# Do Tax Incentives Attract Foreign Direct Investment? The Case of the Southern African Development Community

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**Abstract:** The problem of low domestic savings is inherent in most Southern African Development Community (SADC) countries. This has motivated most of the SADC countries to institute policies that seek to attract foreign capital to cover the investment deficit that arises from low domestic savings rates. In separating individual tax incentives mainly used in the SADC region, this study gives a robust analysis on the impact of each tax incentive on FDI inflows into SADC countries. The tax incentives used in this study are: tax holidays, corporate income tax (CIT), reduced CIT in specific sectors and losses carried forward. The study, in consultation with data from the period 2004 to 2013 separates the SADC countries into four panels based on resource richness. Panel 1 includes the resources-rich countries, Panel 2 the resources-poor countries, Panel 3 all SADC countries, except South Africa and Panel 4 all the SADC countries. The study adopts a system Generalised Method of Moments (SYS GMM) methodology to address the problem of endogeneity associated with dynamic panel data models. The estimated results established that tax holidays positively explain FDI inflows in Panel 2. CIT was found to negatively affect FDI inflows into all SADC countries despite their particular category of resource-richness. Losses carried forward are insignificant in all panels and reduced CIT in specific sectors negatively influences FDI inflows in Panel 1 and surprisingly positively influences FDI inflows in Panel 2.

**Keywords:** tax incentives; foreign direct investment; SADC; corporate income tax (CIT); tax holidays

**JEL Classification**: E62

## 1. Introduction

Economic growth and development is a goal pursued by all African countries. However, realisation of growth and development remains a dream if there are no meaningful investments in an economy. Sub-Saharan Africa has a problem of low savings projected to be 18% of gross domestic product (GDP) in 2005, due to low incomes which create perennial deficits of investment funds. (World Bank, 2004) Therefore all regions in Africa, including the Southern African Development Community (SADC) rely heavily on foreign capital to cover the investment-savings gap and ensure sustainable growth and development in their economies.

Lack of investment in a country creates socio-economic problems mainly centred on unemployment and poverty. These two socio-economic problems have existed in Africa and indeed in the SADC since time immemorial. Akrami (2008) advised that, given the nature of capital that is required by developing countries to efficiently and effectively utilise the natural resources they have, it is important for them to source foreign capital.

There are two broad types of foreign investments that are crucial to developing countries to ensure growth and development: portfolio or indirect investment and foreign direct investment (FDI). Portfolio investment involves the purchase of a stake in an enterprise by a foreign equity investor. FDI is the acquisition and control of the productive operations of a firm in a foreign country (Muradzikwa,

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2002). Both investment types have received attention from policy makers. However the most dominant investment type in the SADC is FDI which involves fixed capital formation due to dominance of the natural resources sectors in the region. Therefore, the focus of this paper will be on FDI.

Tax incentives have various definitions; Bolnick (2004) defines tax incentives as fiscal measures used by governments to attract investment domestically and internationally in certain key sectors of the economy. Zee, Stotsky and Ley (2002) defines tax incentives in statutory and effective terms in which a special tax provision is granted to qualifying investment projects and this provision would not be applied to other investment projects outside the selected qualifying categories.

There are quite a number of empirical studies on the effectiveness of tax incentive in attracting FDI. Tiebout (1956) in Onyeiwu and Shrestha (2005) conclude that the effectiveness of tax incentives in attracting FDI depends on the tax incentives and public goods provision mix in the host nation. Typically FDI location favours nations with the highest public goods provision and lowest tax burden mix. The Organisation for Economic Cooperation and Development (OECD) (2001) notes that governments employ taxation for various political and policy objectives and this are very similar across many economies. Tax incentives fall in the broad category of governments tax systems, thus they are expected to achieve similar objectives, apart from attracting internationally mobile capital. Developing countries offer tax incentives for a variety of reasons, chief amongst them being to counter the negative effects of a bad tax system and to achieve a common regional economic development. (Holland & Vann 1998) The effectiveness of tax incentives in attracting FDI is a highly debatable issue with a number of studies finding non-tax factors more effective than tax incentives (Onyeiwu & Shrestha, 2005, Bolnick, 2004; Sudsawasd, 2008), and others view fiscal incentives as central to FDI attraction. (Hassett & Hubbard, 2002; Sato, 2012)

Chai and Goyal (2008) in a study to compare the benefits and the costs of tax concessions reckon that the cost of tax incentives is larger than the benefits. They used data from small island states in the Eastern Caribbean Currency Union. By comparing the costs of tax concessions they concluded that the region needed to move away from using tax concessions since they were found to be costly. Šimović and Žaja (2010) performed a review of tax incentives used in Western Balkan countries, that is, in Slovenia, Croatia, Serbia, Montenegro, Macedonia and Albania. The survey-based study concluded that like other transitional economies, the Western Balkan countries use tax incentives in under developed regions to attract investment and to develop the regions. Using the firm-level data from 30 Sub-Saharan Africa (SSA) countries, Kinda (2014) revealed that infrastructure, human capital, and institutions, are influential in attracting FDI and taxes are not. Taxes were found to be ineffective in attracting both vertical FDI and horizontal FDI. In a panel of 35 Central and East European countries, Bellak and Leibrecht (2005) found that corporate tax rates were lowered in the region in a quest to attract international capital. The study revealed that the semi-elasticity tax rates on capital movement between trading countries was -2.93. This shows that lowering tax rates has been successful in attracting FDI in the region.

Therefore, these evidences show that there is no solid conclusion on the effectiveness of tax incentives and these can be attributed to the differences in the structure of these economies. It is against this background, that this study seeks to probe the importance of independent fiscal policy decisions taken by the SADC member states with their different resource endowments, in implementing tax incentives for improving their economies' attractiveness to FDI inflows.

Given the profound changes in the economic, social and political environment in the SADC region, the traditional areas of cooperation such as tax harmonisation take on a totally new dimension. The need to establish the nature of contribution tax incentives have, in bringing the much needed FDI is important in the tax design strategies of SADC economies. Many developing countries actively use tax incentives as a foreign capital attraction policy and therefore, tax cooperation in the SADC might be the best route to ensure the region's competitiveness as an investment destination given the integration efforts of countries in the region. (Robinson, 2005; Klemm & Van Parys, 2009)

In this study the effectiveness of tax incentives in attracting foreign direct investment into SADC is investigated using panel econometric estimation method. To provide robust conclusions on the effectiveness of tax incentives, SADC countries are separated into four groups according to resource richness, thereby bringing together those countries with similar characteristics. The tax incentives are captured as tax holidays, corporate income tax (CIT), reduced CIT in specific sectors and losses carried forward. Each of the estimated models in this study, use individual tax incentives variables to avoid the effects of collinearity between different tax incentives variables and to improve the predictive power of the panel data models.

The results suggest that, generally tax incentives have significant mixed effects on FDI attraction in the four different panels of the study. CIT was found to have a significantly negative effect on net FDI inflows into all four panels of the study. Therefore, increasing CIT in the SADC hinders FDI inflows. Tax holidays had mixed results in all four panels. In the resources-poorer SADC countries, increasing tax holidays attracts more foreign capital while in the resources-rich countries of SADC, tax holidays discourage investors from investing in the region. Losses carried forward are insignificant but positively signed in most of the panels and indicating that FDI in the SADC prefers longer losses carried forward. Reduced CIT shows that increasing taxes in specific sectors affects overall FDI inflows in the SADC. But in the resources-poorer countries reduced CIT significantly explained positive FDI inflows into the SADC.

Section 2 which follow presents theoretical framework, methodology and data analysis, while Section 3 analyses the empirical results from the estimations performed in the study. Section 4 concludes the study and proffer policy recommendations.

## 2. Theoretical Framework, Methodology and Data Analysis

### 2.1. Theoretical Framework

Theoretical and empirical literature on the determinants of FDI inflows in developing and developed countries points to policy and non-policy factors. (Mateev, 2008) Policy variables are those that the government can influence directly such as: tax incentives, labour market regulations, trade policies, and infrastructure and governance policies. Non-policy variables are market size, political and economic stability and natural resource endowments.

The study on factors that influence the locational decisions of MNEs using panel data has attracted various methodologies based on different theoretical underpinnings. The most prominent models are the gravity and Dunning's (1993) OLI models. (Mateev, 2008)

The theoretical model adopted in this study is the eclectic paradigm initiated by Dunning. (1979, 1993) The model offers a conceptual framework for micro and macro level factors that influence an investor's decision on the final investment destination. (Anyanwu, 2011) The model suggests that

firms invest abroad based on three types of advantages: ownership (O), location (L) and internalisation (I) thus it is also called the OLI paradigm.

