Foreign Direct Investment and Economic Growth in the Southern African Development Community

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Abstract:

The Southern African Development Community (SADC) has continued to experience an unprecedented increase in foreign direct investment (FDI) inflows for the past three decades. Evidence of their quantitative impact on the economy is still quite mixed. We use panel data methods on data from the (SADC) for the 1980–2020 period, where our results show that FDI has a positive and statistically significant effect on economic growth; thus, agreeing with some work that has been done on the community and in Sub-Saharan Africa. Our study calls for the development of human capital, the promotion of market liberalization, the improvement of the financial sector and the need for policy measures that prioritize productive investment that is supportive of the local private and foreign sectors; the latter provides positive spillovers to other sectors.

Keywords: foreign direct investment; economic growth; absorptive capacity; human capital; market liberalization.

JEL Classification: 011; 047; 055.

Introduction

Most countries, including the Southern African Development Community (SADC), have experienced growth in foreign direct investment (FDI) inflows after liberalizing trade (Asirvathan *et al.* 2017, Bekana 2016, Benli 2016, Sehleanu 2017) following the adoption of economic reforms (Jayaraman *et al.* 2017, Vogiatzoglou and Nguyen 2016). Despite their structural constraints and deficiencies in SADC, these measures greatly impacted FDI inflows (Gammoudi and Cherif 2016). SADC received US$252.93 bn between 1990 and 2020, roughly a third (27.9%) of all FDI net inflows to Africa (US$970.57bn); an insignificant amount (0.79%) compared to world net inflows (US$31911.66) (UNCTAD 2022) but still a helpful resource needed to augment domestic resources in enhancing economic growth. Much FDI (44% of net inflows) (Figure 1 and Table 1 below) tended to flow more to the high-income group - Mauritius and Seychelles, which happen to be tax heavens; as against the 3.7% that flows to low-income resource-poor countries (Congo Democratic Republic, Malawi, Mozambique, and Madagascar).

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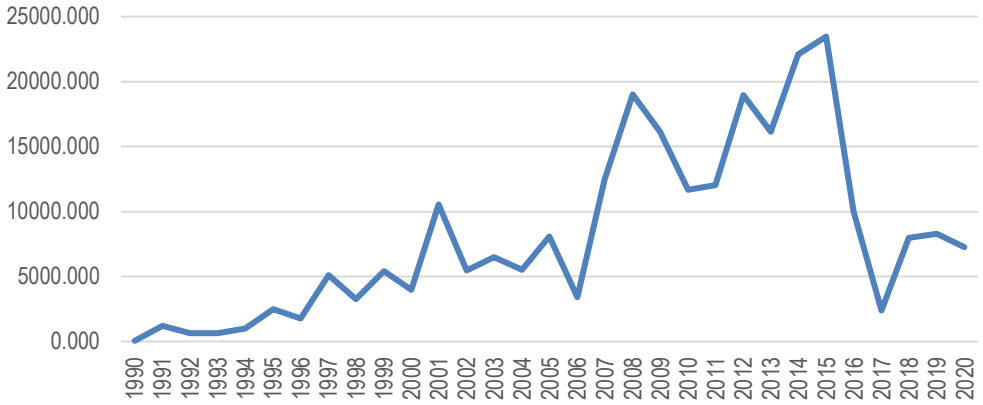
Figure 1. FDI inflows in SADC region, 1990 – 2020 (US$m)



Source: UNCTAD - Annex Table 03: FDI inward stock, by region and economy, 1990-2021

Table 1. FDI to SADC 1990 to 2020 (US$ m)

Income group	US$ m	%
High Income	111 313.3	44
Upper middle income	47 380.9	18.7
Lower middle income	84 758.9	33.5
Low income	9 476.9	3.7
All SADC	252 930.1	100

Source: UNCTAD - Annex Table 03: FDI inward stock, by region and economy, 1990-2021

A cross-sectional time series growth regression is estimated for 16 SADC economies between 1980 and 2020 using panel data methods, testing the impact of FDI on economic growth, contributing to the current debate on the impact of FDI on economic growth. The following section discusses the literature review; Section 3 describes the method used in this study and data sources; the empirical results are presented and discussed in Section 4; Section 5 concludes and provides suggestions for further research.

