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THE EFFECT OF TAX HARMONIZATION IN THE SOUTHERN AFRICAN DEVELOPMENT COMMUNITY ON FOREIGN DIRECT INVESTMENT

Michael Ade*
Steel and Engineering Industries Federation of Southern Africa (SEIFSA), South Africa
Jannie Rossouw
Tendai Gwatidzo
University of the Witwatersrand, South Africa

ABSTRACT

This paper investigates the effect of tax harmonization on foreign direct investment (FDI) in the Southern African Development Community (SADC). Previous attempts aimed at addressing relatively unsatisfactory FDI flows into the region have been largely unsuccessful, compounded by the existence of varied tax rates, laws and tax policies amongst SADC countries. The study employs dynamic panel estimation techniques to test the underlying economic specifications. Specifically, the feasible generalized least squares and the difference GMM approaches are used to test the causal link between FDI and taxation. These approaches are complemented by the Extreme-Bound Analysis (EBA) approach to perform a robustness test and sensitivity analysis over the period 1990-2010. The EBA technique helps to identify robust measures of economic policy changes from the taxation and FDI model. The paper modifies relevant data, per Sudsawasd and Mongsawad (2011), for SADC countries, expanding the number of years from 1995-2006 to 1990-2010, with more relevant and available data. Findings of a first attempt to investigate the linkage between taxation (tax rates and policy) and FDI, using an eclectic panel data modeling approach are presented. A new value added tax harmonization variable is introduced (in addition to a corporate income tax harmonization variable) via a tax policy harmonization measure in the panel empirical investigation, complemented by a sensitivity analysis (using the EBA analysis technique) on the causal relationship between taxation and FDI inflows. The main finding from the study indicates a positive and significant relationship between tax harmonization and FDI. The causal relationship is more robust when errors in the regressors (for instance contemporaneous correlation, heteroskedasticity, cross-sectional dependence, country-specific challenges, endogeneity) are controlled for. From a policy perspective, the paper provides empirical evidence to support the argument for the effective use of taxation towards stimulating regional FDI inflows. Policy considerations towards improved tax harmonization emanating from the paper include the need for individual SADC governments to promote national tax policies aimed at supporting regional tax harmonization objectives towards enhanced FDI, through strengthening existing tax agreements and treaties (such as the SADC 2002 Memorandum of Understanding on Taxation and the 2006 SADC Finance and Investment Protocol).

JEL Classifications: E_{60}, F_{15}, F_{21}, H_{25}, H_{27}
Keywords: SADC, FDI and Tax Policy Harmonization, Panel Data, Cross-sectional Dependence, Endogeneity, Sensitivity Analysis
Contact Authors' Email Addresses: jannie.rossouw@wits.ac.za; tendai.gwatidzo@wits.ac.za

INTRODUCTION

Multinational enterprises consider a number of factors before making decisions on whether or not to invest in Africa, and specifically in the Southern African Development Community (SADC)[1]. Some of the factors include infrastructure quality, market size, regulations, institutional quality and the return on investment (Asiedu, 2004; Mbakile-Moloi, 2006). More often than not, taxation (including tax rates and tax policy) is not at the fore of these considerations even though it is a very definite and important factor. According to Hansson and Olofsdotter (2010), many regional economic communities in the world and in Africa (including the SADC and the East African Community) are specifically pursuing enhanced tax harmonization as an important step towards improved investment (including FDI) and regional economic integration.

Recent studies on the SADC by Mbakile-Moloi (2006) and Letete (2011) have concluded that it is possible to harmonise VAT, but no link was made between VAT[2] and FDI inflow. This paper builds on the existing studies by introducing a tax policy harmonization measure (TPHM) and investigating its effect on FDI flows (excluding resource seeking FDI) as an impetus to economic growth. The study also serves as a stepping stone towards the broader objective of a complete harmonization of taxation, aimed at enhancing regional integration (and tax revenue). Although the SADC region is heterogeneous with different country characteristics (including varied tax systems) and overlapping memberships to other regional groupings, this paper proposes tax harmonization in line with the stated objectives of existing regional protocols[3]. The paper tests the efficacy of existing SADC tax rates in attracting FDI during the period 1990 - 2010, before investigating the impact of harmonized or coordinated tax rates[4] and tax policy measure on FDI. Moreover, this study seeks to improve on the tax literature by accounting for some econometric issues[5] that were not previously considered. The study will also be of interest to policy makers in the SADC, in regional groupings and economic communities in Africa that are considering harmonization of policies to enhance regional economic integration.

LITERATURE REVIEW

Dunning (1980) and OECD (2007) argue that export tax rules and differences in country corporate tax rates (such as invariably high tax rates in foreign countries) often create an incentive for multinational enterprises to be located in their home country and use exports (rather than foreign production) to serve their foreign markets. Hence high and divergent taxes tend to discourage production as firms consider ways of maximizing profits and the return on their investments. The argument is largely consistent with Deveroux's (2006) model and aligns with the neo-classical investment framework (as expounded by Montiel 2003), which generally highlights the fact that investment (including FDI) should be a function of expected future interest rates, prices and taxation (including effective tax rates and tax harmonization).

Gastanaga, Nugent and Pashamova (1998) empirically examine the effects of several different types of policy/institutional variables (including CIT rates) on FDI, using pooled cross-section and time-series data for 49 less-developed countries for the period 1970-95. The study found that low CIT rates and a fair level of harmonization of tax policy

could also significantly influence the flow of FDI to host countries, as companies strive to maximize the advantages of location in such countries.

Sudsawasd and Mongsawad (2011), using panel data from over a hundred countries including most SADC countries[6] from 1995 to 2006, investigated the impact of tax harmonization on FDI and total investment shares. Their empirical findings indicate that more harmonization of a CIT and import duty has positive impacts on FDI and total share of investment inflows. The impacts are found to be robust only in developed countries, confirming the existence of a negative relationship between taxation and certain components of investment. The study reveals that a developed country with less variation in policy from the average of the group attracts more FDI net inflows and vice versa.

Hansson and Olofsdotter (2010) investigated the effects of tax harmonization on FDI in the European Union. Their results generally highlight the benefits of enhanced tax coordination towards improved FDI inflows. The findings align with Tax Justice Network-Africa and ActionAid International (2012) and Mbakile-Moloi (2006) who concluded that there is evidence of effective coordination of tax policies and institutions, along with fiscal mimicking (in setting VAT rates) and copycat behavior in SSA (including the SADC), towards enhancing economic activities (including FDI). The prospect of tax harmonization by neighboring states in a region to improve FDI inflow seems logical. However, Troeger (2013) has highlighted the existing ambiguity arguing against the benefits of tax harmonization, stating that such co-operations sometimes have huge hidden costs (for participating countries), effectively contradicting the proposition by the proponents of tax harmonization.