The ownership advantage entails that a firm investing in a foreign market expects to compete with local firms in taking advantage of its peculiar benefits such as patent rights, expertise and intangible assets. The ownership advantage inspires the investors to exploit foreign markets and resources, overcoming the competitive disadvantage they face from local firms who enjoy better market knowledge. (Dunning & Lundan, 2008)

The locational advantages are those attributes the host nations have that makes it more attractive to investors than other destinations. (Anyanwu, 2011) The locational advantages include the macroeconomic environment of the host nation, government policies that enhance ease of doing business in an economy and the protection of property rights.

Internalisation arises from exploitation of international market imperfections by reducing uncertainties and transaction costs. (Anyanwu, 2011) Internalisation of costs generates knowledge efficiently there-by reducing government created costs such as exchange controls, trade tariffs and taxes.

In combining the tenets of this OLI theory Fedderke and Romm (2006) identify policy and non-policy factors that determine the locational decisions of MNCs. Policy factors are identified as those that governments can influence such as: tax rates, tax incentives, trade barriers, infrastructure, openness, product regulation and labour market regulations. Non-policy factors are identified amongst other factors, as: market size, and political and economic stability.

Dunning (1988) concludes that the locational advantages in FDI motivation determines where production must take place and is of paramount importance in this study. The locational advantages identify the peculiar characteristics of a location which makes it attractive such as: natural resources, market size, infrastructure, governance, legislation that support FDI, tax policies, exchange control policies, patent rights laws and licencing legislation.

Against this theoretical background, the study specifies the following theoretical models:

Model A

$$FDI = f(hol, gov, mrkt, \inf r, natr, open, finG, EP) \tag{1}$$

Model B

$$FDI = f(CIT, gov, mrkt, \inf r, natr, open, finG, EP) \tag{2}$$

Model C

$$FDI = f(Lossescf, gov, mrkt, \inf r, natr, open, finG, EP) \tag{3}$$

Model D

$$FDI = f(\operatorname{Re}dcdCIT, gov, mrkt, \inf r, natr, open, finG, EP) \tag{4}$$

Where $FDI$ is the net FDI flows as a % of GDP, $hol$ are tax holidays, CIT is corporate income tax, lossescf are losses carried forward, redcdCIT is reduced CIT in specific sectors, gov is the level of governance, mrkt represents market potential (proxy by GDP), infr is infrastructure index, natr are natural resource endowments (proxy by total natural resources rents as a % of GDP), open is trade

openness (proxy by trade as a % of GDP), finG is financial globalisation and EP is an index for economic policy[1].

Since tax incentive variables are highly correlated, for example, some of the incentives such as lower CIT, losses carried forward and investment allowances; they may be part of the package which falls under tax holidays. Therefore, the effects of each tax incentive are estimated in independent models. Model A will estimate tax holidays, model B - CIT, model C - losses carried forward and model D will estimate reduced CIT in specific sectors.

## 2.2. Econometric Methodology

The study estimates four panel data equations for each model, Panel 1 has the six highest resource-rich SADC countries according to the World Bank natural resource indicators, Panel 2 includes seven least resource-rich countries, Panel 3 consists of all the SADC countries except South Africa (which is an outlier in resource richness and growth) and Panel 4 includes all the SADC countries.

### 2.2.1. System GMM Estimation

This study's panels have a small number of years (2004-2013), therefore efficient estimators are found using the Blundell and Bond (1998) SYS GMM estimator. Baltagi (2005) reports that there is a need to utilise the initial conditions in generating efficient estimators when using dynamic panel data estimation, given the small time series in the data. The estimation of dynamic panel data models, specified below in equations A-D, poses two major challenges using macroeconomic data. (Okodua, 2011) The first one is the existence of endogenous and predetermined covariates. Which means that, there is a problem of autocorrelation and heteroskedasticity in dynamic panel data models due to the use of lagged dependent variable as an explanatory variable.

Due to the complicated nature of tax laws especially the complicated nature of formulating and implementing statutes, there is difficulty in changing tax laws. Thus tax rates and laws run for a long period before they are changed. Current tax law affect investment decisions and portfolio choice in an economy. This may in turn affect future tax law formulation which leads to dynamic endogeneity in the data. Thus, the observed cross-sectional differences in the countries' data are due to unobserved heterogeneity and country tax law history. Efficient estimators must therefore cater for country endogeneity to produce accurate estimators, hence the choice of the SYS GMM method.

Endogeneity in panel data analysis is solved by the choice of SYS GMM Estimator. (Okodua, 2011) Thus to estimate the relationship between tax incentives and FDI the study employs the SYS GMM Estimator to overcome the endogeneity problem.

The models took the form:

Model A

$$FDI_{it} = \phi FDI_{i,t-1} + \alpha_i hol + \beta_1 In\_gov + \beta_2 mrkt + \beta_3 \inf r + \beta_4 In\_natr + \beta_5 In\_open + \beta_6 In\_finG \\ + \beta_7 EP + \lambda_i + \delta_t + \nu_{it} \tag{5}$$

Model B

$$FDI_{it} = \phi FDI_{i,t-1} + \alpha_i In\_CIT + \beta_1 In\_gov + \beta_2 mrkt + \beta_3 \inf r + \beta_4 In\_natr + \beta_5 In\_open \\ + \beta_6 In\_finG + \beta_7 EP + \lambda_i + \delta_t + \nu_{it} \tag{6}$$

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[1] See data analysis section for detail explanation on how some of the variables are derived.

Model C

$$FDI_{it} = \phi FDI_{i,t-1} + \alpha_i In\_lossescf + \beta_1 In\_gov + \beta_2 mrkt + \beta_3 \inf r + \beta_4 In\_natr + \beta_5 In\_open \\ + \beta_6 In\_finG + \beta_7 EP + \lambda_i + \delta_t + \nu_{it}$$ (7)

Model D

$$FDI_{it} = \phi FDI_{i,t-1} + \alpha_i redcdCIT + \beta_1 In\_gov + \beta_2 mrkt + \beta_3 \inf r + \beta_4 In\_natr + \beta_5 In\_open \\ + \beta_6 In\_finG + \beta_7 EP + \lambda_i + \delta_t + \nu_{it}$$ (8)

Where $\lambda_i$ captures country-specific effects that are time-invariant, $\delta_t$ captures year-specific effects and $\nu_{it}$ is the disturbance term, with $i$ denoting countries (cross-country dimension), and t denoting years (time-series dimension).

Therefore, the estimations follow the leads of Blundell and Bond (1998) SYS GMM estimator: the autoregressive panel data model is specified as:

$$FDI_{it} = \phi' FDI_{it-1} + \alpha_1' X_{it} + \alpha_2' X_{it-1} + \beta_1' Y_{it} + \beta_2' Y_{it-1} + \mu_{it} ................................................2$$

Where- $i = 1,........,N$ $and$ $t = 2,.............,T$. In the model $\mu_{it}$ is decomposed into unobservable individual specific effects so that $\mu_{it} \equiv \lambda_i + \nu_{it} + \delta_t$ where $\lambda_i + \nu_{it} + \delta_t$ is the usual fixed effects decomposition of the error term.

## 2.3. Data Analysis

The data used in this study has been obtained from World Bank Databank; African development indicators, Ernst &Young's global tax data and Worldwide Governance Indicators. The data covers thirteen SADC countries over the period 2004 to 2013. The study chose this time period since the recent tax incentive data from Ernst & Young captures this period. The data is derived from individual country tax statutes and from reports which recorded consistent and similar tax structures for SADC countries. All data is expressed in natural logarithms[1] except for data with negative values.

Tax incentive data is not readily available since it is contained in statutory instruments which are not standardised. (Klemm & Van Parys, 2009) Therefore, in defining variables the study standardised the data and established a trend of how each tax incentive was applied in each year throughout the study period.[2] Given the constraint in obtaining some data directly from the above sources, the following provides a detailed explanation of how some variables used in the study are generated:

### 2.3.1. Tax Holidays

To measure tax holidays the study follows the lead of Klemm and Van Parys (2009) in using the maximum tax holiday given to investors in the economy in a given year. The length of a tax holiday is important in attracting FDI as longer holidays ensure longer periods of a lighter tax burden on the investor.

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[1] Log transformation of the data in time series data analysis is important to stabilise the variance. However because there are no logarithms for negative values log transformation of data with negative values will cause loss of data points.
[2] The study measures individual tax incentives to help policy makers in choosing the actual tax incentives to use in FDI attraction. This adds to literature on SADC countries (see Calitz, 2013) and Bolnick (2004) that have used METR and AETR which lumps all tax incentives together and fails to separate each tax incentive's contribution to FDI attraction.