1. Literature Review

We provide a brief overview of the theoretical considerations explaining the relationship between FDI and economic growth and recent empirical developments in SADC. Two different approaches have been used to link FDI to growth. One is the traditional neoclassical approach, based on (Solow's 1956) growth model and the augmented neo-classical model of (Mankiw *et al.* 1992) that extended the Solow model, which emphasizes the importance of investment (in physical capital) as a driver of economic growth; growth of output is achieved in the short run through a higher rate of savings. Therefore, a higher rate of capital formation (Seetanah and Khadaroo 2010). With a lower savings rate, growth is achieved partly through foreign investment. Thus, FDI as a form of fixed capital is assumed to directly affect economic growth by contributing to gross fixed capital formation (or rather complementing domestic investments) and is therefore considered an essential supplement for capital and investment shortages. This model, however, suffers from its short-term focus and the diminishing returns to capital that limit growth (Dada and Abanikanda 2022).

The other model is the new or endogenous growth approach, which is based on growth models developed by (Lucas 1988; Romer 1986, 1990; Grossman and Helpman 1991). It focuses on the long run and on the internal forces of the economy, particularly those that provide opportunities and incentives to create technological knowledge (Akinlo 2004, Durham 2004, Khadaroo 2010, Dada and Abanikanda 2022). Foreign direct investment plays the role of directly increasing capital accumulation and indirectly increasing the stock of knowledge and fostering technological growth of a technologically inferior recipient economy (Borensztein *et al.* 1998, de Mello 1999, Durham 2004, Castellani and Zanfei 2006, Kemeny 2010, Slajdzic and Mehci 2016, Alemu 2017, Tang and Tan 2018, Opoku *et al.* 2019, Huynh *et al.* 2021, al Faisal and Islam 2022). This, however, will depend on the absorptive capacity (of the host economy), which will enable an economy to benefit from foreign direct investment (Borensztein *et al.* 1998, de Mello 1999, Durham 2004, Alemu 2017); '… a country with strong (weak) absorptive capacity will benefit maximally (minimally) from the growth effect of foreign direct investment' (Dada and

Abanikanda 2022). Absorptive capacity includes the level of development of infrastructure (research and development, innovation, the levels of domestic investment) (Bekana 2016, Naanwaab and Diarrassouba 2016), the level of institutional development (Alfaro *et al*. 2004, Benassy-Quere *et al.* 2007, Farla *et al.* 2016, Fatima 2016) especially concerning financial markets (Alfaro *et al.* 2004), the level of human capital development (Borensztein *et al*. 1998, Fahinde *et al*. 2015, Bbale and Nnyanzi 2016, Pegkas and Tsamadias 2016), environmental quality and the degree of openness of the economy (Dada and Abanikanada 2022).

Empirical studies on the impact of FDI on economic growth have come up with mixed results (Carkovic and Levine 2002, Hsiao and Hsiao 2006, Yao 2006, Zhang 2006, Bhandari *et al.* 2007, Seetanah, and Khadaroo 2010, Ramirez 2011, Ipek and Kizilgol 2015, Bbale and Nnyanzi 2016, Sawalha *et al.* 2016, Alemu 2017, Malikane and Chitambura 2017). Carkovic and Levine (2002), note that 'the macroeconomic findings on growth and FDI must be viewed sceptically.' Their concern is a lack of taking control of simultaneity bias, country-specific effects, and routine use of lagged dependent variables in growth regressions; these factors can bias estimates. Some studies find that FDI augments growth and attributes this to absorptive capacity. Akinola (2004), looks at Nigeria from 1970–2001 and finds a small, statistically insignificant, positive effect of FDI on economic growth. He suspects that extractive FDI might not be growth enhancing as much as manufacturing FDI since (extractive FDI, specifically in the oil sector) is owned by multinationals, is highly capital intensive with few local backward linkages, and is therefore disconnected from the economy.

Seetanah and Khadaroo (2010), applied several models (cross-section, pooled OLS, random effects and GMM) studying 39 Sub-Saharan African countries from 1980-2000. They find that FDI is positive and significant (highly significant in pooled OLS, random effects and GMM models) in effecting growth in Sub Sahara Africa and report that FDI had been an ingredient in the economic growth of African economies even in the short run. They conclude that 'FDI does not only precede growth and output level of the country but also followed growth …' and recommend that 'The above results highlight the economic importance of FDI and provide new evidence for the case of African economies.' Alemu (2017), disaggregates the African data into a panel of 20 middle-income and 19 low-income countries over 15 years between 1998 and 2013 and finds that middle-income African countries tend to have more impact on their economic growth from FDI. In his introduction section, he pinpoints weaknesses (that can be summarised as low absorptive capacity) of low-income countries in Africa. Without mentioning middle income, the implication here is that they have a higher absorptive capacity that entails them experiencing a significant contribution of FDI to growth. Malikane and Chitambara's (2017), study of eight Southern African countries from 1980–2014 finds that FDI has a direct positive effect on economic growth. Specifically, they state that 'the impact of FDI inflows on economic growth increases with economic, political and civil freedom.' They postulate that 'countries with strong democratic institutions are better able to absorb spillovers from FDI inflows.'

