FDI and economic growth in SADC region

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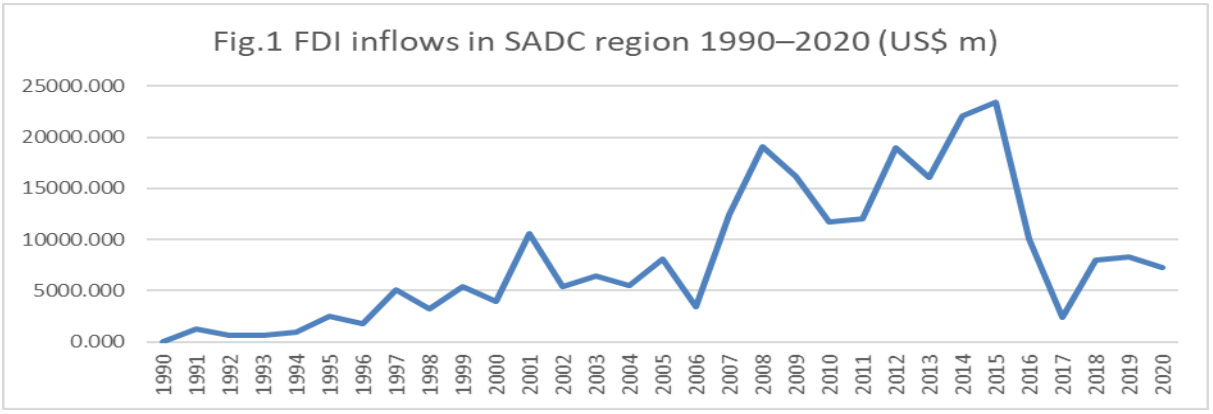
Abstract

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 on 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, promotion of market liberlisation, the improvement of financial sector and the need for policy measures that prioritise productive investment that is supportive of local private as well as foreign sector; the latter does provide positive spillovers to other sectors.

1. Introduction

Most countries have experienced growth in foreign direct investment (FDI) inflows after liberalising trade (Asirvathan *et al.* 2017; Bekana, 2016; Benli, 2016; and Sehleanu, 2017) following the adoption of economic reforms (Jayaraman *et al.* 2017; and Vogiatzoglou and Nguyen, 2016). Southern African Development Community (SADC) countries in particular did massive efforts to make economic reforms and liberalise their trade. Despite the lingering of structural constraints and deficiencies in SADC, these measures had a huge impact on FDI inflows (Gammoudi and Cherif, 2016).

SADC received US$252.93 bn between 1990 and 2020 roughly on third (27.9%) of all FDI net inflows to Africa (US$970.57bn). Although it was an insignificant amount (0.79%) compared to world net inflows (US$31911.66) (UNCTAD, 2022), it is still a useful form of resources needed to augment domestic resources in enhancing economic growth. Figure 1 below provides a picture on the net inflows for 1990 to 2020 and Table 1 shows the way FDI is distributed by income group. As can be seen much FDI (44% of net inflows) tended to flow more to the high income group, comprised of only two countries - Mauritius and Seychelles, which happen to be tax heavens. This is in contrast to the 3.7% that flows to low income has four countries (Congo Democratic Republic, Malawi, Mozambique and Madagascar) which happen to be resource poor.



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

This paper tests the impact of FDI on economic growth in SADC economies. It also explores whether this inflow generates synergies in boosting economic growth. A cross-sectional time series growth regression was estimated for 16 SADC economies between 1980 and 2020 using panel data methods. Our dependent variable is either the annual growth rate of the real GDP per capita or the annual growth rate of the real GDP. The independent variable of main interest is FDI net inflows as a percentage of GDP; while control variables include gross domestic capital formation, trade openness, inflation, private sector credit, population growth rate and human capital. This paper is a contribution to the current debate in the impact of FDI on economic growth in the SADC region as it covers all 16 countries using updated panel data up to 2020. The remainder of this paper is organized as follows. The next section discusses the literature review; Section 3 describes the method used in this study; data sources are shown in Section 4; the empirical results are presented and discussed in Section 5; Section 6 concludes and suggestions for further research are given in Section 7.

2. 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

growth 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 and therefore higher rate of capital formation (Seetanah and Khadaroo 2007, and Dada and Abanikanda 2022). 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) and 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, Seetanah and Khadaroo 2007, and 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, and 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 and 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 and 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 (2007), Ramirez (2011), Ipek and Kizilgol (2015), Bbale and Nnyanzi (2016), Sawalha, *et al.* (2016), Alemu (2017) and 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. Akinlo (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) are owned by multinationals, is highly capital intensive with few local backward linkages, and is therefore disconnected from the economy. Seetanah and Khadaroo (2007) 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 to experience 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 (Akinlo 2004, Alfaro *et al.* 2004, Durham 2004, Ipek and Kizilgol 2015, and 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, openness, etc. but 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 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 TFC). 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.

All in all, 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) covered 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, are omitted) 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.