While the concise literature review generally highlights the role of tax determinants of FDI globally and in Africa (including the SADC), no study has taken a keen interest in exploring the linkage between tax rates, tax policy harmonization variables and FDI in all SADC countries. Also, there has been no investigation on the effectiveness of existing SADC tax rates and tax policies on FDI *vis-à-vis* a neighboring regional economic community like the EAC. At the end of 2010, the SADC had lower average CIT and VAT rates of 30.19% and 14.8% respectively, compared to the EAC's average of 31.0% (CIT) and 17.6% (VAT) respectively (SADC, 2011 and Petersen (ed), 2010). This paper intends to fill the gaps in the investment and tax literature by using recognized methodology.

DATA AND STUDY METHODOLOGY

This paper modifies relevant data per Sudsawasd and Mongsawad (2011) for SADC countries, expanding the number of years from 1995-2006 to 1990-2010, with more relevant and available data. The data used for the final panel estimations (including data series measurement) is compiled from the World Bank, UNCTAD and SADC online databases, complimented with data from the International Monetary Fund (IMF, 2014)[7]. The empirical analysis basically tests the impact of tax rates and tax policy harmonization (sparsely used) including other proffered determinants, on FDI (mostly used as the dependent variable), by means of two timeframes (1990-2010[8] and 2000-2010[9]). The TPHM[10] of Sudsawasd and Mongsawad (2011:665) is specified as follows:

$$TPH_{i,t} = \frac{\left| \tau_{i,t} - \bar{\tau}_t \right|}{\bar{\tau}_t} x100 \quad (1)$$

Where TPH_{it} is the tax policy harmonization index for country *i* at time t, $\tau_{i,t}$ is the tax rate for country i at time t, $\bar{\tau}$ is the group average, t is the time. TPHM ranges are as follows: 0%<TPHM≤50%, high harmonization of tax rates; 50%<TPHM≤100%, low harmonization of tax rates (per absolute values).

The study employed the dynamic panel estimation technique as expounded by Baltagi (2008), namely, the feasible generalized least squares (FGLS) by Park (1967) and Kmenta (1986) and the difference GMM by Arellano and Bond (1991). The techniques are complemented by Leamer's (1983) extreme-bound analysis (EBA) approach, used to perform a robustness test and ascertain the sensitivity levels of changes in taxation to FDI flow in the SADC (given different tax rates, policy and bases).

Preliminary data analyses (namely, unit root tests, co-integration tests[11], descriptive statistics, pair-wise granger causality test, cross-correlation analysis[12]) are also conducted on the panel (full sample, 1990-2010) prior to the model specification. The Im, Pesaran and Shin (IPS) (2003) test results (with better small sample properties and intuitive construction) revealed most of the individual variables to be integrated either at level (that is *I*(0) processes) or of the first order (that is *I*(1) processes)[13], given the absence of cross-sectional dependence (CSD)[14].

MODEL SPECIFICATION (MODELS 1 AND 2) (SAMPLE 2000-2010)

The investigation in this section involves a dynamic panel model with specification as follows:

$$Y_{it} = \alpha y_{it-1} + \mathrm{X}_{it}^{'} \beta + \mu_{it} \quad (2)$$

Where $Y_{i,t}$ = dependent variable, y_{it-1} represents the lag of the dependent variable, $X_{i,t}$ represents the regressors (or the endogenous regressors) other than the lag of the dependent variable, β = the slope coefficient, μ_{it} idiosyncratic error term.

EMPIRICAL SPECIFICATIONS

The final one-way model as directed by the initial diagnostic tests results[15] for model 1 (using tax rates) and model 2 (using TPHM) are consecutively specified as follows:

$$FDI_{it} = \alpha_0 + \beta_1 FDI_{it-1} + \beta_2 CIT1_{it} + \beta_3 VAT1_{it} + \beta_4 TREV_{it} + \beta_5 GOV_{it} + \beta_6 DCR_{it} + \beta_7 EXPO_{it} + \beta_8 INQP_{it} + \mu_i + \nu_{it} \quad (3)$$

$$FDI_{it} = \alpha_0 + \beta_1 FDI_{it-1} + \beta_2 CHAR_{it} + \beta_3 VHAR_{it} + \beta_4 TRHA_{it} + \beta_5 GOV_{it} + \beta_6 DCR_{it} + \beta_7 EXPO_{it}$$

$$+ \beta_8 INQP_{it} + \mu_i + \nu_{it} \quad (4)$$

Where in both equations 3 and 4, i - the cross-sections, t - time, FDI_{it} - SADC FDI share of GDP, α - common intercept, $\beta_1,\beta_2 \ldots \beta_8$ are slope coefficients, GOV_{it} is government expenditure, DCR_{it} - growth rate of domestic credit, $EXPO_{it}$ is export, $INQP_{it}$ is the institutional quality strength of protection of investors, μ_i is the country-specific fixed effect and ν_{it} is the idiosyncratic error term. In equation 3 $CIT1_{it}$ and $VAT1_{it}$ represent the statutory CIT and standard VAT rates, and $TREV_{it}$ is tax revenue share of GDP. In equation 4, $CHAR_{it}$ and $VHAR_{it}$ are the statutory CIT and standard VAT policy harmonization indicators, while $TRHA_{it}$ is collected tax revenue policy harmonization indicator.

INITIAL DIAGNOSTIC TESTS RESULTS
(MODELS 1 AND 2, SAMPLE 2000-2010)

Summarily the initial diagnostic tests results reveal that individual effects and pool model are valid, time effects are invalid (warranting a one-way model), heteroscedasticity exists and there's no CSD. Although the pool model which assumes homogeneity of cross-sections and does not account for country-specific effects is valid, it will not be reported, due to largely statistically insignificant results. Instead the results of the validity of country effects which allows for modeling of heterogeneity across the cross-sections will be reported. Model 1 is void of endogeneity but a correction for endogeneity is made in both models to maintain consistency and also because the endogenous variable CHAR (CIT policy variable) in model 2 is derived from the CIT rates (used as a variable in model 1). Endogeneity is corrected for in both models with instruments which are uncorrelated with the fixed effects, by means of the instrumental variable (IV) technique (Mbakile-Moloi, 2006; Mesa and Parra-Pena, 2008). The diagnostic tests result generally highlight the fact that the basis for a DPM specification has been met. The model takes a dynamic form due to the strong persistence behavior of FDI as captured in the cross-correlation results.