Other studies as Akinlo (2004), Alfaro *et al. (*2004), Durham (2004), Ipek and Kizilgol (2015), Dada and Abanikanda (2022) find the negative impact of FDI on growth. Among the reasons given are found in Alemu (2017), citing Boone (1996), that foreign aid is fully consumed, it substitutes rather than complements domestic resources, assists import of inappropriate technology, distorts domestic income distribution, and encourages inefficient and corrupt governments in developing countries.

There also are studies that come up with inconclusive results. Some of the reasons presented include the sources of data use and model specification, specifically applying linear models in non-linear situations. Carkovic and Levine (2002), study 72 countries, including 18 Sub-Sahara Africa, over the period 1960-95 and found that 'the exogenous component of FDI does not exert a reliable positive impact on economic growth. It does not prove that FDI is unimportant… it somewhat reduces confidence in the belief that FDI accelerates GDP growth. This was arrived at after several trials, including running OLS regressions where FDI is never significant and running panel regressions where FDI becomes unstable after controlling some variables. For instance, when they include schooling, FDI and interaction (FDI/schooling) term results come up with FDI as growth-enhancing in countries with low levels of education, which contradicts the theory. When they include a dummy variable (1 for more significant than average schooling and 0 otherwise), the impact of FDI on growth does not robustly vary with education attainment.

Similar attempts are made in testing the growth impact of FDI in countries depending on levels of income, financial development, and openness, but they come up with results that either FDI does not exert an exogenous impact on growth or that there is no strong link between FDI and growth. They attribute this partly to the volatile nature of data and (possibly) sadly reach a statement that 'that FDI is growth-enhancing in countries with low levels of education, … reduces confidence in the belief that FDI accelerates GDP growth. Alfaro *et al.* (2004), studied 71 developing countries (including five from the SADC region) and found that FDI alone plays an ambiguous role in contributing to economic growth. However, countries with well-developed financial markets gain significantly from FDI. Otherwise, insufficiently developed financial markets and institutions (that could complement the positive

effects of FDI) affect gains from FDI. After interacting with FDI with financial markets to test the significance of financial markets in enhancing the positive externalities associated with FDI flows, they found positive and significant results. However, after calculating the net effect of FDI on growth for each county, they found that most countries had a negative effect. They attribute this partly to most countries having less developed financial markets and partly to model specification (applying a linear to a non-linear situation). Durham (2004), examines the effects of FDI and equity foreign portfolio investment (EFPI) on economic growth in 62 non-OECD (including Sub-Saharan countries) and 21 high-income countries between 1979 and 1998 using OLS. He finds that the impact of FDI on long-run economic growth depends on the data source. Among the models, he fits are two that test absorptive capacity (Model 3 – about openness and Model 4 – human capital) using data from three sources (OECD flows to lower countries from 1984 to 1998; IFS flows that do not have a significant source of resources - some of these resources are outliers; and TIC). The interaction of FDI and trade openness was positive and significant at 5% for TIC data, marginally positive and significant for IFS data, and negative and insignificant for OECD data. The interaction of FDI and human capital (proxied as the male education rate) was negative and insignificant in all three data sets. From the main models 1 and 2, he finds that 'the cross-sectional OECD data largely suggest that FDI does not have an unmitigated effect on long-run economic growth. With an ambiguous overall effect, the relation between FDI and expansion may be contingent on intervening factors.' One of his conclusive statements is that 'These proxies are perhaps crude, but further research on the specific conditions under which flows have real positive effects would be instructive.

The data do not suggest that FDI and EFPI have an unmitigated, positive effect on economic growth.' Ipek and Kizigol's (2015), research on the effects of FDI on domestic investment for each country (Turkey, Brazil, Russia, South Africa, and Mexico) individually using time series analyses. Their findings are mixed, whereby FDI significantly crowds in domestic investment in Russia and significantly crowds out domestic investment in South Africa and Turkey; although it crowds in domestic investment in Brazil and Mexico, the effect is insignificant. Sawalha *et al.* (2016), cover 21 developed and 19 emerging economies (one of which was South Africa) samples from 1980 to 2012. They make these findings for emerging countries. The first impact of FDI on growth in both cases, when interactions of FDI with other selected variables are applied and when not applied, is positive and significant. Second, the impact of FDI on growth varies marginally positive with market capitalization and is significant. The implication is that the equity market system has contributed positively to the process of channelling FDI resources into economic growth. Third, the impact of FDI on growth varies marginally positive with stock trading and is significant, implying that a country's local conditions (like the micro-macro policies) have enhanced absorptive capacities to enjoy the advantage of FDI and Stock trading externalities.

