heshmati (2020) show that export expansion stimulates growth between 2005 and 2017 for SADC countries, while more trade openness reduces growth potential as postulated by the Prebisch-Singer hypothesis. Ikpesu *et al.* (2019) argue that trade, domestic investment, and imports positively affect growth, while exports negatively affect growth. In addition, Polat *et al.* (2015) show that financial development and capital formation promote growth, while trade openness impedes growth. Their study supports a demand-side hypothesis for South Africa. On the contrary, Kim and Lin (2009) contend that there is an income threshold above which more trade openness improves growth and below which heightened openness may

be detrimental to growth. Furthermore, Musila and Yiheyis (2015) show that trade openness has a negative effect on both investment and growth although the effect on the latter is insignificant. A study by Sandri *et al.* (2016) further states that trade in goods has a negative effect on growth and consistent with results by Muhammad *et al.* (2020) that show that trade in services has a positive effect on growth. Goh *et al.* (2017) find no cointegrating relationship between exports and economic growth. Cevik *et al.* (2019) support a feedback relationship between growth and trade openness in the short run that is also confirmed by Erkisi (2018).

Past studies confirm the presence of a link between growth and investment (Ugochukwu and Chinyere, 2013; Canh and Phong, 2017; Garzarelli and Limam, 2019). The effect of investment on growth depends on whether it is private or public in nature. For example, in developed countries, public investment is significant in explaining growth, while in developing countries both forms of expenditure explain growth. Private investment expenditure is seen as important in explaining growth in developing countries (Makuyana and Odhiambo, 2016). Bakari (2017) and Olokoyo (2012) suggest that foreign direct investment (FDI) and domestic investment do not explain growth, while Saleem and Zaheer (2018) argue that private investment has a negative effect on growth due to lack of infrastructure in host countries. On the contrary, Olatunji and Shahid (2015) suggest that FDI has a positive effect on growth in the short run and has no effect on growth in the long run. Exports and FDI drive growth and reduce poverty when they are underpinned by a conducive business climate, exchange rate realignment, and strong infrastructure. Epaphra and Massawe (2016) argue that private investment expenditure positively affects growth, and its effect depends on the level of public investment expenditure to GDP ratio. This positive effect of private investment expenditure on growth is reduced over the long term as public investment expenditure and FDI increase. This is supported by the argument that public investment expenditure crowds out private investment expenditure in the long run. According to Almsafir and Morzuki (2015), both public and private investment expenditure have a significant and positive effect on GDP. The former has a huge effect on GDP growth compared to the latter.

In addition, Javid (2019) suggests that both public and private investment expenditure have positive but different effects on growth. Public investment expenditure has a larger effect compared to private investment expenditure. Griffith-Jones and Cozzi (2016) argue that a significant increase in gross fixed capital formation, supported by innovation, leads to economic recovery in the short term and growth in the long term. Both public and private investment expenditure are necessary for promoting growth. In addition, a study by Coban *et al.* (2020) produces mixed findings on the investment-led growth hypothesis. Domestic investment expenditure has a positive effect on growth, while FDI does not explain economic growth. Keho (2017) argues that there is a complementary relationship between trade openness and capital formation in driving growth. This is supported by Feddersen *et al.* (2017) who show that capital formation has a positive effect on growth when supported by high export performance, while Topcu *et al.* (2020) show that the effect depends on the income levels of the host country. On the contrary, Ajose and Oyedokun (2018) argue that economic growth and capital formation have a negative and insignificant relationship.

3. Methodology

3.1. Model Specification

The model of analysis is Autoregressive Distributed Lag (ARDL) which explains relationships in both the short and long run (Goh *et al.* 2017; Kalai and Zghidi, 2019). According to Pesaran *et al.* (1999), this method is efficient and can be applied where data has small N and large T and where variables are stationary to levels and in first difference. It cannot be used where variables are stationary after the second differencing. The study employs pooled mean group (PMG) estimator that allows for homogeneity and heterogeneity in the long- and short-run relationships, respectively. However, this technique is applied after using the Hausman test to compare the PMG with other estimators (mean group and dynamic fixed effect). The study employs the following model shown in Equation 1:

$$GDPg_{it} = \gamma_i + \sum_{j=1}^{P} \beta_0 GDPg_{i(t-j)} + \sum_{j=0}^{q} \beta_1 LNTRDOP_{i(t-j)} \sum_{j=0}^{q} \beta_2 LNGFCF_{i(t-j)} + \mu_{it} \quad (1)$$

where; γ is a constant and β are parameters to be estimated; i and t represent country and time components, respectively. The error correction term (ECT) is obtained by re-parameterization of Equation (1) to get the model shown in Equation (2).