The results warrant the use of an estimation technique(s) that preserves homoscedasticity, cross-sectional independence, prevents serial correlation, corrects for CSD, contemporaneous correlation and preserve the orthogonality between transformed variables and lagged regressors (Arellano and bond, 1991). These include the FGLS by Park (1967) and Kmenta (1986) and the difference GMM by Arellano and bond (1991). The applied techniques complement corrective interventions earlier carried out for errors in the panel of both models as directed by Baltagi (2008). After having corrected where necessary, there is improvement in the results (standard errors and t-statistics) and the respective models are estimated.

EMPIRICAL RESULTS (MODELS 1 AND 2, SAMPLE 2000-2010)

The empirical results for dynamic panel models (DPM) derived by estimating equations 3 and 4 are presented in Table 1. The difference GMM by Arellano and Bond (1991) (complemented by the FGLS[16]) is employed to correct for endogeneity.

TABLE 1: DYNAMIC PANEL MODELS 1 AND 2 EMPIRICAL RESULTS - FGLS, DIFFERENCE GMM[17] (SAMPLE: 2000-2010). DEPENDENT VARIABLE: FDI

	Model 1: Dynamic panel model - TAX RATES (CIT1, VAT1, Collected Tax Revenue-TREV)		Model 2: Dynamic panel model – TPHM (Computed Tax Policy Harmonization Measure)	
Variables	**FGLS (Feasible generalised least squares)**	**GMM (Generalised methods of moments)**	**FGLS (Feasible generalised least squares)**	**GMM (Generalised methods of moments)**
FDI (lag)	0.420	0.378	0.538	0.362
	(0.000) ***	(0.000) ***	(0.000) ***	(0.000) ***
CIT1	0.201	0.212		
	(0.003) ***	(0.012) **		
VAT1	0.230	0.327		
	(0.153)	(0.099) *		
TREV	-0.010	-0.029		
	(0.769)	(0.400)		
CHAR			-0.004	0.060
			(0.870)	(0.004) ***
VHAR			0.009	0.020
			(0.594)	(0.010) **
TRHA			-0.019	-0.003
			(0.000) ***	(0.322)
DCR	-0.014	-0.014	-0.008	-0.013
	(0.042) **	(0.063) *	(0.382)	(0.030) **
GOV	0.038	0.033	0.115	0.029
	(0.453)	(0.558)	(0.007) ***	(0.573)
EXPO	0. 043	0.065	0.027	0.055
	(0.049) **	(0.057) *	(0.356)	(0.064) *
INQP	0.538	0.566	-0.1202	0.435
	(0.063) *	(0.141)	(0.744)	(0.151)
Observations	150	164	150	164
Sargan/ Hansen test		0.430		0.769 *

Source: Derived using Eviews 8 and STATA 13

*P-values are in parentheses. *Significant at 10% (0.10 level), **Significant at 5% (0.05 level), ***Significant at 1% (0.01 level) respectively. Model 1 reflects the dynamic panel results using tax rates (CIT1, VAT1) and collected tax revenue (TREV) from both CIT and VAT; while model 2 reflects the results obtained from a computed tax policy harmonisation measures (TPHM). An increase in the tax policy harmonization variable implies an increase in the extent of harmonization.*

The results compare favorably with the FGLS estimates showing that they are likely good estimates of the true parameters of the variables. Although the GMM estimation does not meet the post estimation diagnostic requirements in model 1 (tax rates), it meets the requirements in the endogenous model 2 (TPHM). In model 2, the Hansen (1982) test for over-identification does not reject the null of no misspecification and suggests that the instruments set are valid, and no over-identifying restrictions exist for the GMM estimators. Also, in the absence of CSD of the error terms these results are adequately robust and well aligned to *a priori* expectations.

DISCUSSION OF GMM REGRESSION RESULTS (MODELS 1 AND 2, SAMPLE 2000-2010)

Based on the GMM results, the coefficients of lagged FDI in both model 1 and 2 are positively signed and significant at the 1% level. This confirms the persistent behavior of FDI flows to the SADC countries in the panel. The finding also aligns with the correlation analyses results. In model 1, the coefficients of both the CIT and the VAT rate indicators are positively signed and statistically significant at the 5% and 10% levels respectively. The results denote that during the period 2000-2010, existing SADC tax rates have improved on FDI inflows to the SADC, despite the potential of reducing after tax profits and discouraging both FDI and tax rates harmonization initiatives. Generally, inspite of moderate increases in the tax rates of some SADC neighboring countries, the average increment was still lower than those of the EAC[18] and was effective in attracting FDI into the region. Both findings on CIT and VAT rates align with the a priori expectations. The results are also consistent with Hansson and Olofsdotter (2010) and Sudsawasd and Mongsawad (2011), which generally highlight the positive effects of comparatively low levels of CIT and VAT rates in neighboring states in a regional grouping on FDI. However, while the CIT result aligns with the correlation analyses, the VAT result contradicts the correlation analysis.

In model 2, the coefficients of the CIT and VAT policy harmonization indicators (CHAR and VHAR) are both positively signed and statistically significant at the 1% and 5% levels, respectively. The results denote that during the period 2000-2010, increased coordination in tax policies played a significant role in fostering FDI inflows to the SADC. The findings align with the economic expectations but contradict the correlation analyses results. The coefficients of both collected tax revenue indicators (TREV and TRHA) are statistically insignificant and unimportant. Oddly, this implies that these variables have no effect on FDI. However, TREV and TRHA are found to be important, statistically significant and robust at 10% and 1% levels, respectively (in subsequent sensitivity models 3 and 4) over an expanded timeframe (1990-2010), seemingly effective over a longer time period.

The coefficients for the growth rate of domestic credit (DCR) in both models 1 and 2 are negatively signed and statistically significant at the 10% and 5% levels respectively. The results are consistent with the economic expectations but generally contradict that of Sudsawasd and Mongsawad (2011). The coefficient for government expenditure share in GDP (GOV) in both models is statistically insignificant and unimportant. This is contrary to the economic expectation, and the finding of Sudsawasd and Mongsawad (2011). The coefficients for the export variables (EXPO) in both models

are all positively signed and statistically significant at 10% level in line with Gastanaga, et al. (1998) and Sudsawasd and Mongsawad (2011). The coefficients for institutional quality and ease of protection of investors (INQP) in both models are found to have a strong positive impact on FDI although surprisingly statistically insignificant and unimportant. This is contrary to the economic expectations and the correlation analysis but is consistent with Asiedu (2004). The author concludes that despite the institutional and infrastructural reforms aimed at improving institutional quality towards better FDI, coupled with many African countries liberalizing their FDI regulatory framework, the impact on FDI flow has been less significant when compared to other developing countries.