In short, these studies on the impact of FDI on economic growth in Sub-Saharan Africa have mixed results leading to no conclusive statement regarding the relationship between FDI and growth.

2. Methodology and Data Sources

2.1. Scope of the study

This paper aims to analyze the role of FDI in explaining the different growth performances across SADC countries. Following Alemu's (2017), premise the SADC group is comprised of remarkably diverse and heterogeneous countries by their grouping (by their GDP per capita) into low-income, lower-middle-income, upper-middle-income, and higher-income economies, some with large and some with small populations; by their different endowments with natural resources including proximity to the sea; by their geographical size; population size. These differences are not considered in our estimations, though in part, we look at how they fair according to their income grouping.

2.2. Model specification

There is no agreed specification of a growth model, especially given that so many variables (more than 60) can be included and come out significant (Sala and Martin 1977). However, a family of variables tend to appear in these specifications. The growth rate of GDP per capita (Carkovic and Levine 2002, Sawalha *et al.* 2016, Alemu 2017, Malikane and Chitambara 2017, Dada and Abanikanda 2022); the growth rate of GDP (Mencinger 2003, Lyroudi *et al*. 2004, Ipek and Kizilgol 2015, Seyoum *et al.* 2015); the share of investment on GDP (Ipek and Kizilgol 2015) and on rare occasions GDP (Akinlo 2004, Seetanah and Khadaroo 2010) have been used on the left-hand side of a growth model. The right-hand side has about three sets of variables that are roughly named as a set of variables always included in the regression, a set of variables of interest and a set of variables identified by past studies as potentially critical explanatory variables of growth (Levine and Renelt 1992, Durham 2004). This study uses similar variables following (Naanwaab and Diarrassouba 2016, Sawalha *et al.* 2016). On our left-hand side, we

interchangeably use the annual growth rate of the real GDP per capita (Yc) and the annual growth rate of the real GDP (Yr). The right-hand side has seven variables detailed after this specification:

$$Y_{it} = \beta_0 + \alpha_i + \eta_t + \beta_1 fdi_{it} + Z'X_{it} + \varepsilon_{it} \quad (1)$$

where: $_i$ indexes countries; $_t$ indexes time; α captures country fixed effects; η captures year fixed effects; ε_{it} is the transitory error term. As noted above *Y* represents either the natural log of the annual growth rate of the real GDP per capita or the natural log of the annual growth rate of the real GDP. Like GDP, *fdi* is either the natural log of a measure of net FDI inflows as a percentage of GDP or the natural log of a measure of FDI in stock. X_{it} is a vector that includes six standard growth determinants (all expressed as logs) viz gross fixed capital formation (*gfcf*), trade openness (*opt*), inflation (*inf*) and private sector credit (*crd*), population growth (*pop*) and human capital (*human*).

Hence, X_{it} = f (*gfcf*, *op*, *inf, crd*, *pop, human*). (2)

where: *gfcf*, *op*, *inf, crd*, *pop, and human* have been explained above.

Thus, substituting (2) in (1) produces our refined model:

$$Y_{it} = \beta_0 + \alpha_i + \eta_t + \beta_1 fdi_{it} + \beta_2 gfcf_{it} + \beta_3 op_{it} + \beta_4 inf_{it} + \beta_5 crd_{it} + \beta_6 pop_{it} + \beta_7 human_{it} + \varepsilon_{it} \quad (3)$$

Model 3 is used in this study with some variations where Y_{it} may represent either the annual growth rate of GDP per capita (*Yc*) or the annual growth rate of overall GDP (*Yr*); and where FDI may be a measure of net FDI inflows as a percentage of GDP (*fdi*), or as a measure of FDI stock inflows (*fdist*).

2.3. Data Sources

The following are the sources of data we use in this study:

- UNDP Human Development Report: *human* - Human capital is the percentage of secondary Schooling enrolment;
- United Nations Population Division: World Population Prospects - *pop* - annual population growth rate: UNCTAD: *fdist* - FDI in stock in US$ m;
- World Development Indicators: *Yc* – annual growth rate of per capita GDP; *Yr* – annual growth rate of GDP; *gdp* - per capita GDP; *fdi* - FDI inflows as a percentage of GDP*; gfcf* - Gross capital formation as a percentage of GDP; *opt* - exports and imports as a percentage of GDP; *inf* – annual rate of inflation as measured by CPI; *crd* - private credit as a percentage of GDP.