$$\Delta GDPg_{it} = \gamma_i + \delta_i \left(GDPg_{i,(t-j)} - \varphi_1 LNTRDOP_{i(t-j)} - \varphi_2 LNGCFC_{i(t-j)} \right) + \sum_{j=1}^{P-1} \emptyset_1 \Delta GDPg_{i(t-j)} + \sum_{j=0}^{q-1} \emptyset_2 \Delta LNTRDOP_{i(t-j)} + \sum_{j=0}^{q-1} \emptyset_3 \Delta LNGFCF_{i(t-j)} + \mu_{it} \quad (2)$$

where; $\emptyset$ and φ are short- and long-run coefficients, respectively, and δ is the speed of adjustment.

3.2. Diagnostics and data

The study employs both variance inflation factors (VIF) and correlation coefficients to test for multicollinearity. The methods by Levin *et al.* (LLC) (2002), Breitung (2001), and Im *et al.* (IPS) (2003) are applied to test for stationarity. Cointegration is tested using the method by Pedroni (1999). The cointegration test can be ignored where long-run homogeneity is assumed. In this case, cointegration is ascertained by the statistical significance of the long-run coefficients and the ECT.

The study employs panel data from twelve (12) SADC member states[1] covering the period 1994 to 2019 based on data availability. Data is obtained from World Development Indicators (WDI) which also provides standard definitions adopted in this study. Economic growth (GDPg) is measured by the annual growth in GDP (Farahane and Heshmati, 2020). Gross fixed capital formation (GFCF) as a percentage of GDP, which is a proxy for investment, is measured in current United States Dollars as defined by WDI. It is expected to have a positive effect on growth as explained by previous studies (Makuyana and Odhiambo, 2016; Javid, 2019); Trade (TRDOP) is the total of imports and exports in goods and services with rest of the world divided by GDP and expressed as a percentage. It is expected to have either a positive effect (Keho, 2017; Farahane and Heshmati, 2020) or a negative effect (Musila and Yiheyis, 2015; *Sandri et al.* 2016). Explanatory variables are expressed in logarithmic form and as such parameters are taken as elasticities.

Table 1 shows some key indicators for all sampled countries for the period under understudy. The level of GDPg is below zero on average due to some countries that experience negative growth rates in some years. There is evidence of erratic growth within the region. TRDOP remains above 50% and there is a gradual rise in the volume of imports and exports as a percentage of GDP. The level of investment, which is proxied by gross fixed capital formation as a percentage of GDP (GFCF), is around 20% on average. This result shows that there is scope for a continued increase in investment expenditure in the region to influence the production base.

Table 1. Selected indicators

Year	1994-1999	2000-2004	2005-2009	2010-2014	2015-2019
GDPg	2.71	8.42	7.53	0.56	3.19
TRDOP	51.94	56.00	64.41	66.25	61.65
GFCF	17.68	16.72	21.19	21.81	20.61

Source: Author's own estimation

4. Results and Discussion

The average level of GFCF is 21.26 units, while the rate of growth of GDP is 3.82% per annum on average within the SADC region. Further, there is much variability in the growth rate of GDP,

[1] Countries included are Botswana, Democratic Republic of Congo, Eswatini, Madagascar, Malawi, Mauritius, Mozambique, Namibia, Seychelles, South Africa, Tanzania, and Zimbabwe.

while trade openness shows lower variability as shown in Table 2. This shows that the growth rate of GDP is subject to shocks that may be different across countries.

Table 2. Summary statistics

	Obs.	Mean	Std. Dev.	Min.	Max.
GDPg	312	3.82	4.32	-17.67	19.67
GFCF	312	21.26	1.48	18.16	25.10
TRDOP	312	4.32	0.45	3.18	5.42

Source: Author's own compilation

As shown in Table 3, the correlation coefficients are low for all variables, which suggests that there are no exact linear representations of one another among variables. More so, findings using VIF as indicated in Table 4 shows that there is no problem of multicollinearity since values are less than 5.

Table 3. Correlation coefficients

	GDPg	GFCF	TRDOP
GDPg	1.000		
GFCF	0.1723	1.000	
TRDOP	-0.0046	-0.3454	1.000

Source: Author's own estimation

Table 4. Variance inflation factors (VIF)

Dependent Variable	VIF
GCFC	1.14
TRDOP	1.17

Source: Author's own estimation

The study shows that GDPg is stationary at levels using all the three methods applied to test for unit root as can be seen from Table 5. Both GFCF and TRDOP are stationary after first differencing using the Breitung method. GFCF is stationary after first differencing using the IPS method. Both LLC and IPS confirm that TRDOP is stationary at levels. There is confirmation that all variables are stationary at levels and after first differencing, and hence there are no I(2) variables. Thus, the tests for cointegration and use of the ARDL model could be applied.