The reviewed empirical results for both two models reveal the extent to which tax rates and tax policy harmonization explain the variation in FDI inflows to the SADC. Generally, all the empirical findings are consistent with or contradict the empirical studies in the field. Against the backdrop of the estimation results, the sensitivity levels of FDI to changes in taxation in the SADC are further investigated.

EBA - ROBUSTNESS AND SENSITIVITY CHECK (TAX RATES AND TPHM)

In applying the Extreme Bound Analysis (EBA) model of Sudsawasd and Mongsawad (2011) to a panel data regression explaining FDI sensitivity, the model takes the form:

$$Y_{it} = \alpha_i + \sum_{j=1}^{n} \delta_j X_{jit} + \beta M_{it} + \sum_{j=1}^{k} \gamma_j Z_{jit} + \varepsilon_{it} \qquad (5)$$

Where Y_{it} is FDI flows into country *i* at time *t*, $X_{j_{it}}$ is the jth explanatory variable that is included in every regression (for example export), M_{it} is the tax variable of interest whose robustness is under investigation (like CIT, VAT or TPHM), $Z_{j_{it}}$ is the set of optional explanatory variables and ε_{it} is the error term.

Based on equation 5, an EBA equation for tax rates and tax policy (variables of interest) are consecutively specified as:

TAX RATES:

$$FDI_{it} = \alpha_i + \delta_i EXPO_{it} + \beta CIT1_{it} + \sum_{j=1}^{k} \gamma_i Z_{jit} + \varepsilon_{it} \qquad (6)$$

$$FDI_{it} = \alpha_i + \delta_i EXPO_{it} + \beta VAT1_{it} + \sum_{j=1}^{k} \gamma_i Z_{jit} + \varepsilon_{it} \qquad (7)$$

$$FDI_{it} = \alpha_i + \delta_i EXPO_{it} + \beta TREV_{it} + \sum_{j=1}^{k} \gamma_i Z_{jit} + \varepsilon_{it} \qquad (8)$$

TPHM:

$$FDI_{it} = \alpha_i + \delta_i EXPO_{it} + \beta CHAR_{it} + \sum_{j=1}^{k} \gamma_i Z_{jit} + \varepsilon_{it} \quad (9)$$

$$FDI_{it} = \alpha_i + \delta_i EXPO_{it} + \beta VHAR_{it} + \sum_{j=1}^{k} \gamma_i Z_{jit} + \varepsilon_{it} \quad (10)$$

$$FDI_{it} = \alpha_i + \delta_i EXPO_{it} + \beta TRHA_{it} + \sum_{j=1}^{k} \gamma_i Z_{jit} + \varepsilon_{it} \quad (11)$$

Where FDI_{it} is FDI flows into country *i* at time *t*, $EXPO_{it}$ is export (included in every regression), $CIT1_{it}$ and $VAT1_{it}$ are the CIT and VAT rates respectively, $TREV_{it}$ is the collected tax revenue variable, $CHAR_{it}$ and $VHAR_{it}$ are the CIT and VAT harmonization variables respectively, $TRHA_{it}$ is the collected tax revenue harmonization variable, Z_{jit} is the set of optional explanatory variables (such as growth rate of domestic credit, inflation) and ε_{it} is the error term.

The export share in the GDP captures export led growth initiatives by SADC countries and is also considered an apt proxy for international trade openness which is devoid of high levels of import penetration. Moreover, the export variable together with the set of tax variables of interest, are the key regressors consistently used in Extreme Bound Analysis (EBA) technique towards testing for robustness in tax variables from the investment model (Sudsawasd and Mongsawad, 2011; Gujarati 1995). The set of Z variables are generally unknown and the EBA approach involves varying all combinations of the subset of Z variables in order to estimate the widest range (the highest and lowest bound values) of the estimated coefficient of the variables of interest (Sudsawasd and Mongsawad, 2011; Baltagi 2008).

After estimating equations 6 to 11 for the full sample period (1990-2010), all the estimated coefficients of the tax policy harmonization indicators are found to be having statistically significant negative robust correlation with FDI (at various levels of significance). There is one fragile result for the CIT rate[19]. The findings on CHAR and VHAR contradict the EBA results of Sudsawasd and Mongsawad (2011), while the results for TRHA are generally consistent. Generally, the EBA results show that within the timeframe 1990-2010, capital inflow is more sensitive to the selected three tax policy harmonization measures than the tax rates.

CONCLUSIONS

This paper evaluates the effect of tax harmonization on FDI in all 15 SADC countries for the period 2000-2010, by means of an eclectic panel data modeling approach. The findings provide empirical evidence to support the argument for harmonizing taxes (reduced tax competition) in the SADC (given its heterogeneity) towards higher FDI inflows, thereby

improving on preceding studies by Mbakile-Moloi (2006), Letete (2011) and Sudsawasd and Mongsawad (2011). This study also tests and corrects for mild cross-sectional dependence (including contemporaneous correlation) of SADC countries, thereby addressing a major critique of panel data modeling and tax models for regional economic communities. Accordingly, the paper improves the relatively small but growing empirical literature on FDI and taxation in Africa.

The empirical results thus warrant some policy implications for the SADC. First, individual governments' national policies should support the SADC regional tax harmonization objectives in order to reduce disparity in tax rates and tax bases, towards higher tax co-movement. Second, efforts aimed at harmonizing regional VAT policy should be improved, especially given its regressivity and its massive revenue generating potential. Third, member countries should promote a tax policy position geared towards enhanced coordination, mitigating CIT leakages, consolidating revenue and improving FDI.

ENDNOTES

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[1] SADC consists of Angola, Botswana, DRCongo, Lesotho, Madagascar, Malawi, Mauritius, Mozambique, Namibia, Seychelles, South Africa, Eswatini, Tanzania, Zambia, Zimbabwe (SADC, 2011).

[2] Different VAT systems create difficulties for both businesses and tax administrations, generating tax competition, double taxation and tax avoidance, hindering international trade. Also, varied VAT rates can perpetuate VAT fraud, including VAT carousel (Itriago, 2011).

[3] See the 2006 finance and investment protocol (FIP) (SADC, 2006) and the 2002 MOU on taxation (SADC, 2011)

[4] Some of the variations of CIT include effective tax rates, the average tax rates, the marginal tax rates and the statutory tax rates; while some of the variations of VAT are reduced VAT rates, zero-rated VAT, exempt VAT rates and standard VAT rates (SADC, 2011).