Tax holidays are derived from various tax relief measures given to investors. They are predominantly found under corporate tax rates. The study uses the maximum period offered to an investor as tax relief in a given year; it could be a full exemption, reduced rates or other allowances offered by the country.

The study chose the longest tax holidays offered in a year because tax holidays indicate how much an economy is willing to accommodate foreign capital. Thus, a country that offers tax holidays in its strategic sectors is probably going to offer incentives in other sectors since most economic sectors have linkages.

### 2.3.2. Corporate Income Tax Rate (CIT)

The statutory CIT rate was used as a measure for this variable. Shrestha and Onyeiwu (2005) conclude that the CIT rate measures the extent to which corporations are taxed and measures tax on income, profits and capital gains. A low CIT rate is expected to attract and retain foreign investment as it increases returns.

There are various rates of corporate taxes recorded in the Ernst & Young's worldwide corporate tax guides offered in different sectors. This study used the ordinary industrial tax rate as it is the rate that covers more sectors and has a bigger influence in determining investment decisions.

### 2.3.3. Losses Carried Forward

The variable is recorded as relief for losses in the Ernst & Young's worldwide corporate tax guides. It measures the number of years a company is allowed to carry forward tax losses.

In cases where multiple rates exist in different sectors, the study used the least carried forward years used in the manufacturing sector. For the sake of consistency in this study, where the carried forward years are unlimited, it has declared 10 to be the maximum number of years for the claim to be valid.

### 2.3.4. Reduced CIT in Specific Sectors

The lowest tax rate offered to specific sectors was used to measure this variable. This follows the lead of Klemm et al. (2009) in measuring investment allowances which are similar to reduced CIT in specific sectors.

This variable is derived from the tax rate offered in different sectors and the lowest rate offered in the sectors covered by this study. This shows how an economy treats strategic sectors which it wants to grow for the benefit of the whole economy. This measure is used as a proxy to indicate how the policy makers treat strategic sectors.

### 2.3.5. Governance

Kaufmann, Kraay and Matstruzzi (2010) discuss the origin of the worldwide governance indicators (WGI) that have been adopted in this study. In 1996, the WGI (which embraces 200 countries and measures six governance indicators) was initiated. The indicators are: Voice and Accountability, Political Stability and Absence of Violence/Terrorism, Government Effectiveness, Regulatory Quality, Rule of Law, and Control of Corruption. (Kaufmann et al., 2010) The six indicators are important in ensuring ease of doing business and are thus likely to affect the investor's decision to invest in a location. The data is obtained from 31 different data sources including governance perceptions by survey respondances, non-governmental organisations, commercial business information providers, and public sector organisations worldwide.

Kaufmann et al. (2010) define "governance" as "the traditions and institutions by which authority in a country is exercised. This includes (a) the process by which governments are selected, monitored and replaced; (b) the capacity of the government to effectively formulate and implement sound policies; and (c) the respect of citizens and the state for the institutions that govern economic and social interactions among them." These processes, if they are implemented positively in a country, give investors property rights and security in their investments and thus attract further investment. Following the lead of Akanbi (2015) the study measures governance in a broad sense by averaging the six measure in the WGI.

### 2.3.6. Infrastructure

Measuring infrastructure is multi-dimensional with availability and quality of the infrastructure being important to growth. (Calderón & Servén 2010) Most studies on determinants of FDI have captured a single dimension measure of infrastructure, mainly the availability measure proxied by telephone lines per 100 people in the country. The availability of telephone lines indicates a good road network and information delivery through internet services since they are related in their operations.

The study's efforts in seeking robust conclusions on the factors that determine investors' locational decisions in the SADC, adopts the Calderón and Servén (2010) principal component analysis (PCA). This measure produces a synthesis index which captures both the quality and quantity dimensions of infrastructure measurement. The index built from the analysis combines information from the three basic infrastructure measures: telecommunication, power and roads. (Calderón & Servén, 2010) This removes the problem of multicollinearity in using the variables separately in the model.

This method (also adopted by Akanbi (2015) develops a model for the study that measures both the quality and quantity of infrastructure. The model will construct an infrastructure model for the SADC using the PCA method. Following the lead of Akanbi (2013), the study will represent infrastructure stock through a composite index, the physical infrastructure index (PII). Calderón and Servén (2004) state that the stock of physical infrastructure varies across nations based on demographic and geographic factors.

The PCA process involves converting high-dimension groups of indicators into new indices that incorporate information on a different dimension which makes them mutually uncorrelated. Due to the unavailability of data, telephone lines per 100 people is used to proxy road networks. Internet user per 100 people shows the effectiveness of telecommunication networks. Electric power consumption which measures the production of power plants and combined heat and power plants less transmission, distribution, and transformation losses and own use by heat and power plants is used to measure the electricity infrastructure stock.

The aggregate infrastructure stocks index is derived by using the first eigenvectors from the PCA as the weights to establish a linear combination:

$PII = a_1 X_1 + a_2 X_2 + a_3 X_3$ where $a_1, a_2$ and $a_3$ are eigenvectors from the PCA and $X_1, X_2$ and $X_3$ are the three infrastructure stocks. Table A1 in Appendix report the eigenvalues and eigenvectors from the PCA.

### 2.3.7. Financial Globalisation

Financial services are important for investment since they provide a medium for access to investment funds. FDI thrives in economies that are financially open to foreign players. Financial openness

involves reducing capital controls and capital flow restrictions. (Stoianov, 2007) The neoclassical theory suggests that financial globalisation encourages the flow of capital from capital rich countries to capital poor countries in anticipation of higher returns. (Stoianov, 2007)

The measure "financial openness" has two important dimensions, the first one is legal or de jure factors based on elements that restrict or allow capital flows in and out of an economy. (Stoianov, 2007) The second set of measures are de facto indicators which show the extent of trade volumes, capital flows in the economy and the amount of capital foreigners hold in an economy, accessibility of financial services, amongst many others. The two measures are highly correlated; the legal measures indicate government policy towards capital flows and the de facto indicators show the results of the policy and thus a choice should be made as to which indicators to use. (Stoianov, 2007)

Financial globalisation is estimated using the de facto measure which looks at access to financial services in the economy. The study uses the number of commercial banks per 100, 000 adults in the economy, as a measure of financial globalisation.

### 2.3.8. Economic Policy

This study adopts Ojeaga's (2012) single index measure for economic policy. The government's economic policies are regulations set by government to achieve its economic goals and are thus in most cases correlated with each other. Therefore, there is a need for a single index that represents the policies, since using one proxy variable normally gives biased estimates. In this study economic policy was captured using government consumption expenditure and inflation and a single index was developed using principal component anlysis (PCA). Government policies are the various fiscal and monetary policies aimed at macroeconomic stability and inflation and government expenditure covers these policies effectively. Table A2 in Appendix report the eigenvalues and eigenvectors from the PCA for the Economic Policy variable.

## 3. Empirical Results and Analysis

### 3.1. Diagnostic Tests

Tables A3 to A6 in the Appendix contain diagnostic test results from a system GMM estimation of Panels 1 to 4. The estimation results from the four panels were gained from using one-step GMM estimation with constants as specified in econometric models A to D. The model also contains individual year specific effects. These additional ten-year dummy variables are included to increase the instruments and thus improve the efficiency of estimates. (Stoinov, 2007)

The diagnostic test results analysis begins with the model specification test shown by the F-statistic which is highly significant for all four panels at 1% level as shown by the p-values. This indicates that the regressors in the four panels jointly explain the significant variation in the FDI inflows across the selected SADC countries in each panel.

The next important estimation test is the post-estimation Sargan test which tests for over-identifying restriction in the panels. The Sargan test compares the number of instruments used and the parameters in the model. In one-step estimation the Sargan test is considered superior to the alternative Hansen J-test. (Okodua, 2011) In cases where the model fails the Sargan test it indicates a misspecification error. (Chavali, 2014) This is because it minimises the value of the GMM one-step model. The null

hypothesis for the Sargan test is that over-identifying restrictions are valid. The Sargan test rejects the validity of instruments when the probability p-value is less than 0.05. (Chavali, 2014)

Thus, the Sargan test in all the four panels using p-values does not reject over identifying restrictions since all four panels have p-values above 0.05. The diagnostic result, therefore, concludes that the instruments' over-identification restrictions set in each panel are valid.

The models used two differenced lags as instruments to address the problem of short time periods and small cross-sections in the models. The reported AR (1) and AR (2) tests show p-values above 5% in the one-step estimations. Therefore, we accept the null hypothesis of no autocorrelation at 5% level of significance. Therefore, the instruments are not endogenous and estimates are consistent.