Methodology

3.1. Scope of study

The objective of this paper is to analyse the role played by 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; etc. These differences are not taken into account in our estimations; though in part we look at how they fair according to their income grouping.

3.3. Model specification

There is no agreed specification of a growth model especially given that there are so many variables (more than 60) that can be included and come out significant (Sala i Martin 1977). However there is a family of variables that tend to appear in these specifications. Growth rate of GDP per capita (Carkovic and Levine 2002, Sawalha *et al.* 2016, Alemu 2017, Malikane and Chitambara 2017 and Dada and Abanikanda 2022), growth rate of GDP (Mencinger 2003, Lyroudi *et al*. 2004, Ipek and Kizilgol 2015 and Seyoum *et al.* 2015), share of investment on GDP (Ipek and Kizilgol 2015) and on rare occasions GDP (Akinlo 2004 and Seetanah and Khadaroo 2007) 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 of always included in the regression, a set of variables of interest, and set of variables identified by past studies as potentially important explanatory variables of growth (Levine and Renelt 1992 and Durham 2004). In this study similar variables are used following the formulation of Naanwaab and Diarrassouba 2016 and 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 percentage of GDP or the natural log of a measure of FDI instock. 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, human* have been explained above.

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

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

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

3. Data Sources

4.1. Sources

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

1. UNDP Human Development Report - *human* - Human capital is percentage of secondary Schooling enrolment.
2. United Nations Population Division: World Population Prospects - *pop* - annual population growth rate
3. UNCTAD: *fdist* - FDI in stock in US$ m
4. World Development Indicators
    a. *Yc* – annual growth rate of per capita GDP
    b. *Yr* – annual growth rate of GDP
    c. *gdp* - per capita GDP

d. *fdi* - FDI inflows as percentage of GDP

e. *gfcf* - Gross capital formation as percentage of GDP

f. *opt* - exports and imports as percentage of GDP

g. *inf* – annual rate of inflation as measured by CPI

h. *crd* - private credit as percentage of GDP

5. Results and discussion

5.1. Missing data

We note that our results may have some bearing from missing data. Whereas data is available in all variables that we use there are a few in specific countries like Namibia, Malawi and Zimbabwe where data was not complete in certain variables. 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 that are were missing for 1982 to 1989 in Malawi are very high and unrealistic. The STATA programme seems to treat the 1980s period as the latter half of 2000s and 2010s with values that are roughly 5 to 10 times higher those of 1990s. Any approach we use to treat missing data then has an impact on the outcome of the parameters..

5.2. Panel unit root test

Before embarking on the analysis panel unit root tests are important to test the stationarity of the variables. We carry out panel unit root tests on the dependent and all independent variables. We find that *fdist, crd,* and *human* have unit roots and make correction after taking first differences and come up with all variables that are stationary.

5.3. Summary Statistics

The values presented in Table 2 below apply to all 16 countries combined for instance the log of annual growth of GDP (*yr*) was 0.541 ranging from -2.0 to 1.38 both for Angola respectively in 1982 and 1993; and the log of FDI for all SADC as 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 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 for the period of 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 -23.98% for Angola in 1993 to 21.02% for Eswatini in 1990. Country data show the average ranging for the period of 1980 to 2020 from 1.48% in Congo DRC to 5.91% in Botswana. Overall growth has on average 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 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. Overall then variability is not a serious problem to 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

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

5.4. Correlations

Given that computations are made using logs, correlations of logs are presented in Table 3. They indicate a moderate degree of correlation on 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 a 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 has a negative correlation with both growths (*yc* and *yr*) and with *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

5.5. Regression Outputs

Following Seetanah and Khadaroo (2007), we employ panel data techniques to analyse the role of FDI in the economic growth in 16 countries in SADC. We use the Hausman test to test whether to use a random effect or a 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 use of either random effects or fixed effects is recommended (notes are provided are the bottom of 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 very low 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. In each treatment of *yc* or *yr* FDI as one of the independent variables is first taken as the natural log of a measure of net FDI inflows as percentage of GDP (*fdi*) and then as a natural log of a measure of FDI in-stock (*fdist*). Table 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

5.6. Discussion

FDI

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 and Malikane and Chitambara 2017) to name a few. Based on the data we have and the panel data method we have used we come up with 28 regressions, 6 of these 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 3 negative cases are not significant). Of the 19 positive cases 4 are significant (3 of which are robust) as presented in Table 3. The significance of 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 very low income are excluded. The findings though fairly mixed are more skewed towards FDI augmenting growth in SADC region and are in agreement 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, and al Faisal and Islam 2022) and with findings of Akinlo 2004, Seetanah and Khadaroo 2007, Alemu 2017 and Malikane and Chitambara 2017 as covered in the literature review section above.