[5] For example, testing for and correcting for cross-sectional dependence (CSD), contemporaneous correlation, and country-specific challenges.

[6] Angola, Botswana, Lesotho, Madagascar, Malawi, Mauritius, Mozambique, Seychelles, South Africa, Eswatini, Zambia were included while the DRCongo, Namibia, Tanzania and Zimbabwe were excluded.

[7] For the dataset and *a priori* expectations, see Appendix B, Tables B.1 and B.2.

[8] The start date (1990) of the robustness tests represents significant political changes in SADC (SADC, 2011). The end date (2010) permits an assessment of the rebound of FDI in the aftermath of the global financial crises. Moreover, more recent data for certain SADC countries is not yet available, and the intuition is that this paper will trigger more studies on taxation at a later stage when more data becomes available.

[9] The dynamic models allow for an in-dept analysis of the dynamic and persistent FDI flows to SADC. The dynamic models are only estimated from the year 2000, because it was within this period that many African countries (including SADC) specifically galvanized efforts towards mobilizing domestic resources under the auspices of the African Union ((SADC, 2006). The dynamic models assess the effectiveness of resources mobilization efforts, including the role of existing protocols on FDI inflows.

[10] The tax variables CIT1, VAT1 and TREV are used to calculate the three tax policy harmonization measures (TPHM), CHAR, VHAR and TRHA respectively. A high variation in tax rates and TPHM

is indicative of increased tax competition and vice versa. On this basis and in order to avoid duplication, there is no separate tax competition variable used.

[11] The inflation variable was left out of the cointegration test as it is an outlier.

[12] Cross-correlation results (FDI and explanatory variables) (FDI_1(0.56***), CIT1(0.30***),VAT1(-0.17***),TREV(0.17***),CHAR(-0.15***),VHAR(-0.01),TRHA(0.19***),DCR(-0.15***),EXPO(0.16***),GOV(0.12**),INF(-0.03),INQP(-0.13**) are significant at (*)10%,(**)5%,(***)1%.

[13] See summarized results on Table A.1 of Appendix A.

[14] See IDT results in Table A.2 of Appendix A.

[15] See Table A,2 of Appendix A

[16] The FGLS by Park (1967) and Kmenta (1986) also corrected for errors in the panel, thereby significantly improving the results of the estimations. The FGLS corrects for possible endogeneity in the error terms, heteroskedasticity, contemporaneous correlation and serious levels of CSD.

[17] The lag of the endogenous variable CIT1 and real interest rate (RIR) are used as instruments. The RIR is selected from the pre- determine pool of data as it mimics the behavior of CIT rates better. Both variables have the potential of increasing business costs.

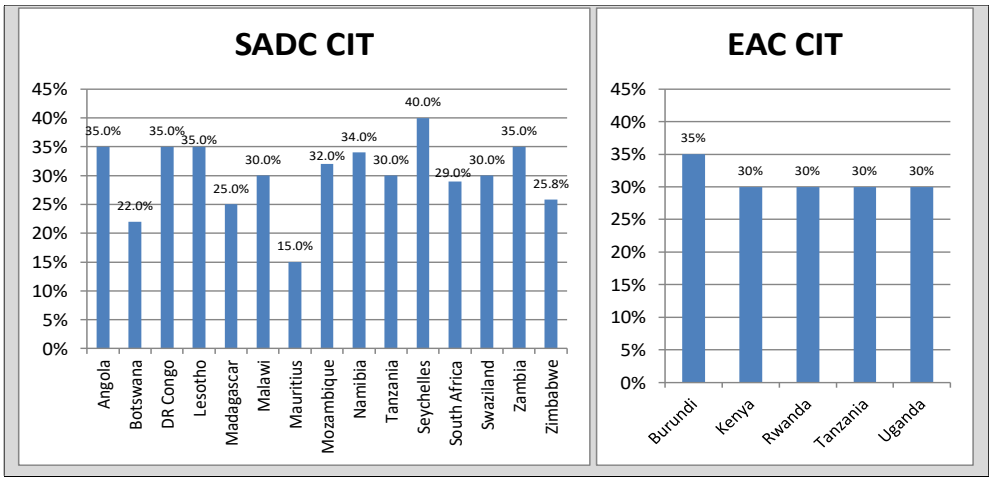
[18] See graphical illustrations of SADC and EAC's comparative average tax rates in Appendix A.

[19] See EBA sensitivity results in Appendix B.

[20]The composite collected tax revenue variable (TREV) is employed in this paper in place of the real GDP (which reflects increased business activity and profits) or the real GDP per capita (a measure of household income levels and development). Increased business activity and higher development increases the population's buying power and motivates foreign investors to invest, leading to more tax revenue collection by governments (Troeger, 2013). Both the real GDP and real GDP per capita are therefore expected to be positively

APPENDIX A

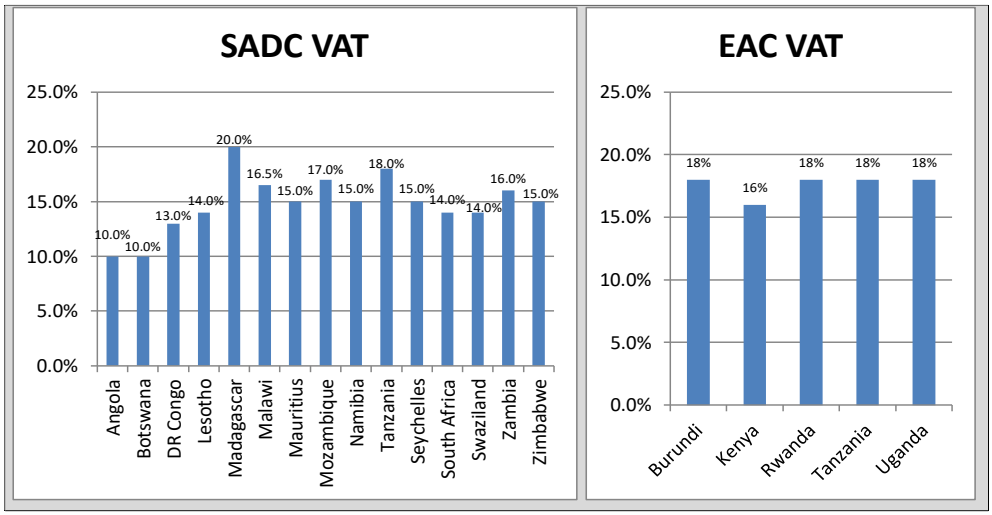
FIGURE A.1: REGIONAL COMPARISON OF STATUTORY CIT RATES FOR 2010



Source: Own illustration. Derived from SADC (2012) and Petersen (2010) data.