Table 5. Panel unit root

Variable	Levels			1st Difference
	Breitung	Levin, Lin & Chu	Im, Pesaran & Shin	
GDPg	-4.2782***	-2.2141**	-5.6714***	NA
GFCF	1.5620	-2.2753**	0.4849	-4.5310***
TRDOP	-1.2303	-1.7578**	-1.4660*	-3.5447***

Note: ***, **, and * represent significance levels at 1%, 5%, and 10%, respectively.
Source: Author's own estimation

The study shows that the null hypothesis of no cointegration is rejected at the 1% level for all group statistics using the method by Pedroni since four of the seven statistics show values that are higher than two (2) which suggests that there is cointegration[2]. This finding has been supported using the significance of long-run coefficients and error correction term using all three models PMG, MG, and DFE as illustrated in Table 6. Hausman tests are done to select the appropriate estimator. Findings show that the PMG estimator is the best and more efficient estimator compared to DFE and MG. This result is supported by p-values of 0.1018 and 0.2103, which are greater than the 5% level, and hence we cannot reject the null hypothesis of homogeneity. The study assumes that long-run coefficients are the same, while short-run coefficients differ for all countries in the panel. Both the PMG and PG confirm the existence of a long-run relationship at 1% among variables. Deviations from the long-run equilibrium are

[2] Results can be provided upon request.

corrected at adjustment speeds of 16.98% and 26.31% using the PMG and MG model, respectively. The study is very clear about the existence of joint causality among variables since the ECT is significant using PMG and MG.

Both the PMG and MG confirm that there is causality between investment and growth in the short and long run. Findings support the investment-led growth which is consistent with previous studies (Almsafir and Morzuki, 2015; Keho, 2017). Specifically, both models show that the positive effect of investment on growth is higher in long term compared to the short run. Using the PMG model, a 10% increase in investment results in an increase in growth by 2% in the long run and by 0.88% in the short term[3]. Efforts to make an investment build up in the short run are more realized in the long term. It widens the capacity for countries to produce more output which is not possible with limited resources.

The study shows that trade openness has a negative effect on growth in the long and short run. Specifically, a 10% increase in trade openness results in a fall in growth by 0.99% and 1.82% in the short run and long run, respectively. This finding shows that the more open an economy becomes, a gradual reduction in growth occurs. This could be explained by the composition of exports and imports for member states. Imports mainly comprise capital or processed goods, while exports are composed of primary products which cannot fetch much revenue on the global market. This argument is consistent with the Prebisch-Singer hypothesis that suggests a fall in the terms of trade for primary product-based economies, which is synonymous with SADC member states. Primary products are affected by decreasing income elasticity of demand, and such products suffer from low price elasticity of demand, which reduces revenues even when their prices are falling. Findings are consistent with previous studies (Sandri *et al.* 2016; Farahane and Heshmati, 2020) which show that increased trade openness retards growth.

Table 6. Long-run and short-run coefficients

Variable	Estimated coefficients (PMG)	Estimated coefficients (MG)	Estimated coefficients (DFE)
GFCF	0.8682*** (5.320)	0.5455** (2.531)	0.6406*** (4.105)
TRDOP	-0.7885*** (-4.143)	-0.1137 (-1.241)	-0.0748 (-0.956)
ECT	-0.1698*** (-3.559)	-0.2631*** (-3.572)	-0.1762 (-0.977)
d.GFCF	0.3830*** (4.104)	0.3776*** (4.001)	0.2573*** (3.672)
d.TRDOP	-0.4284*** (-5.172)	-0.4014*** (-5.601)	-0.3535*** (-4.997)
Constant	1.3990*** (3.679)	2.6011*** (3.981)	1.7399*** (3.775)
Observations	300		
Groups	12		
Log likelihood	345.56		
Hausman (p-value)		0.1018	0.2103

Notes: ***, **, and, * represent significance levels at 1%, 5%, and 10%, respectively, and t-statistics are shown in parentheses.