3. Results and Discussion

Missing data

We note that our results may have some bearing from missing data. Whereas data is available in all variables it is not complete in certain variables in Namibia, Malawi and Zimbabwe. Although tools for imputing missing data are available, there are issues relating to how to use them. For instance, imputed data for FDI stock inflows missing for 1982 to 1989 in Malawi are very high and unrealistic. The data analysis tool used treats the 1980s, half of the 2000s and 2010s with values roughly 5 to 10 times higher than those of the 1990s. Any approach we use to treat missing data then impacts the outcome of the parameters.

Panel unit root test

We perform a unit root test to test the stationarity of the variables. We perform panel unit root tests on the dependent and all independent variables. We find that *fdist, crd,* and *human* have unit roots and make corrections after taking the first differences and coming up with all static variables.

Summary statistics

Table 2 below shows the log of annual growth of GDP (*yr*) was 0.541 ranging from -2.0 to 1.38 for Angola, respectively, in 1982 and 1993; and the log of FDI for all SADC as a percentage of GDP (*fdi*) for the period of 1980 to 2020 is 0.24. The minimum and maximum are spot values of -2.276 for Madagascar in 1982 and 1.763 for Seychelles in 2012. Country descriptive statistics (not in logs and not presented) make more sense in comparisons. In this case, FDI as a percentage of GDP for the period of 1980 to 2020 ranged from 0.4% in Comoros and 0.85% in South Africa to 10.07% in Seychelles and 23.54% in Mauritius. Per capita GDP growth rate (YC) averaging 1.33% shows variation, ranging from -26.41% for Angola in 1993 to 18.07% for Zimbabwe in 2010; country data show the average ranging from 1980 to 2020 from -1.57% in Congo DRC and 0.09% in Angola, to 3.21 and 3.34%

respectively in Mauritius and Botswana. Likewise, annual GDP growth (YR) of 3.36% on average varied from -23.98% for Angola in 1993 to 21.02% for Eswatini in 1990. Country data show the average range from 1980 to 2020 from 1.48% in Congo DRC to 5.91% in Botswana. Growth has been slow compared to other developing countries (Dada and Abanikanda 2022). We use the ratio of standard deviation to the mean, also called coefficient of variation (CV), to check the size of the standard deviation and, therefore, the relative level of variability. As a rule of thumb, a CV>1 shows a higher variability, and a CV<1 indicates a lower variability. From CV then openness (0.13), GPD per capita (0.18), gross fixed capital formation (0.35), inflation (0.56) and annual growth rate (0.78) have lower variability compared with the rest. Private credit (25.44), human capital (12.46) and FDI in-stock (8.09) and FID as a percentage of GDP (3.2) have wider variability. Variability is not a severe problem for about half of the independent variables.

Table 2. Descriptive statistics

Variable	Mean	Std. dev	Min	Max
yc	0.350	0.505	-2.677	1.422
gdp	3.016	0.555	-0.721	4.210
yr	0.541	0.422	-2.000	1.380
fdi	0.240	0.769	-2.726	1.763
gfcf	1.228	0.432	-2.000	1.732
opt	1.866	0.240	0.688	2.352
inf	1.013	0.570	-1.398	4.376
pop	0.272	0.351	-2.640	0.779
fdist1	0.038	0.305	-2.342	3.298
crd1	0.011	0.276	-2.958	3.097
human1	0.012	0.145	-1.455	1.327

Note: N (number of total observations) = 640; n (number of cross-sectional units, *i.e.*, countries) =16
Source: Authors' computation 2022

Correlations

Given that computations are made using logs, correlations of logs are presented in Table 3. They indicate a moderate correlation with one another as they are all below the benchmark of 0.8, implying an absence of multicollinearity among the variables (Dada and Abanikanda 2022). Of interest are *fdi* and *fdist,* which have positive though low correlations with growth in per capita income (*yc*), with per capita income (*gdp*) and with the rate of growth of GDP (*yr*), indicating the positive impact of foreign direct investment on economic growth in SADC. Surprisingly, gross fixed capital formation negatively correlates with growths (*yc* and *yr*) and *gdp.*