Note. The overlapping membership of Tanzania to both the SADC and EAC regional economic groupings pose a potential conflict-of-interest and should be well managed by the SADC in consideration of further CIT harmonisation negotiations.

FIGURE A.2REGIONAL COMPARISON OF STANDARD VAT RATES FOR 2010



Source: Own illustration. Derived from SADC (2012) and Petersen (Ed.) (2010) data
Note. The overlapping membership of Tanzania to both the SADC and EAC regional economic groupings pose a potential conflict-of-interest and should be well managed by the SADC in consideration of further VAT harmonisation negotiations.

RESULTS FOR PRELIMINARY TESTS

Table A.1, Panel Unit Root Tests (URT), 1990-2010

	Test type 1 - Pool unit root test: Summary **Null: Unit root - assumes common unit root process; assumes individual unit root process.** Levin, Lin & Chu (including Im, Pesaran and Shin W-stat, ADF - Fisher Chi-square, PP - Fisher Chi-square test results)		**Test type 2 - : Unit root (individual unit root process)** **Null Hypothesis: Unit root (individual unit root process)** Im, Pesaran and Shin W-stat including Intermediate ADF test results)	
Variable	**Level**	**1st diff**	**Level**	**1st diff**
Foreign direct investment (FDI*)	LLC -2.182[b] (IPS -2.207[b], ADFF 63.584[a], PPF 68.097)[a]		IPS -2.208	IPS -18.528[a]
Corporate income tax (CIT1**)	LLC 0.119 (IPS 0.115, ADFF 1.263, PPF 1.264)	LLC -5.273[a] (IPS -3.500[a], ADFF 17.100[a], PPF 17.393)[a]	IPS 0.115	IPS -3.500-[a]
Value added tax (VAT1)		Insufficient non identical observations		Insufficient non identical observations
Tax revenue collected (TREV*)	LLC -1.300 IPS -1.719, ADFF37.213, PPF 43.323)	LLC -11.736[a] (IPS -11.240[a], ADFF 136.070[a], PPF 204.836)[a]	IPS -1.719	IPS -11.639[a]
Domestic credit (DCR*)	LLC -3.975[a] (IPS -4.123[a], ADFF 76.670[a], PPF 57.920)[a]		IPS -4.122	IPS -9.382[a]
Government expenditure (GOV*)	LLC -0.413 (IPS 0.058, ADFF 38.093, PPF 61.279)	LLC -13.879[a] (IPS-16.167[a], ADFF 232.900[a], PPF 250.520)[a]	IPS 0.058	IPS -16.496[a]
Export (EXPO*)	LLC -1.204 (IPS -1.133, ADFF 41.478, PPF 43.470)	LLC -9.579)[a] (IPS -12.406[a], ADFF 185.332[a], PPF 304.623)[a]	IPS -1.133	IPS -12.406[a]

Inflation (INF*)	LLC -4.354[a] (IPS -5.473 [a], ADFF 83.374 [a], PPF 77.263)[a]		IPS -5.473	IPS -17.966 [a]
Corporate income tax harmonisation measure, CHAR (**; *)	LLC -0.600 (IPS 0.437, ADFF 3.458, PPF 5.831)	LLC -6.800[a] (IPS -4.676 [a], ADFF 27.933 [a], PPF 29.914)[a]	IPS 0.437	IPS -5.265a
Value added tax harmonisation measure, VHAR (**; *)	LLC 1.100 (IPS 0.794, ADFF 9.607, PPF 10.103)	LLC -11.858[a] (IPS -7.860 [a], ADFF 85.863 [a], PPF 89.658)[a]	IPS 0.794	IPS -9.255 [a]
Tax revenue harmonisation measure (TRHA*)	LLC -1.844[b] (IPS -3.373[a], ADFF 58.081 [a], PPF 48.562)[b]		IPS -3.374	IPS -12.379 [a]
Institutional quality protection of investors (INQP*)	LLC -2.377 (IPS -1.293, ADFF 10.731, PPF 7.654	LLC -2.855[a] (IPS -1.438 [c], ADFF 8.873 [c], PPF 10.079)[b]	IPS -1.293	IPS -2.655 [a]

Source: Derived using Eviews 8

H_o: assumes individual unit root process.

*Note: * and ** indicate that the unit root tests (URTs) on the variables were done with intercept only and an intercept and time trend respectively.- a, b and c indicate rejection of the null hypothesis (H_o) at the 1%, 5% and 10% level of significance, respectively. The series includes variables for all 15 SADC countries. Acronyms for URTs: LLC = Levin, Lin & Chu, IPS = Im, Pesaran and Shin W-stat, ADFF = ADF Fisher Chi-square, PPF = PP Fisher Chi-square. For validity of the results, with regard to the results for test type 1 titled 'summary', the series should be stationary under the 'method' (includes results for Levin, Lin and Chu only) and 'the applicable unit root tests' (Im, Pesaran and Shin W-stat test, ADF-Fisher Chi-square, PP-Fisher Chi-square tests). With regard to the results for test type 2 titled 'individual unit root process', the series must be stationary both under the 'method' (includes only Im, Pesaran and Shin W-stat test results) and 'intermediate ADF test results' which has p values of the individual cross sections (Baltagi, 2008:277).*

TABLE A.2: FULL RESULTS OF THE INITIAL DIAGNOSTIC TESTS (SAMPLE WIDE EMPIRICAL RESULTS) (MODELS 1 AND 2)

INITIAL DIAGNOSTIC TESTS, MODELS 1 AND 2 (SAMPLE WIDE EMPIRICAL RESULTS)