### 3.2. Estimated Empirical Models[1]

The SYS GMM estimations in this section produced interesting results on the effectiveness of tax incentives in FDI attraction in the SADC region. Macroeconomic control variables also had interesting, and in some cases surprising relationships, with net FDI inflows into the SADC countries. The estimations were done using the one-step GMM estimation with constants as specified in econometric models A to D in section 3. The estimation results are shown in tables 1 to 4.

**Table 1. Estimated empirical results of the SYS GMM Panel 1**

| Independent Variable | Dependent variable: FDI as a % of GDP | | | |
|---|---|---|---|---|
| | **Model A** | **Model B** | **Model C** | **Model D** |
| **FDI (-1)** | 0.7508288 (0.000)*** | **0.7813831 (0.000 )*** | 0.7313236 (0.000)*** | 0.69201174 (0.000 )*** |
| **Tax holidays** | -0.0453303 (0.819 ) | | | |
| **Log CIT** | | -0.32456 (0.006)*** | | |
| **Losses Carried Forward** | | | -6.457257 (0.259) | |
| **Reduced CIT** | | | | -0.257379 (0.040 )** |
| **Governance** | 11.37773 (0.076 )* | 9.958844 (0.101) | 8.679832 (0.029 )** | 5.945349 (0.008 )*** |
| **Market potential** | -0.1198403 (0.262 ) | -0.0899106 (0.430 ) | -0.1302812 (0.171) | -0.1598241 (0.139) |
| **Infrastructure** | -4.434885 (0.005)*** | -3.327424 (0.065)* | -3.412898 (0.058)* | -5.075188 (0.004)*** |
| **Log Natural Resources** | -1.345016 (0.000)*** | -1.36202 (0.000)*** | -1.451677 (0.000)*** | -1.306214 (0.000)*** |
| **Log Trade Openness** | 1.543197 (0.0056)*** | 1.518772 (0.010)** | 1.593977 (0.007)*** | 2.07522 (0.001)*** |

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[1] The models contain a combination of linear-linear and linear-log relationships. For linear-linear relationships a unit change in the independent variable leads to a change in the dependent variable which is equal to the coefficient of the independent variable. For linear-log models one unit increase of log independent variable leads to a change in the dependent variable by the value of the coefficient of the independent variable. Thus a 1% increase in the independent variable changes the dependent variable by 0.01 times the coefficient of the independent variable. Since the dependent variable is measured as a % of GDP the interpretations of the variables for linear-log models have to consider the variables measurement.

| | | | | |
|---|---|---|---|---|
| **Log Financial Globalisation** | 1.432874 (0.059)* | 1.451487 (0.504) | 0.1210353 (0.962) | 2.471988 (0.032)** |
| **Economic Policy** | -0.1802605 (0.517) | -0.2629364 (0.085)* | -0.1752989 (0.582) | -0.0794149 (0.815) |
| **Yr2004** | Dropped due To collinearity | Dropped due To collinearity | Dropped due To collinearity | Dropped due To collinearity |
| **Yr2005** | Dropped due To collinearity | Dropped due To collinearity | Dropped due To collinearity | Dropped due To collinearity |
| **Yr2006** | 1.975048 (0.351) | 2.305721 (0.284) | 1.539036 (0.474) | 1.978067 (0.339) |
| **Yr2007** | 7.414866 (0.000)*** | 8.235579 (0.000)*** | 7.450592 (0.000)*** | 7.341992 (0.000)*** |
| **Yr2008** | 6.744843 (0.009)*** | 7.225766 (0.006)*** | 6.788771 (0.009)*** | 5.498714 (0.034)** |
| **Yr2009** | 3.661675 (0.110) | 4.453325 (0.065)* | 3.808071 (0.100) | 3.039139 (0.181) |
| **Yr2010** | 5.672091 (0.021)** | 6.460128 (0.012)** | 6.190999 (0.014)** | 4.328481 (0.083)* |
| **Yr2011** | 3.911199 (0.109) | 5.077059 (0.056)* | 4.591577 (0.069)* | 2.522045 (0.312) |
| **Yr2012** | 3.742166 (0.180) | 4.859294 (0.101) | 4.390719 (0.126) | 2.560895 (0.361) |
| **Yr2013** | 1.755233 (0.549) | 2.837567 (0.359) | 2.586305 (0.396) | 0.5466028 (0.852) |
| **Constant** | -43.01757 (0.045)** | -85.97198 (0.059)* | -27.81898 (0.264) | -62.53391 (0.007)*** |
| **Observations** | 63 | 63 | 63 | 63 |
| **Number of Groups** | 7 | 7 | 7 | 7 |

*Source: Author's calculation from stata 12 output*

Note: p-values are in brackets and ***indicates significant at 1% level, **indicates significant at 5% level and *indicates significant at 10% level.

From Table 1, Panel 1, tax holidays in Model A are statistically insignificant, meaning they do not explain FDI inflows into resources-rich SADC countries. However, the negative sign on the variable indicate that tax holidays give a negative signal about an economy to investors and discourage their location in economies that use tax holidays. A 1% increase in tax holidays reduces FDI inflows by 0.045%.

CIT is significant at 1% level as shown in Model B and is negatively signed indicating that an increase in CIT will lead to reduced FDI inflows to the SADC resources-rich countries. This supports the findings of Klemm and van Parys (2009) that lower income tax rates attract more FDI inflow into developing countries. Precisely a 1% increase in CIT reduces FDI inflows by 0.325%. Therefore, tax holidays are not preferred as much lower CIT in attracting FDI.

Losses carried forward are insignificantly different from zero as shown in Model C. The insignificant values for the variable support the argument that investors are interested in incentives that are long-term. The variable has a p-value of 0.259 showing that it is insignificantly different from zero. Reduced CIT in specific sectors produced interesting results shown in Model D above; the variable

has a negative effect at 1% level. Since the study uses the lowest rate offered in specific investment sectors in each SADC country to measure this variable, the sign indicates that high tax rates in key sectors reduces FDI inflows. Specifically in Panel 1, reduced CIT shows that a 1% reduction in CIT will translate into a 0.25% increase in FDI inflows. This supports the neoclassical investment theory which argues that low costs attract investment since they enhances profits.

The lagged FDI variable shows similar results for all four models estimated using Panel 1 countries' data. The variable is significant at 1% and is positively signed in all the models A to D. This indicates that the flow of FDI into SADC countries responds to previous year inflows; therefore, most investments in the region flow to areas where other investors are established. Thus, most investors use the follow-the-leader approach, where new investments are inspired by the performance of earlier investors. The results also support the New Economic Geography theory which argues that investment flows to the core region where economic activity is already high. This is typically true in developing countries where most FDIs are resources-seeking and thus discovery of primary resources by early movers attracts new entrants. The effects of previous year FDI inflows in Panel 1 show coefficients that are almost equal. In Model A, a 1% increase in previous year FDI inflows increases FDI net inflows in the current year by 0.75%. For models B, C and D a 1% increase in previous year FDI inflows increases FDI net inflows in the current year by 0.78%, 0.73% and 0.69% respectively.

The governance index in the model shows the socio-economic status of a country. Panel 1 results for models A, C and D show that FDI net inflows are positively related to a stable socio-economic status of a country at 10%, 5% and 1% significant levels respectively. These results support the findings of Akanbi (2013) which conclude that investment spending in a country increases when the socio-economic environment is good. These results and the magnitudes of the coefficients indicate that the institutional stability and effectiveness in the SADC region are important in attracting foreign investment. For instance, in Model A, a one index point increase (improvement) in governance will lead to about an 11% increase in FDI inflow to the region.

Market potential measured by GDP growth rate, is insignificantly different from zero in all the four models of Panel 1. This shows that the globalisation wave has removed the effects of market size since foreign markets are now easier to access due to technological improvement in information communications technology. The SADC countries' integration has also widened the market for investors in the region thus market-seeking FDI to individual countries is insignificant. Though insignificant, the market potential variable is surprisingly negative in all four panels. For example, in Model A, a 1% increase in market potential reduces FDI inflows by 0.12%. This is contrary to the expected positive effect that market potential should have. This might be because of the nature of investment in the SADC resource-rich countries which is resources-seeking FDI. Thus, increases in the GDP growth rate indicate high incomes for the local nationals which might pose competition for foreign capital. High incomes also signal potentially strong pressure groups for indigenous participation in sectors that involve natural resources extraction which threatens the existence of foreign investment in those sectors.