Gross capital formation

The impact of gross capital formation on growth has had extensive debate (Akobeng 2017, Ntembe *et al.* 2017, Omoregie and Ikpesu 2017, Turkovic 2017, Reddy and Ramaiah 2020, and Zahir and Rehman no date). The premise is that domestic savings will be invested. In their literature review section Omoriege and Ikpesu (2017) indicate both a short and long run relationship between savings and investment seems to be mixed. While in some cases savings lead to investment, in some the link is missing. Therefore the findings by Ntembe *et al.* (2017), Omorienge and Ikepsu (2017), Tukovic (2017), Redy and Ramaiah (2020) and Zahir

and Rehman (no date) that when combined with other variables like human labour an increase in gross capital formation augments growth are part of the expected outcomes. That is 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 negative in 13. Of those positive 9 it was significant in 4 cases(1% in two cases, 5% in one case and 10% in another). And out of the negative 13 it was 5% significant in 2 cases. So overall the panel data method used on data from SADC draws a picture 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 4 are positive.

Trade openness

Although literature on the impact of trade openness to 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, Shakil and Imran 2018, Silajdzic and Mehci 2018, Jena and Sethi 2019, and 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%, 3 at 5% and 6 at 10%) cases; and in all 7 negative cases 7 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 such a good contribution in a literature review on which he show 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 joint impact as negative to economic growth. Also there is 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 negative impact. But 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 to growth was positive in 8 cases and negative in 14 (all were not significant). Of those positive 8 it was strongly 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 on 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 and 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 to 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. And out of the negative 4 it was marginally significant in one case in which every one percentage point increase in private domestic credit leads to the drop of GDP by 2.06 percent in the upper middle income group. But overall the panel data method used on data from SADC draws a picture that private sector credit has a positive impact on 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, to faster technological progress, and thus to a higher growth rate of productivity then it will lead to economic growth. But if faster population growth slows down aggregate human capital accumulation, it dampens the rate of technical change, and thus reduces productivity growth, it will lead to a slow down of economic growth (Bucci and Prettner 2021). Second is the outcome from a discussion by Peterson (2017). He suggests that the findings on the relationship between population growth and economic growth depend on the theoretical base of the study. If it is neo classical where savings and population are exogeneous then population growth will have a negative impact on economic growth. But is it is based on endogenous growth models it is likely to come up with a finding that population growth will lead economic growth. However he comes to the point where empirical findings are mixed. Some attribute negative impact to the agrarian nature of the economy; while others suggest that the impact is positive in economies with

specialist and developed human capital; and others do not come up with expected results; it is inconclusive. The third is empirical and is part of the inconclusive cohort where Luo (2020) came up with a finding that the retired section of 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 to growth was positive in 8 cases that were all not significant and negative in 14. And out of the negative 14 it was significant in 5 (1 at 1%, 2 at 5% and 2 at 10%) cases. So overall the panel data method used on data from SADC draws a picture that population growth has a negative impact on growth. From Bucci and Prettner 2021 above then 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. Akinlo, 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 enrolment ratio; and health, which is estimated by life expectancy. Lack of this clarity means there can be varied outcomes in the estimates of $\beta_{is.}$ In this study secondary school enrolment is used as a measure of human capital. Pelinescu (2015) has a good coverage on the literature where, among other things, she shows that education, innovation and research and development enhance labour productivity which augments growth. Quite a number of 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 in our study on SADC draws a similar picture that human capital has a positive impact on growth. Out of 22 regressions the effect of human capital to growth was positive in 15 cases and negative in 7. Of those positive 15 the impact was marginally significant in 2 cases, both in lower middle income group. And out of the negative 7 it was marginally significant only in one case in the upper middle income group. Following the findings on population above the findings on human capital here are inconclusive.

6. Conclusion

Theoretically FDI is expected to close savings gap or lead to capital accumulation by increasing current savings, and thus to increase economic growth in host countries where multinational companies make investments in. Besides, it can be asserted that FDI plays an

important role in increasing economic growth by creating positive externalities in local market, increasing productivity of physical capital, providing productivity gains, creating employment opportunities, leading to technological development and its spread. Moreover, FDI increases the quality of the human capital of a host country and improves know how and management skills of local firms. 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 the more dynamic indirect impact of FDI on economic growth. The results of our empirical analysis are inconclusive. Although countries with higher levels of human capital and higher levels of financial sector development do seem to have taken advantage of their position to use FID to enhance economic growth, their results are not significant. However countries with higher levels of higher levels of financial sector development have experienced a negative impact of FDI on economic growth. In view of this the policy measures may include the government to first prioritise the productive investment that is supportive of local private as well as foreign sector; second to have a well-directed policies 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 financial sector (Sawalha and Suliman, 2016); and fourth at a wider level to improve on market liberalization polices that would influence on inward net capital based on the composition of the capital inflows desired.

7. Further research

From these results we provide suggestions for further research. First, as regards the empirical research design, there is the need to take account of differences in levels of technological development and proficiency across SADC economies. Second, one should be cautious about which proxies for the financial sector and human capital are selected. 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 that a wider country panel data should be used because the results would be more reliable.

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