Tests	Model 1 (tax rates)		Model 2 (TPHM)	
Test and hypotheses	Test statistics and critical value	Basis for Inference and inference	Test statistics and critical value	Basis for Inference and inference
Joint validity of cross-sectional individual effects (Pool or Fixed Effects Model) $H_0: \mu_1 = \mu_2 = \ldots = \mu_{N-I} = 0$ $H_A =$ not all equal to 0	F Stat = 2.173715 F $crit$ = F (0.05,14,142) = 1.76201	Reject H_0 if Fstat > F $crit.$ Cross-sections are heterogeneous, should not be pooled and must be controlled for by individual effects.	F Stat = 3.215697 F $crit$ = F (0.05,14,142) = 1.76201	Reject H_0 if Fstat > F $crit.$ Cross-sections are heterogeneous, should not be pooled and must be controlled for by individual effects.
Joint validity test for random effects (Pool versus Random Effect Model) $H_0: \sigma_\mu^2 = 0$ $H_A: \sigma_\mu^2 \neq 0$	LM = 0.055395 $\chi^2(1)$ = 3.841459 (1-way ECM)	We do not reject H_0 if $LM < \chi^2(1)$ The pool model is better than the random effects model. There is no heterogeneity amongst countries.	LM = 3.609228 $\chi^2(1)$ = 3.841459 (1-way ECM)	We do not reject H_0 if $LM < \chi^2(1)$ The pool model is better than the random model individual effects. There is no heterogeneity amongst countries.
Joint validity of time (period) fixed effects (test validity of specific time effects) $H_0: \lambda_1 = \lambda_2 = \ldots = \lambda_{T-1} = 0$ $H_A =$ not all equal to 0	F Stat = 1.318432 F $crit$ = F (0.05,10,146) = 1.896088	Reject H_0 if F stat > F $crit$ And conclude that time-specific effects are valid. (Inference: We do not reject H_0. Time effects are not valid. Error term does not take a two-way error component form).	F Stat = 1.254152 F $crit$ = F (0.05,10,146) = 1.896088	Reject H_0 if F stat > F $crit$ And conclude that time-specific effects are valid. (Inference: We do not reject H_0.

				Time effects are not valid. Error term does not take a two-way error component form).
Durban Watson (DW) test for first order serial correlation, given fixed effects (1-way model, for large *N*) $H_0 : \rho = 0$ (given μ_1 are fixed parameters) $H_A = : \rho > 0$ Reject H_0 or make inferences based on the DP test statistics interpretation of DW tables for panel data.	d_p = 1.849007 Critical value: $d_{pL} < d_p < d_{pU}$	Inconclusive results	d_p = 1.911645 Critical value: $d_{pU} < d_p <$ 4-dpu	No first order serial correlation present, given fixed effects
Hausman specification test $H_0 : E(\mu_{i,t} / X_{i,t}) = 0$ $H_A : E(\mu_{i,t} / X_{i,t}) \neq 0$	m_3 = 14.972401 $\chi^2(8) = 15.50731$	Reject H_0 if $m_3 > \chi^2(8)$ We fail to reject the null of exogeneity of the x-regressors. ' is no endogeneity between the x regressors and the error term.	m_3 = 16.080013 $\chi^2(8) = 15.50731$	Reject H_0 if $m_3 > \chi^2(8)$ We do not fail to reject the null of exogeneity of the x-regressors. Regressors are endogenous.

Source: Derived using Eviews 8 and STATA 13

Note: *Due to the inconclusive results of the D_P test for serial correlation, a further test (the LM test) for serial correlation given large T is conducted on the models. In both models 1 and 2, we do not reject H_0. The test results also do not indicate the presence of positive serial correlation in both model 1 and model 2*

SERIAL CORRELATION TEST 2 (DW STATISTICS) (MODELS 1 AND 2)

	Model 1 (tax rates)	**Model 2 (TPHM)**
Test type	Durbin-Watson statistics for panel data	Durbin-Watson statistics for panel data
Hypothesis tested	$H_0: \rho = 0$ $H_A = \ / \rho / < 1$ (in $v_{it} = \rho v_{it-1} + \varepsilon_{it}$)	$H_0: \rho = 0$ $H_A = \ / \rho / < 1$ (in $v_{it} = \rho v_{it-1} + \varepsilon_{it}$)
Test Statistics	Dp = 1.849007	Dp = 1.911645
Critical values	$dpl = 1.8258$, $dpu = 1.8851$ $4 - dpu = 2.1149$, $4 - dpl = 2.1742$	$dpl = 1.8258$, $dpu = 1.8851$ $4 - dpu = 2.1149$, $4 - dpl = 2.1742$
Basis for Inference	Includes four reference points regarding the test statistics, Dp: If $dpu < dp < 4 - dpu$ indicates absence of serial correlation If $0 < dp < dpl$ indicates positive serial correlation If $4 - dpl < dp < 4$ indicates negative serial correlation and finally If $dpl < dp < dpu$ and $4 - dpu < dp < 4 - dpl$ indicates inconclusive results	Includes four reference points regarding the test statistics, Dp: If $dpu < dp < 4 - dpu$ indicates absence of serial correlation If $0 < dp < dpl$ indicates positive serial correlation If $4 - dpl < dp < 4$ indicates negative serial correlation and finally If $dpl < dp < dpu$ and $4 - dpu < dp < 4 - dpl$ indicates inconclusive results
Inference	$1.8258 < dp < 1.8851$ We do not reject H_o. The results are inconclusive.	$1.8851 < dp < 2.1149$ We do not reject H_o as test results indicate the absence of serial correlation.

Source: Derived using Eviews 8

Note: The basis for inference and the DW statistics is calculated using the WITHIN residuals as illustrated by Bhargava, Franzini and Narendranathan (BFN) where critical values for large N, dp<2 indicates positive serial correlation (BFN) (1982:537).

This is done with residual, $\tilde{v}_{it}$ *:* $d_p = \sum_{i=1}^{N} \sum_{t=2}^{T} (\tilde{v}_{it} - \tilde{v}_{i,t-1})^2 / \sum_{i=1}^{N} \sum_{t=1}^{T} \tilde{v}^2_{it}$

CROSS-SECTIONAL DEPENDENCE TESTS RESULTS (CSD) (MODELS 1 AND 2)