The stock of infrastructure variable has interesting results in all four models, which is surprisingly negatively signed. The coefficients are significant at 1% level in Models A and D and at 10% in models B and C. The coefficients have high values of -4.4 for model A, -3.3 for Model B, -3.4 for Model C and -5.1 for Model D. Theoretically, increases in stock of infrastructure is expected to positively impact foreign capital. However, the results in Panel 1 for all the models A to D indicate that increase in infrastructure negatively affects inward FDI attraction. This conclusion supports the

findings of Devarajan, Swaroop and Zou (1996) that excessive productive expenditure by governments can be unproductive and that developing countries misallocate expenditure in favour of capital expenditure at the expense of recurrent expenditure. The negative relationship between infrastructure and FDI inflows can also be attributed to poor infrastructure regulatory frameworks. Following the recommendations of the World Bank in the 1990s most SADC countries privatised their state-owned enterprises in the infrastructural sector which created private companies in the industry. This move increased the cost of infrastructure and hence their positive attraction to FDI collapsed. Kirkpatrick, Parker and Zhang (2006) conclude that though developments in the commutations sector have encouraged competition, the sector has characteristics that allow firms to retain a monopoly which might encourage them to exploit their power in pursuit of supernormal profit.

The log natural resources variable also exhibits interesting results. Panel 1 shows that the natural resources variable (measured as natural resources rents as % of a GDP) has a negative relationship with FDI inflows and are significant at 1% level in all four models. This indicates that FDI in SADC is resources-seeking and when countries impose high royalties in mining and other taxes on foreign investment, FDI inflows fall. For instance, in Model B a 1% increase in natural resources rent as a % of GDP reduces FDI inflows by 1.36%.

Trade openness measured as trade % of GDP is significant in all four models of Panel 1. The variable is positively signed indicating that openness to trade attracts FDI inflows into SADC resources-rich countries. The result supports the theoretical arguments that openness to trade reduces the costs of doing business to foreign firms and thus attracts foreign capital. The variable is highly significant at 1% level in models A, C and D and at 5% in Model B. Model D has the highest coefficient which shows that a 1% increase in trade as a % of GDP will lead to an increase in FDI net inflows by 2.075%. The coefficients for models A, B and C are also high taking values of 1.54; 1.51 and 1.59 respectively.

Financial globalisation positively impacts FDI inflows in all four models of Panel 1. However, the variable is only significant in models A and D at 10% and 5% levels respectively. Model A shows the 1% increase in financial globalisation explains a 1.43% increase in net FDI inflows and in Model D, a 1% increase in financial globalisation accounts for a 2.47% increase in net FDI inflows. The economic policy variable is insignificantly different from zero in models A, C and D of Panel 1. It is, however, significant at 10% level in Model B and negatively signed. Thus, an increase in inflation and government expenditure in the index reduces net FDI inflows into SADC resources-rich countries. A 1% increase in economic policy index reduces net FDI inflows by 0.26%.

**Table 2. Estimated empirical results of the SYS GMM Panel 2**

| Independent Variable | Dependent variable: FDI as a % of GDP | | | |
|---|---|---|---|---|
| | Model A | Model B | Model C | Model D |
| **FDI (-1)** | 0.1817723 (0.000 )*** | 0.1769628 (0.000 )*** | 0.1517319 (0.000)*** | 0.1682598 (0.000 )*** |
| **Tax holidays** | 0.0335549 (0.002)*** | | | |
| **Log CIT** | | -0.02603 (0.006)*** | | |
| **Losses Carried Forward** | | | 0.8545623 (0.690) | |
| **Reduced CIT** | | | | 0.0891729 (0.093 )* |

| | | | | |
|---|---|---|---|---|
| **Governance** | -2.617819 (0.078 )* | -2.300087 (0.063 )* | -3.0867 (0.164 ) | -1.869469 (0.085 )* |
| **Market potential** | 0.1808723 (0.016 )** | 0.1805173 (0.112 ) | 0.1913209 (0.097 )* | 0.1569562 (0.157) |
| **Infrastructure** | -4.638513 (0.002 )*** | -4.702356 (0.002 )*** | -4.774561 (0.002)*** | -4.91995 (0.001 )*** |
| **Log Natural Resources** | -0.8224798 (0.244) | -0.9648517 (0.033)** | -0.7644326 (0.252) | -0.6970618 (0.274) |
| **Log Trade Openness** | -0.0731741 (0.978) | -0.79119 (0.772) | -0.3125475 (0.908) | -2.5307442 (0.074)* |
| **Log Financial Globalisation** | 3.960395 (0.039)** | 3.512697 (0.075)* | 4.154748 (0.025)** | 3.912717 (0.033)** |
| **Economic Policy** | 0.255267 (0.427) | 0.1704575 (0.609) | 0.1703265 (0.588) | -0.0887271 (0.789) |
| **Yr2004** | Dropped due To collinearity | Dropped due To collinearity | Dropped due To collinearity | Dropped due to collinearity |
| **Yr2005** | -4.181803 (0.002)*** | -4.497011 (0.001)*** | -4.460478 (0.004)*** | -1.238662 (0.313) |
| **Yr2006** | -2.476348 (0.031)** | -2.685077 (0.020)** | -2.753415 (0.070)* | Dropped due to collinearity |
| **Yr2007** | Dropped due To collinearity | Dropped due To collinearity | -0.3645437 (0.807) | 2.529052 (0.023)** |
| **Yr2008** | 0.4285573 (0.702) | 0.8141012 (0.508) | 0.3192226 (0.786) | 3.434598 (0.005)*** |
| **Yr2009** | 0.0264707 (0.985) | 0.333031 (0.821) | Dropped due To collinearity | 2.698731 (0.061)* |
| **Yr2010** | -2.684225 (0.009)*** | -2.384177 (0.033)** | -2.894136 (0.029)** | 0.5085404 (0.682) |
| **Yr2011** | -1.843181 (0.081)* | -1.447129 (0.218) | -2.096105 (0.096)* | 1.368191 (0.287) |
| **Yr2012** | -2.626588 (0.024)** | -2.169428 (0.109) | -2.859258 (0.028)** | 0.3558411 (0.778) |
| **Yr2013** | -4.307746 (0.000)*** | -3.757873 (0.009)*** | -4.525393 (0.001)*** | -1.3313991 (0.298) |
| **Constant** | 2.266665 (0.868) | -0.5028798 (0.970) | 4.965254 (0.693) | -2.531855 (0.834) |
| **Observations** | 54 | 54 | 54 | 54 |
| **Number of Groups** | 6 | 6 | 6 | 6 |

*Source: Author's calculation from stata 12 output*

Note: p-values are in brackets and ***indicates significant at 1% level, **indicates significant at 5% level and *indicates significant at 10% level.

Table 19 shows the results from a system GMM estimation of Panel 2 models A to D. The tax incentives variables in the panel significantly explain FDI inflows into resources-poor SADC countries except losses carried forward. Tax holidays are significant at 1% and are positively signed. The results show that a 1% increase in tax holidays leads to an increase of 0.034% in net FDI inflows into SADC resources-poorer countries listed in Panel 2. This is in support of the findings by Klemm et al. (2009) that in developing countries tax holidays are important in luring foreign capital. Tax holidays in the SADC resources-poorer countries reduce costs to the investor thus encouraging investment in less attractive sectors.

CIT is significant at 1% level and negatively signed. Precisely a 1% increase in CIT reduces net FDI inflows by 0.026%. This supports the theory which argues that increases in CIT increase the cost of doing business and thus push away investment. This finding is similar to those in Panel 1. Reduced CIT in specific sectors, though weakly significant at 10% level, is surprisingly positively signed in Panel 2. The results show that increasing taxes in specific sectors increases FDI inflows into resources-poorer SADC countries. A 1% increase in least tax rate in specific sectors increase FDI inflows by 0.089%. Possibly this is because of the preferential treatment given to specific sectors over other sectors; thus in countries with limited resources investors prefer equal treatment in all sectors to ensure easier diversification of operations.

The lagged FDI variable shows similar results for all four models A to D in Panel 2 estimation. The variable has a positive effect on net FDI inflows and is significant at 1% level in all four models. The variable, however, has lower coefficients than Panel 1 estimations. Thus, the impact of previous year FDI inflows has a lower effect in lower-resourced SADC countries than in resources-richer SADC countries. In models A, B, C and D a 1% increase in previous year net FDI inflows leads to a 0.18%, 0.18%, 0.15% and 0.17% increase in current year net FDI inflows in models A, B, C and D respectively.

The governance index is significant in models A, B and D at the 10% level and insignificant in Model C. Surprisingly; unlike in Panel 1, in Panel 2 the governance index is negatively signed. In models A, B and D a 1 unit increase in governance performance reduces FDI inflows into low-resources SADC countries by 2.62%, 2.3% and 1.87% respectively. This could be due to the fact that strong governance structures that ensure accountability in operations do not encourage FDI in resource-poor environments because they increase the cost of doing business.