Source: Author's own estimation

The PMG model's full command option is applied to extract the short-run coefficients and error variances, which allows for the comparison of countries by analyzing potential short-run

[3] $GDPg = 0.9622 * ln(10) = 1.9991$, and $GDPg = 0.3830 * ln(10) = 0.88$

heterogeneity among them. This is done with the understanding that the assumption of long-run homogeneity can still hold, and long-run coefficients reported earlier (Table 6) are still the same. The results, as shown in Table 7, show that about 50% of the sampled countries adjust to the long-run equilibrium at different speeds. The finding is supported by statistically significant coefficients of the ECT. This could be explained by differences in the level of trade openness and investment expenditure across countries. The composition of exports and investment expenditure is different in member states. Countries that are firmly endowed in investment, for example, are more equipped to produce more in the long run than those that are not.

Table 7. Short-run coefficients and ECT at country level

Var	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12
ECT	-0.49*** (-3.115)	-0.16 (-0.551)	-0.19 (-0.119)	-0.16*** (-4.551)	-0.22** (-2.778)	-0.04 (-0.776)	-0.02 (-0.334)	-0.03 (-0.738)	-0.15* (-1.916)	0.12 (0.532)	-0.10** (-2.771)	-0.61** (-2.811)
d.GFCF	0.59*** (3.226)	0.34*** (3.110)	0.21** (2.650)	0.28*** (3.100)	0.41*** (4.332)	0.37*** (3.558)	0.42*** (4.335)	0.05* (1.915)	0.81*** (4.359)	0.23*** (3.011)	0.10*** (3.001)	0.78*** (3.793)
d.TRDOP	-0.21 (-0.865)	-0.31** (-2.770)	-0.31** (-2.791)	-0.85*** (-4.352)	-0.13 (-0.810)	-0.59*** (-3.989)	-0.65*** (-3.991)	-0.24*** (-3.224)	-0.39*** (-3.276)	-0.16 (-0.741)	-0.67*** (-3.998)	-0.65*** (-3.899)
C	3.75*** (4.118)	1.32 (0.974)	1.46 (0.915)	1.28*** (3.961)	1.81** (2.793)	0.37 (0.895)	0.22 (0.810)	0.28 (0.813)	1.21* (1.925)	-0.80 (-0.245)	0.85** (2.777)	5.04** (2.889)

Notes: ***, **, and * represent significance levels at 1%, 5%, and 10%, respectively, and t-statistics are shown in parentheses. The columns represent countries as follows: Botswana (C1), Democratic Republic of Congo (C2), Eswatini (C3), Madagascar (C4), Malawi (C5), Mauritius (C6), Mozambique (C7), Namibia (C8), Seychelles (C9), South Africa (C10), Tanzania (C11), Zimbabwe (C12).

Source: Author's own estimation

5. Conclusion and implications

This study aimed to empirically examine the impact of trade and investment on growth. The study examined the applicability of the trade-investment-led growth hypothesis within the context of SADC using annual data for the period from 1994 to 2019. It employed the ARDL approach to test the relationship in both short- and long-run periods. Overall, the study confirmed the existence of the trade- and investment-led growth hypothesis. There is a short run, long run, and joint causality from both explanatory variables to growth. There is cointegration between economic growth, trade, and investment. Specifically, an increase in investment spurs growth in both the short- and long-run. Investment appears to double the growth potential in the long run. Thus, the investment-led growth hypothesis is confirmed. In addition, the study shows that an increase in trade openness retards growth both in the short and long run. The results are consistent with the Prebisch-Singer hypothesis, which suggested that SADC member states face the risk of slow growth due to the failure to benefit from trade. This is usually the case where countries trade mainly in primary products as opposed to manufactured goods that have greater income and price elasticities.

Findings from this study suggest that SADC member states should improve the level of domestic investment by focusing on industries that produce intermediate and manufactured products to benefit from a rise in prices and incomes globally. The development and improvements of fixed investment locally help to drive growth potential. This can subsequently improve the capacity of firms to move from primary to intermediate and more advanced products and improve the terms of trade for exported goods. Such interventions can be done at different levels by considering the speed at which countries adjust to their long-term equilibrium. Incentives like tax reductions, improvement in property rights, reducing interest rates to encourage borrowing by targeted firms, and policies that improve the ability and willingness to save by households are more plausible. Monetary and fiscal policies that seek to improve the capitalization of manufacturing-oriented firms, as opposed to primary product-oriented firms, are ideal. The efficiency of local firms can still be maintained by keeping the economy open to foreign competition. This will improve the quality of products meant for local consumption and the export market. This work can be extended, in our context, by considering how the effect of trade and investment on growth is sensitive to the quality of institutions and differences in monetary and fiscal policy regimes in members states. Analysis can be done at a micro-level by focusing on individual countries and using a sectoral approach to gauge export performance and the possibility of scaling it upwards given the availability of investment funding.

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