Table 3 Correlation matrix

	yc	*gdp*	*yr*	*fdist*	*fdi*	*gfcf*	*opt*	*inf*	*crd*	*pop*	*human*
Yc	1.000										
Gdp	0.041	1.000									
Yr	0.424	-0.026	1.000								
Fdist	0.056	0.206	0.039	1.000							
Fdi	0.103	0.213	0.152	0.197	1.000						
Gfcf	-0.095	-0.040	-0.016	0.303	-0.090	1.000					
Opt	0.139	0.340	0.074	0.192	0.454	0.031	1.000				
Inf	0.076	-0.459	-0.032	0.037	-0.201	-0.059	-0.064	1.000			
Crd	-0.013	0.565	-0.088	0.160	0.191	-0.093	0.217	-0.405	1.000		
Pop	-0.130	-0.359	-0.033	0.100	-0.262	0.287	-0.244	0.293	-0.323	1.000	
human	0.001	0.758	-0.038	0.148	0.106	-0.160	0.231	-0.436	0.520	-0.407	1.000

Source: Authors' computation 2022

Regression Outputs

Following (Seetanah and Khadaroo 2010), we employ panel data techniques to analyse the role of FDI in economic growth in 16 countries in SADC. We use the Hausman test to test whether to use a random or fixed effect estimation approach. The Hausman test tests the null hypothesis that the coefficients estimated by the efficient random effects estimator are the same as the ones estimated by the consistent random effects estimator. After performing the specification test, random or fixed effects are recommended (notes are provided at the bottom of the tables). We have come up with 28 regressions; 4 for all SADC, 4 for high-income countries; 4 for upper middle-income countries, 4 for lower-middle-income countries, 4 for low-income countries, 4 in which we exclude high-income countries and two for deficient-income countries, and 4 in which we exclude countries with high FDI as a percentage of GDP. Each set of four regressions has two subsets; one where *yc* represents the natural log of the annual growth rate of the real GDP per capita and another where *yr* is the natural log of the annual growth rate of the real GDP. Each treatment of *yc* or *yr* FDI as one of the independent variables is first taken as the natural log of net FDI inflows as a percentage of GDP (*fdi*) and then as a natural log of a measure of FDI in stock (*fdist*). Table 4 presents a selection of regressions where FDI was significant.

Table 4 Regression outputs

	SADC	High Income	Exclude High and Low income	Exclude High FDI
Dependent variable	*yr*	*yc*	*yr*	*yr*
Fdi	0.073 *** (2.590)		0.060 * (1.800)	0.077 ** (2.550)
Fdist		0.381 (2.340) **		
gfcf	0.001 (0.010)	-0.088 (-1.38)	-0.023	-0.018 (-2.40)
Opt	0.061 (0.630)	-0.578 (-0.66)	0.098 (0.900)	0.056 (0.520)
Inf	-0.012 (-0.370)	-0.094 (-0.84)	-0.024 (-0.41)	-0.021 (0.037)
Crd	0.107 * (1.810)	1.024 (1.06)	0.121* (1.86)	0.104 * (1.720)
Pop	-0.002 (-0.040)	-0.152 (-1.25)	0.074 (0.93)	0.003 (0.040)
Human	0,116 (1.030)	1.426 (1.08)	0.102 (081)	0.120 (1.040)
Cons	0.417 (2.210)	0.584 (05.77)	0.322 (1.54)	0.416 (2.180)
N	640	80	480	560
R^2	0.030	0.133	0.025	0.029
Model	re	re	re	re
Wald chi^2	15.43 *P* = 0.0309	11.01 *P* = 0.1381	11.97 *P* = 0.1017	13.78 *P* = 0.0552
Hausman test	*P* = 0.9792	*P* = 0.9990	*P* = 0.9981	*P* = 0.9910

*Notes**: Significant at 10%, ** significant at 5%, ***significant at 1%, *t* statistics in parenthesis;
Source: Authors' computation, 2022

Discussions

- *Foreign Direct Investment*

FDI, which must be part of the model, is proxied as FDI stock inflows (Durham 2004) or FDI inflows as a percentage of GDP (Sawalha *et al.* 2016, Alemu 2017, Malikane and Chitambara 2017), to name a few. Based on our data and the panel data method, we came up with 28 regressions; 6 are not consistent because the model fitted on the data fails to meet the asymptotic assumptions of the Hausman test. In 19 regressions, FDI has a positive effect on growth in SADC, and in 3 regressions, FDI has a negative effect on growth in SADC (all three negative cases are insignificant). Four of the 19 positive cases are significant (3 of which are robust), as presented in Table 3. The effect of FDI is very high for the whole region, mild for the whole region when countries with high FDI are excluded and for high-income countries, and marginal when countries with very high income and two countries with meagre income are excluded.