Market potential measured by GDP growth rate is weakly significantly different from zero in models A and C of Panel 2 and insignificant in models B and D. Contrary to its effects in Panel 1, estimations of the market potential variable has a positive impact on net FDI inflows. Thus, in lower-resourced SADC countries market-seeking FDI inflows are significant. Precisely a 1% increase in GDP growth rate increases net FDI inflows by 0.18% in Model A and by 0.19% in Model C. This result is expected since theory suggests that FDI moves to markets that are stronger and thus can find demand for their products. Importantly, this shows that less resources-rich SADC countries attract FDI in sectors other than the primary resources sector.

The stock of infrastructure variable has interesting results in all four models in Panel 2. Just as in Panel 1, the results are surprisingly negatively signed. The coefficients are significant at 1% in models A to D. A 1% increase in infrastructure stock reduces FDI inflows by 4.64%, 4.70%, 4.77% and 4.92% in models A to D respectively. This result reinforces those findings in Panel 1.

The log natural resources variables support the results in Panel 1. The variable is significant at 5% in Model B of Panel 2. Thus, Panel 1's result that taxing natural resources more in SADC countries discourages foreign investment is reinforced. Panel 2 Model B shows that a 1% increase in the natural resources variable reduces net FDI inflows by 0.96%.

The trade openness variable in Panel 2 shows a different result to that of Panel 1. The result is negatively signed though it is significant in Model D only at 10% level. In Model D a 1% increase in the trade openness variable reduces net FDI inflows by 2.53%. This indicates that in resources-poor SADC countries, foreign capital is in sectors that require protection against foreign produced products entering the market. Thus the SADC resources-poor countries have not improved their economic

environments to ensure competitive production of other goods and services outside the primary resources sector.

Financial globalisation significantly impacts positive FDI inflows in all four models of Panel 2 at 5% level in models A, C and D, with 10% in Model B. This result complements the findings of Panel 1; however, the coefficients in Panel 2 are higher than those in Panel 1. A 1% increase in financial globalisation increases net FDI inflows by 3.96%, 3.51%, 4.15% and 3.91% in models A, B, C and D respectively. This result suggests that financial development is important to foreign investment in other service sectors in the SADC countries with scarce natural resources.

The economic policy variable is insignificant in all four models of Panel 2. Unlike in Panel 1 the variable is positively signed in models A, B and C. This might be because government expenditure crowds in FDI inflows and moderate to low inflations do not discourage investment.

**Table 3. Estimated Empirical Results of the SYS GMM Panel 3**

| Independent Variable | Dependent variable: FDI as a % of GDP | | | |
|---|---|---|---|---|
| | **Model A** | **Model B** | **Model C** | **Model D** |
| **FDI (-1)** | 0.9189012 (0.000)*** | 0.892344 (0.000 )*** | 0.9245603 (0.000)*** | 0.9154076 (0.000 )*** |
| **Tax holidays** | 0.0780323 (0.295 ) | | | |
| **Log CIT** | | -0.721275 (0.001)*** | | |
| **Losses Carried Forward** | | | 0.9337763 (0.448) | |
| **Reduced CIT** | | | | -0.0325512 (0.394 ) |
| **Governance** | 0.4258281 (0.023)** | 0.8436805 (0.021)** | 0.7751284 (0.005)*** | 1.102428 (0.004)*** |
| **Market potential** | -0.0616652 (0.343) | -0.02511873 (0.695) | -0.056254 (0.396) | -0.04884783 (0.449) |
| **Infrastructure** | -1.908309 (0.034)** | -1.4194 (0.000)*** | -2.172851 (0.015)** | -2.196754 (0.014)** |
| **Log Natural Resources** | -0.5296842 (0.089)* | -0.7130618 (0.039)** | -0.4579656 (0.148) | -0.5793247 (0.057)* |
| **Log Trade Openness** | -1.083133 (0.500) | -0.9571666 (0.543) | -0.9074215 (0.571) | -0.6550741 (0.674) |
| **Log Financial Globalisation** | 1.542521 (0.051)* | 0.6371277 (0.009)*** | 1.967879 (0.021)** | 1.513586 (0.072)* |
| **Economic Policy** | -0.1248531 (0.480) | -0.1817259 (0.300) | -0.1418776 (0.424) | -0.1362478 (0.446) |
| **Yr2004** | Dropped due to collinearity | Dropped due to collinearity | Dropped due To collinearity | Dropped due To collinearity |
| **Yr2005** | -0.4003894 (0.778) | -9.248697 (0.347) | -0.585162 (0.935) | 1.14612 (0.866) |
| **Yr2006** | 0.2765428 (0.839) | -8.857821 (0.364) | -0.3687737 (0.959) | 1.554275 (0.820) |
| **Yr2007** | 3.616528 (0.009)*** | -5.747985 (0.552) | 2.530101 (0.725) | 4.414547 (0.519) |
| **Yr2008** | 1.68104 (0.152) | -6.92987 (0.471) | 0.7324856 (0.920) | 2.745105 (0.693) |
| **Yr2009** | Dropped due | -8.500497 (0.367) | -0.7294905 (0.918) | 1.317356 (0.845) |
| **Yr2010** | due | -7.125888 | 0.4928031 | 2.388776 |

| | | | | |
|---|---|---|---|---|
| **Yr2011** | To collinearity 1.330272 | (0.449) -6.924801 | (0.945) 0.7924337 | (0.724) 2.521793 |
| **Yr2012** | (0.322) 2.009716 | (0.465) -7.068726 | (0.913) 0.1712367 | (0.714) 2.1683 |
| **Yr2013** | (0.128) 1.731301 | (0.452) -8.436732 | (0.981) -1.474243 | (0.754) 0.599894 |
| **Constant** | (0.223) 0.5196761 (0.732) 20.29752 (0.159) | (0.370) -8.436732 (0.370) | (0.840) -3.12545 (0.612) | (0.754) 24.1454 (0.986) |
| **Observations** | 108 | 108 | 108 | 108 |
| **Number of Groups** | 12 | 12 | 12 | 12 |

*Source: Author's calculation from stata output*

Note: p-values are in brackets and ***indicates significant at 1% level, **indicates significant at 5% level and *indicates significant at 10% level.

Table 3 shows the results from a system GMM for Panel 3 models A to D. The tax incentive variables indicate that only CIT is statistically different from zero and the other three incentives (tax holidays, losses carried forward and reduced CIT in specific sectors) are insignificantly different from zero. Tax holidays, however, show a positive sign which supports the findings of Panel 2 that increasing tax holidays' years attracts more foreign capital.

CIT shows results similar to those in panels 1 and 2 which is a significant negatively signed effect on FDI net inflows. Statistically, a 1% increase in the statutory CIT rate will reduce net FDI inflows into twelve SADC countries in Panel 3 by 0.72%. This supports the theory and findings in panels 1 and 2 that FDI into the SADC is attracted by low tax rates which enhance increased profits.

Losses carried forward are insignificant but positively signed, thus the effect is consistent with expected results. This is because FDI faces high set-up costs and thus benefits from losses carried forwards in initial years of establishment. The longer the years' losses can be carried forward for tax purposes, the more attractive the destination.

Reduced CIT unlike in panels 1 and 2 is insignificant but the negative effect is similar to the variable impact in Panel 1.

The lagged FDI variable has similar effects to those in panels 1 and 2 which are highly significant at 1% level positively signed effect. The positive coefficients in the panel show that previous year FDI inflows positively affect current year inflows. The effects have higher coefficients than those in Panel 2 which shows that the previous year FDI inflows impact the combined SADC countries minus South Africa more than they do the resources-poor group. Statistically, a 1% increase in previous year net FDI inflows increases current year net FDI inflows by 0.92%, 0.89%, 0.92% and 0.92% in models A, B C and D respectively.

The governance index is significant in all four models of Panel 3, at 5% level in models A and B and at 1% in models C and D. Similar to the findings of Panel 1, the variable is positively signed showing that SADC countries with high governance scores attract more foreign capital. Thus, in the SADC countries forming Panel 3 of the study, FDI favours countries with socio-economic stability. In Panel 3, a 1 unit increase in governance performance increases net FDI inflows in SADC countries by 0.43%, 0.84%, 0.78% and 1.1% in models A, B, C and D respectively.

Market potential measured by GDP growth rate is insignificantly different from zero in all four models of Panel 3. Surprisingly, however, just as in Panel 1 it is negatively signed. This finding is contrary to theory suggesting that high incomes discourage foreign capital due to possible competitiveness of local businesses (indicated by high incomes).

The stock of infrastructure variable is significant in all four models of Panel 3 at 5% in models A, C and D and at 1% in model B. The coefficients just as in panels 1 and 2, are negatively signed. The coefficients indicate that a 1% increase in infrastructure stock explains a reduction in net FDI inflows by 1.91%, 1.42%, 2.17% and 2.2% in models A to D respectively. This result reinforces those findings in panels 1 and 2.