The findings though somewhat mixed, are more skewed towards FDI augmenting growth in the SADC region and agree with the theoretical argument presented by Borensztein *et al. (*1998), de Mello (1999), Durham

(2004), Castellani and Zanfei (2006), Kemeny (2010), Slajdzic and Mehci (2016), Alemu (2017), Tang and Tan (2018), Opoku *et al.* (2019), Huynh *et al.* (2021), al Faisal and Islam (2022) and with findings of Akinlo (2004), Seetanah and Khadaroo (2010), Alemu (2017), Malikane and Chitambara (2017) as covered in the literature review section above.

- *Gross capital formation*

The impact of gross capital formation on growth has been extensively debated (Akobeng 2017, Ntembe *et al.* 2017, Omoregie and Ikpesu 2017, Turkovic 2017, Reddy and Ramaiah 2020, Zahir and Rehman - no date). The premise is that domestic savings will be invested. In their literature review section, Omoriege and Ikpesu (2017), indicate that the short- and long-term relationship between savings and investment seems to be mixed. While savings lead to investment, in some cases, the link is missing.

Therefore, the findings of Ntembe *et al. (*2017), Omorienge and Ikepsu (2017), Tukovic (2017), Redy and Ramaiah (2020), Zahir and Rehman (n.d., no date) that when combined with other variables like human labour and increase in gross capital formation augments growth are part of the expected outcomes. The impact of gross capital formation on growth may take any sign (not necessarily a positive one). In our study, out of 22 regressions, the effect of gross capital formation on growth is positive in 9 cases and harmful in 13. Of those positive 9, it was significant in 4 cases (1% in two cases, 5% in one case and 10% in another). Furthermore, out of the negative 13, it was 5% significant in 2 cases. So overall, the panel data method used on data from SADC shows that though gross capital formation on growth has a mixed impact on growth, it is more tilted to a positive impact given that out of 6 significant cases, four are positive.

- *Trade openness*

Although the literature on the impact of trade openness on economic growth is mixed, our study on SADC does support the argument that openness has a positive impact on growth (Altaee and Al Jafari 2018, Ahmed and Khan 2018, Silajdzic and Mehci 2018, Jena and Sethi 2019, Jilenga 2022). Out of our 22 regressions, the effect of openness to growth was positive in 18 cases and negative in 4. Of those positive 18, it was significant in 11 (2 at 1%, three at 5% and six at 10%) cases; and in all seven negative cases, seven none was significant.

- *Inflation*

Studies on the impact of inflation on economic growth can be positive (Uddin 2022) or negative (Anghelache *et al.* 2021), or even mixed or inconclusive (Mandeya 2021). Yilmazkuday (2022), found that the strength of institutions tends to influence the results; 'While the effects of inflation on growth are negative and significant in countries with stronger institutions, they are positive and significant in countries with weaker institutions.' However, (Mandeya 2021), makes a good contribution in a literature review in which he shows that the outcome of any study on inflation versus economic growth depends on how it is conducted. Most of the studies that examine the joint impact of both inflation and inflation uncertainty on economic growth, which is the most comprehensive approach, find the collective impact as unfavourable to economic growth. Also, there is a tendency in many cases for studies examining the impact of inflation on economic growth without controlling for the role of inflation uncertainty to come up with a negative impact.

Nevertheless, there is no consensus for those looking at the impact of inflation uncertainty on economic growth without controlling for the role of inflation; some may come up with a negative impact, while some may have a positive impact on inflation uncertainty on economic growth. In our case on SADC, out of 22 regressions, the effect of inflation on growth was positive in 8 cases and negative in 14 (all were not significant). Of those positive eight, it was enormously significant (1%) in 3 cases. So overall, the panel data method used on data from SADC draws a picture that inflation has a positive impact on growth. We cannot make any conclusive statement because, in our study, inflation was one of the variables that affected economic growth. Though we can speculate that there may exist weak institutions that have led to inflation playing an augmenting role, as noted by Yilmazkuday 2022 above.

- *Private sector credit*

As seen above, the impact of FDI on economic growth will depend on the absorptive capacity of the host economy (Borensztein *et al.* 1998, de Mello 1999, Durham 2004, Alemu 2017). So, we turn to other variables that were included in the regressions. Overall, out of 22 regressions, the effect of private sector credit on growth was positive in 18 cases and negative in 4. Of those positive 18, it was marginally significant in 3 cases, as displayed in Table 3. Moreover, out of the negative four, it was marginally significant in one case where every one percentage point increase in private domestic credit led to the drop of GDP by 2.06% in the upper middle-income group.

However, overall, the panel data method used on data from SADC shows that private sector credit positively impacts growth.

- *Population*

The population economic growth nexus is still debatable. A few points are listed here to provide a picture. First is a general observation that if population growth leads to faster aggregate human capital accumulation, faster technological progress, and thus to a higher productivity growth rate, then it will lead to economic growth. However, if faster population growth slows down aggregate human capital accumulation, it dampens the rate of technical change and thus reduces productivity growth, leading to slow economic growth (Bucci and Prettner 2021). Second is the outcome of a discussion by (Peterson 2017). He suggests that the findings on the relationship between population growth and economic growth depend on the study's theoretical base. If it is neo-classical, where savings and population are exogenous, then population growth will negatively impact economic growth.

Nevertheless, if it is based on endogenous growth models, population growth will likely lead to economic growth. However, he comes to the point where empirical findings are mixed. Some attribute the negative impact to the agrarian nature of the economy, while others suggest that the impact is positive in economies with specialist and developing human capital, and others do not come up with expected results; it is inconclusive. The third is empirical and part of the inconclusive cohort where (Luo 2020), found that the retired section of the population section leads to economic growth, especially in democratic regimes. Our case may also be filed in the inconclusive bundle in that out of 22 regressions, the effect of population growth on growth was positive in 8 cases that were all not significant and negative in 14.

Moreover, out of the negative 14, it was significant in 5 (1 at 1%, two at 5% and two at 10%) cases. So overall, the panel data method used on data from SADC shows that population growth hurts growth. From (Bucci and Prettner 2021) above, there seems to have not been an accompanying human capital development with population growth in SADC.

- *Human capital*

The proxy for human capital varies from study to study. Akinola (2004) uses the measure of educational level and return on education to raw labour input which is human capital proxied by the share of university, polytechnics, and colleges of education students in the population. Alemu (2017), breaks human capital down into two components: education, which is captured by the enrolment ratio, and health, which is estimated by life expectancy. Lack of this clarity means there can be varied outcomes in the estimates of β_{is}. This study uses secondary school enrolment as a measure of human capital. Pelinescu (2015), has good coverage in the literature where, among other things, she shows that education, innovation and research and development enhance labour productivity which augments growth. Quite some studies suggest a positive impact of human capital on economic growth (Eigbiremolen and Anaduaka 2014, Pelinescu 2015, Alatas and Cakir 2016, Rambeli *et al.* 2021). Likewise, our study on SADC draws a similar picture that human capital positively impacts growth. Out of 22 regressions, the effect of human capital on growth was positive in 15 cases and negative in 7. Of those positive 15, the impact was marginally significant in 2 cases, both in the lower middle-income group. Moreover, out of the negative seven, it was marginally significant only in one case in the upper middle-income group. Following the findings on the population above, the findings on human capital here are inconclusive.

Conclusion

Theoretically, FDI is expected to close the savings gap or lead to capital accumulation by increasing current savings, thus increasing economic growth in host countries where multinational companies make investments. Besides, it can be asserted that FDI plays an essential role in increasing economic growth by creating positive externalities in the local market, increasing the productivity of physical capital, providing productivity gains, creating employment opportunities, and leading to technological development and its spread.

Moreover, FDI increases the quality of a host country's human capital and improves local firms' know-how and management skills. In this paper, we test for the impact of FDI on economic growth for 16 countries of SADC during the period 1980-2020. The model includes FDI as an independent variable and control variables to obtain a comparatively fully specified model. These variables are considered essential in determining FDI's more dynamic indirect impact on economic growth. The results of our empirical analysis are inconclusive. Although countries with higher levels of human capital and financial sector development seem to have taken advantage of their position to use FID to enhance economic growth, their results are insignificant. However, countries with higher levels of financial sector development have experienced a negative impact of FDI on economic growth.

Given this, the policy measures may include the government first prioritizing the productive investment that is supportive of local private as well as foreign sectors; second, having a well-directed policy effectively in line with the development of human capital, which entails improving institutions, including the development of school enrolment; third to develop an infrastructure that includes the improvement of the financial sector (Sawalha and Suliman 2016); and fourth at a broader level to improve on market liberalization policies that would influence on inward net capital based on the composition of the capital inflows desired.

From these results, we provide suggestions for further research. First, regarding the practical research design, there is a need to consider differences in levels of technological development and proficiency across SADC economies. Second, one should be cautious about selecting proxies for the financial sector and human capital. A poor choice of proxies may lead to misleading conclusions and, thus, inaccurate policy implications. Third, the width of the study panel may influence results. We suggest more comprehensive country panel data be used because the results would be more reliable.

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