The log natural resources variables support the results in panels 1 and 2. The variable is significant in models A, B and D at 10%, 5% and 10% levels respectively. Thus, the results in panels 1 and 2 reinforce that taxing natural resources more in SADC countries discourages foreign investment. For Panel 3, models A, B, and D show that a 1% increase in the natural resources variable reduces net FDI inflows by 0.53%, 0.71%, and 0.58% respectively.

The trade openness variable in Panel 3 shows that the variable is insignificantly different from zero in all four models. The result is negatively signed as in Panel 2. The sign is contrary to theory and means that FDI into SADC countries prefers protected economies which are not open to trade.

Financial globalisation has a significantly positive impact on FDI inflows in all four models of Panel 3 at 10% level in models A and D, 1% in model B and at 5% in model C. This result complements the findings of panels 1 and 2. A 1% increase in financial globalisation increases net FDI inflows by 1.54%, 0.64%, 1.97% and 1.51% in models A, B, C and D respectively. This result suggests that financial development is important to foreign investment in the SADC.

The economic policy variable is insignificant in all four models of Panel 3. Similar to Panel 1, the variable is negatively signed in all the models. This is because government expenditure crowds out foreign investment and inflation levels in the SADC are too high which affects business viability.

**Table 4. Estimated Empirical Results of the SYS GMM Panel 4**

| Independent Variable | Dependent variable: FDI as a % of GDP | | | |
|---|---|---|---|---|
| | **Model A** | **Model B** | **Model C** | **Model D** |
| **FDI (-1)** | 0.9119658 (0.000)*** | 0.8842055 (0.000 )*** | 0.9181124 (0.000)*** | 0.9045428 (0.000 )*** |
| **Tax holidays** | -0.1001436 (0.155 ) | | | |
| **Log CIT** | | -0.0452 (0.009)*** | | |
| **Losses Carried Forward** | | | 0.9052408 (0.449) | |
| **Reduced CIT** | | | | -0.0099738 (0.784) |
| **Governance** | 0.2175242 (0.087 )* | 0.4763533 (0.554) | 0.1638223 (0.031 )** | 0.4213011 (0.046 )** |
| **Market potential** | -0.0474351 (0.454) | -0.0087058 (0.889) | -0.0456667 (0.479) | -0.03126 (0.618) |
| **Infrastructure** | -0.685311 (0.068)* | -0.3688582 (0.054)* | -0.7936212 (0.060)* | -0.5234846 (0.002)*** |

| | | | | |
|---|---|---|---|---|
| **Log Natural Resources** | -0.3291234 (0.227) | -0.6035176 (0.057)* | -0.2077596 (0.426) | -0.2305557 (0.384) |
| **Log Trade Openness** | -1.351099 (0.382 ) | -1.012735 (0.501) | -1.145398 (0.449) | -0.7036566 (0.640) |
| **Log Financial Globalisation** | 0.8308491 (0.031)** | -0.2300842 (0.767) | 1.217181 (0.018)** | 0.5815253 (0.012)** |
| **Economic Policy** | -0.1307242 (0.443) | -0.202619 (0.231) | -0.1486099 (0.385) | -0.1582274 (0.359) |
| **Yr2004** | Dropped due To collinearity | Dropped due To collinearity | Dropped due To collinearity | Dropped due to collinearity |
| **Yr2005** | 5.899724 (0.371) | -11.64383 (0.230) | 1.954367 (0.773) | 2.825582 (0.665) |
| **Yr2006** | 5.750351 (0.384) | -11.52865 (0.231) | 1.719719 (0.800) | 2.719137 (0.679) |
| **Yr2007** | 8.675983 (0.192) | -8.280672 (0.386) | 4.835564 (0.479) | 5.655541 (0.390) |
| **Yr2008** | 7.226081 (0.283) | -9.163584 (0.335) | 3.304517 (0.632) | 4.348277 (0.515) |
| **Yr2009** | 5.622282 (0.283) | -10.6495 (0.252) | 1.80938 (0.787) | 2.961434 (0.646) |
| **Yr2010** | 6.714986 (0.303) | -9.487239 (0.306) | 2.762216 (0.682) | 3.885741 (0.547) |
| **Yr2011** | 7.121997 (0.283) | -9.229978 (0.323) | 3.203507 (0.640) | 4.050767 (0.538) |
| **Yr2012** | 6.91114 (0.298) | -8.97133 (0.332) | 2.947802 (0.667) | 4.083123 (0.535) |
| **Yr2013** | 5.61058 (0.401) | -10.15462 (0.273) | 1.608993 (0.815) | 2.779936 (0.675) |
| **Constant** | 5.64238 (0.465) | -4.13543 (0.564) | 0.064523 (0.456) | 2.468545 (0.956) |
| **Observations** | 117 | 117 | 117 | 117 |
| **Number of Groups** | 13 | 13 | 13 | 13 |

*Source: Author's calculation from stata 12 output*

Note: p-values are in brackets and ***indicates significant at 1% level, **indicates significant at 5% level and *indicates significant at 10% level.

Table 4 shows the results from a system GMM for Panel 4 models A to D. The tax incentive variables indicate that only CIT is statistically different from zero and the other three incentives (tax holidays, losses carried forward and reduced CIT in specific sectors) are insignificantly different from zero. Tax holidays surprisingly show a negative effect contrary to the panel 2 and 3 estimations but similar to Panel 1. The possible reason for this is the addition of South Africa in Panel 4 which adds to the number of SADC countries that have abolished tax holidays. This negative effect is thus a consequence of that South Africa being the highest recipient of FDI inflows in the SADC.

CIT shows results similar to those in panels 1, 2 and 3 which is a significant negatively signed effect on FDI net inflows. Statistically, a 1% increase in the statutory CIT rate will reduce net FDI inflows into thirteen SADC countries in Panel 4 by 0.05%. This supports theory and findings in panels 1, 2 and 3 that FDI into the SADC is attracted by low tax rates which enhance increased profits. The

coefficient in Panel 4 is smaller than that in Panel 3, showing that adding South Africa to the model in Panel 3 reduces the effects of CIT. This is because South Africa is moving away from using tax incentives as an FDI attraction strategy.

Losses carried forward are insignificant but positively signed as in earlier panels, thus the effect is consistent with expected results. This is because FDI faces high set-up costs and thus benefits from losses carried forward in the initial years of establishment and the longer the years' losses can be carried forward for tax purposes, the more attractive the destination.

Reduced CIT in Panel 4 is insignificant and negatively signed. The negative effect supports theory that low taxes attract more investments.

The lagged FDI variable has similar effects to those in panels 1, 2 and 3 which is a highly significant at 1% level positively signed effect. The positive coefficients in the panel show that previous year FDI inflows positively affect current year inflows. Statistically, a 1% increase in previous year net FDI inflows increases current year net FDI inflows by 0.91%, 0.88%, 0.92% and 0.90% in models A, B, C and D respectively.

The governance index is significant in models A, C and D of Panel 4 at 5% level in models C and D and at 10% in models A. Similar to the findings of panels 1 and 3, the variable is positively signed showing that SADC countries with high governance scores attract more foreign capital. Thus, the thirteen SADC countries forming Panel 4 of the study show that FDI favours countries with high socio-economic stability. In Panel 4, a 1 unit increase in governance performance increases net FDI inflows into SADC countries by 0.22%, 0.16% and 0.42% in models A, C and D respectively.

Market potential measured by the GDP growth rate is insignificantly different from zero in all four models of Panel 4. Surprisingly, however, just as in panels 1 and 3 the variable is negatively signed. This finding is contrary to theory which suggests that high incomes discourage foreign capital due to possible competitiveness of local businesses (indicated by high incomes).

The stock of infrastructure variable is significant in all four models of Panel 4 at 1% in Model D and at 10% in models A, B and C. The coefficients, just as in panels 1, 2 and 3, are negatively signed. The coefficients indicate that a 1% increase in infrastructure stock explains reduction in net FDI inflows by 0.69%, 0.37%, 0.79% and 0.52% in models A to D respectively. This result reinforces those findings in panels 1, 2 and 3.

The log natural resources variable, unlike the results of panels 1, 2 and 3, is significant only in Model B at 10% level. Thus, adding South Africa to the panel of SADC countries reduces the impact of natural resources rents. This is because of the dominance of South Africa in terms of resource richness and FDI inflows compared to other SADC countries. Therefore, even though South Africa receives high rents from its natural resources, it continues to attract high investment inflows due to other advantages it has, such as high economic development. For Panel 4 Model B, a 1% increase in the natural resources variable reduces net FDI inflows by 0.60%.

The trade openness variable in Panel 4 shows that the variable is insignificantly different from zero in all four models. The result is negatively signed as in panels 2 and 3. The sign is contrary to theory and means that FDI into SADC countries prefers protected economies which are not open to trade, even after adding South Africa to the model.

Financial globalisation has a significantly positive impact on FDI inflows in three models of Panel 4 at 5% level. This result complements the findings of panels 1, 2 and 3. A 1% increase in financial

globalisation increases net FDI inflows by 0.83%, 1.22% and 0.58% in models A, C and D respectively. This result suggests that financial development is important to foreign investment in the SADC.

The economic policy variable is insignificant in all four models of Panel 4. Similar to panels 1 and 3, the variable is negatively signed in all the models. This reinforces the argument that government expenditure crowds out foreign investment and inflation levels in the SADC are too high which affects business viability.

## 4. Conclusions and Policy Implications

This study has investigated the effectiveness of tax incentives (tax holidays, corporate income tax (CIT), reduced CIT in specific sectors and losses carried forward) in attracting FDI. The study further grouped SADC countries into four panels. Panel 1 included the seven highest resource-rich countries, Panel 2 had the six least resource-rich countries, Panel 3 consisted of twelve SADC countries excluding South Africa which is an outlier in resource richness and growth and Panel 4 had all thirteen SADC countries in the study. In line with the existing theoretical framework, the impact of tax incentives on FDI was estimated taking into account the contemporaneous effects of market size, governance, physical infrastructure, natural resource endowments, trade openness, financial globalisation and economic policy. The estimations were carried out using the SYS GMM estimation technique.

The estimations revealed interesting results on the effectiveness of tax incentives in FDI attraction in the SADC region. The tax incentive variables indicate that only CIT is statistically different from zero in the entire four panels estimated in the study and it constituted Model B. Consistent with theory, the CIT variable renders results which are negatively signed. Thus, it can be concluded that in SADC countries, increasing statutory CIT, reduces the attractiveness of a country to foreign capital. Tax holidays had mixed and interesting results in all four panels. The variable significantly explains variations in FDI inflows only in Panel 2 which comprises the resources-poorer SADC countries. The effect of the variable is positive in Panel 2, thus for the resources-poorer SADC countries, increasing tax holidays attracts more foreign capital. Though insignificant in Panel 3, the variable has a positive effect, but surprisingly in panels 1 and 4, tax holidays show a negative effect. This indicates that adding South Africa to the set of all SADC countries listed in the study, changes the effect of tax holidays. This then shows that for transitional economies in the group (including South Africa) tax holidays discourage foreign capital.

Losses carried forward are insignificant but positively signed in panels 2, 3 and 4 and negatively signed in Panel 1 of the study. The positive sign indicates that FDI in the SADC prefers longer losses carried forward. Reduced CIT shows a significant negative effect in Panel 1. This indicates that increasing taxes in specific sectors affects overall FDI inflows in the SADC. Contrary to Panel 1, Panel 2 shows reduced CIT to be significantly positive for explaining FDI inflows into SADC resources-poorer countries. The variable, though insignificant in panels 3 and 4, has a negative sign.

From the above summarised findings, the study recommends that the SADC pursue policies that increase domestic effective demand and ensure a stable market for products, in order to lure more FDI inflows. The study gave the policy recommendations based on empirical findings specific to the SADC. Firstly, the study recommends that SADC countries administer low CIT to encourage FDI

inflows. Secondly, for resources-rich countries tax holidays should not be granted as they discourage FDI inflows; however, resources-poor countries can implement tax holidays as they attract investment in the countries.

Thirdly, lowering taxes in specific sectors that are important to economic growth should be pursued by the SADC governments as this encourages FDI inflows. Fourthly, the SADC countries should establish policies that ensure openness to FDI since flows of FDI into SADC countries are related to previous year FDI inflows. Fifthly, good governance is crucial in the SADC as it encourages new investments and reinvestments by existing investors. The next point is that, infrastructure should be consistently improved to suit all types of investment. This demands that the SADC countries move away from improving infrastructure that only favours primary resource investment. This is because natural resources are non-renewable and once depleted, will no longer attract FDI.

Lastly, SADC countries should improve its nationals' accessibility to financial resources as this will attract more investors.

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## Appendix

**Table A1. Construction of infrastructure index**

| Method of construction variables | PCA Component 1 | PCA Component 2 | PCA Component 3 |
|---|---|---|---|
| **Telephone** | 0.6797 | -0.2423 | 0.6923 |
| **Electricity** | 0.2264 | 0.9671 | 0.1161 |
| **Internet** | 0.6976 | -0.0778 | -0.7122 |

Notes: The table values were constructed using the eigenvalue transformation.

The infrastructure index was constructed from the principal component eigenvalue (Table 10 above). Using the stata command "predict pc1 pc2 pc3" the principal components are generated from the equations:

$$PC1 = (0.6797 * telephone) + (0.2264 * electricity) + (0.6976 * int\,ernet)$$
$$PC2 = -(0.2423 * telephone) + (0.9671 * electricity) - (0.0778 * int\,ernet)$$
$$PC3 = (0.6923 * telephone) + (0.1161 * electricity) - (0.7122 * int\,ernet)$$

PC1, PC2 and PC3 are the principal components 1, 2 and 3 respectively.

The infrastructure index was obtained by summing the principal components as infrastructure index = PC1+PC2+PC3.

**Table A1. Construction of economic policy index using eigenvectors**

| Method of construction Variables | PCA Component 1 | PCA Component 2 |
|---|---|---|
| Government expenditure | -0.7071 | 0.7071 |
| Inflation | 0.7071 | 0.7071 |

*Source: Generated by author using eigenvalue transformation, using the command "pca government inflation".*

The economic policy index is constructed from the principal component eigenvalue Table 11 above.
Using the stata command "predict pc4 pc5" principal components are generated from the equations:

$$PC4 = -(0.7071 * gvt\exp) + (0.7071 * \inf l)$$
$$PC5 = (0.7071 * gvt\exp) + (0.7071 * \inf l)$$

Where gvtexp is government expenditure and infl is inflation. PC4 and PC5 are the principal components 1 and 2 respectively.

The economic policy index is obtained by summing the principal components as economic policy index = PC4+PC5.

**Table A3. Panel 1 tests**

| Test | Model A | Model B | Model C | Model D |
|---|---|---|---|---|
| Instrument Count | 58 | 58 | 58 | 58 |
| F(stat) Wald $\chi^2$ | 321.10 | 315.90 | 313.21 | 335.96 |
| F(stat) p-value | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Sargan test p-values | (0.4380) | (0.5113) | (0.5315) | (0.5641) |
| AR(1) | (0.1335) | (0.1539) | (0.1276) | (0.0697) |
| AR(2) | (0.1363) | (0.1432) | (0.1234) | (0.0897) |

**Table A4. Panel 2 tests**

| Test | Model A | Model B | Model C | Model D |
|---|---|---|---|---|
| Instrument Count | 55 | 55 | 55 | 55 |
| F(stat) Wald $\chi^2$ | 165.06 | 171.17 | 173.54 | 179.21 |
| F(stat) p-value | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Sargan test p-values | (0.7158) | (0.6907) | (0.6406) | (0.7271) |
| AR(1) | (0.0937) | (0.0763) | (0.0827) | (0.0761) |
| AR(2) | (0.0983) | (0.0765) | (0.0926) | (0.0973) |

**Table A5. Panel 3 tests**

| Test | Model A | Model B | Model C | Model D |
|---|---|---|---|---|
| Instrument Count | 60 | 167 | 163 | 166 |
| F(stat) Wald $\chi^2$ | 323.35 | 862.35 | 810.53 | 837.35 |
| F(stat) p-value | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Sargan test p-values | (0.4508) | (0.2648) | (0.3954) | (0.2438) |
| AR(1) | (0.1230) | (0.1342) | (0.1209) | (0.1386) |
| AR(2) | (0.1264) | (0.1437) | (0.1318) | (0.1425) |

**Table A6. Panel 4 tests**

| Test | Model A | Model B | Model C | Model D |
|---|---|---|---|---|
| Instrument Count | 174 | 175 | 172 | 175 |
| F(stat) Wald $\chi^2$ | 853.31 | 890.50 | 831.67 | 876.58 |
| F(stat) p-value | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Sargan test p-values | (0.3074) | (0.1654) | (0.2775) | (0.1415) |
| AR(1) | (0.1672) | (0.1549) | (0.1452) | (0.1673) |
| AR(2) | (0.1724) | (0.1690) | (0.1524) | (0.1739) |