Tests	Model 1 (tax rates)		Model 2 (TPHM)	
Test and hypotheses	**Test statistics and critical value**	**Basis for Inference and inference**	**Test statistics and critical value**	**Basis for Inference and inference**
Pesaran (2004) CD test for CSD $H_O : corr(\mu_{i,t}, \mu_{j,t}) = 0$ *for* $I \neq j$ $H_A : corr(\mu_{i,t}, \mu_{j,t}) \neq 0$ *for some* $I \neq j$	LM=0.475 Prob = 0.6349 (critical value)	Reject H_0 if *LM > critical value* We do not reject the null of independent cross-sections. Cross-sections are independent. There is no CSD in the error term.	LM=0.361 Prob = 0.7182 (critical value)	Reject H_0 if *LM > critical value* We do not reject the null of independent cross-sections. Cross-sections are independent. There is no CSD in the error term.
Frees (1995, 2004) test for CSD $H_O : corr(\mu_{i,t}, \mu_{j,t}) = 0$ *for* $i \neq j$ $H_A : corr(\mu_{i,t}, \mu_{j,t}) \neq 0$ *for some* $i \neq j$	Test statistics = 0.023 Critical values from Frees' Q distribution alpha = 0.10 : 0.2559 alpha = 0.05 : 0.3429 alpha = 0.01 : 0.5198	Reject H_0 if *t-stats > critical values at 1%, 5% and 10%.* We do not reject the null of independent cross-sections. Cross-sections are independent. There is no CSD in the error term.	Test statistics = -0.281 Critical values from Frees' Q distribution alpha = 0.10 : 0.2559 alpha = 0.05 : 0.3429 alpha = 0.01 : 0.5198	Reject H_0 if *t-stats > critical values at 1%, 5% and 10%.* We do not reject the null of independent cross-sections. Cross-sections are independent. There is no CSD in the error term.
Friedman (1937) test for CSD $H_O : corr(\mu_{i,t}, \mu_{j,t}) = 0$ *for* $i \neq j$ $H_A : corr(\mu_{i,t}, \mu_{j,t}) \neq 0$ *for some* $i \neq j$	Test statistics = 12.556 Prob = 0.5617 (critical value)	Reject H_0 if p *value* is significant. We do not reject the null of independent cross-sections. Cross-sections are independent. There is no CSD in the error term	Test statistics = 12.265 Prob = 0.5850 (critical value)	Reject H_0 if p *value* is significant We do not reject the null of independent cross-sections. Cross-sections are independent. There is no CSD in the error term

Source: Derived using STATA 13

Note: The Breush Godfrey and Pagan langrange multiplier test (Breusch-Pagan LM test) (1980), is not conducted on the dynamic panel models as it is most suited when T>N (De Hoyos and Sarafidis, 2006:483).

APPENDIX B

TABLE B.1: VARIABLES DEFINITION AND SOURCES[20]

Abbreviation	Variable description	Sources	Definition of variables
FDI	Foreign direct investment net inflows to the SADC	World Development Indicators (World Bank, 2013)	Foreign direct investment net inflows share of GDP. Measured as the net foreign inflow into the SADC (% of GDP).
CIT1	Corporate Income Tax (maximum statutory rate)	SADC 2011	Maximum statutory corporate tax rate, calculated on profit before tax.
VAT1	Value Added Tax (standard rate)	SADC 2011	Applicable standard VAT rate or general sales tax (GST) on goods and services as a percentage of value added of industry and services
TREV	Tax revenue	SADC 2011, the IMF's International Financial Statistics (IFS) (2014a).	Collected corporate tax on profits, income, and capital gains (CIT2) and also from value added tax as a percentage of GDP (VAT2).
GOV	Government expenditure	World Development Indicators (World Bank, 2013).	Share of government expenditure in GDP (GOV)
DCR	Domestic credit growth rate	World Development Indicators (World Bank, 2013).	Growth rate of (net) domestic credit at constant prices
EXPO	Export	World Development Indicators (World Bank, 2013)	Total trade exports of SADC countries to the developed world, share of GDP
INF	Inflation	World Development Indicators (World Bank, 2013; the IMF's International Financial Statistics (IFS) (2014a).	Rate of inflation for SADC countries
INQP	Institutional Quality Protection of investors	Doing business. Measuring Business Regulations (World Bank, 2012b).	Strength of investor protection index (0-10)
RIR	Real Interest Rate	World Development Indicators (World Bank, 2013); the IMF's International Financial Statistics (IFS) (2014a).	Percentage of real interest rate (lending interest rate) adjusted for inflation as measured by the GDP deflator. A reflection of increased in cost of doing business.

Source: Compiled from various sources as cited

TABLE B.2: *A PRIORI* EXPECTATION (ALL PANEL MODELS-FULL SAMPLE)

Variable	Expected signs	Deductions
FDI	Dependent variable	Dependent variable
CIT1	Positive	The CIT rates applied by the SADC member countries during the period under investigation did not increase business costs and have significantly improved on FDI inflows to the region (positive sign).
VAT1	Positive	The VAT rates applied by the SADC member countries during the period under investigation did not increase business costs and have significantly improved on FDI inflows to the region (positive sign).
TREV	Positive	The tax bases including tax revenue collection methods during the period under investigation have significantly contributed to tax revenue efforts, build investors' confidence and FDI inflows to the SADC region (positive sign).
CHAR	Negative/ Positive	More variation upward (more deviation or increased tax competition) in a country's statutory CIT rate from that of the SADC group average would lead to a reduction in FDI (negative relationship). More harmonisation and synchronisation (less deviation) in a country's statutory CIT rate in accordance with that of the SADC group average would improve investors' confidence and lead to an increase in FDI (positive relationship).
VHAR	Negative/ Positive	More variation upward (more deviation or increased tax competition) in a country's standard VAT rate from that of the SADC group average would lead to a reduction in FDI (negative relationship). More harmonisation and sychronisation (less deviation) in VAT rates by a member country in accordance with that of the SADC group average would improve investors' confidence and FDI (positive sign).
TRHA	Negative/ Positive	More variation upward (more deviation or increased tax competition) in a country's tax policy from that of other SADC countries would lead to a reduction in FDI (negative relationship). More harmonisation (less variation) and improved coordination in regional tax policies geared towards deepening the tax bases in the SADC would boost investors' confidence, increase tax revenue and FDI (positive sign).
Expo	Positive.	An increase in exports promotes business activities, builds business confidence and positively impacts on FDI flows. Hence the levels of export by a country would have a positive influence on FDI decisions (positive relationship).
DCR	Positive/ Negative.	An increase in the growth rate of domestic credit would lead to more FDI, as already established subsidiaries of multinationals take advantage of improved funding for businesses. The benefit could trickle down to already established Brownfield investments (positively relationship). On the other hand increased credit growth channeled towards initiation of more domestic investments for indigenous businesses (as opposed to foreign investment activities), leads to reduction in FDI. The benefit could be reflected in greater number of Greenfield investments (negative relationship).
Gov	Positive/ Negative	An increase in the level of government expenditure (consumption) would grow domestic market size, boost economic activities and trigger the flow of FDI (positive relationship). However, if government consumption is frequently financed through borrowings and debts, leading to poor ratings and subsequently investors' confidence, FDI may be resultantly low (negative relationship).
INF	Negative	A high inflation rate generally increases the prices of goods and services, leading to a fall in demand as consumers cross over to available substitutes. Soaring inflation often represents the overall instability of the country and would lead to reduction in FDI (negative relationship).
INQP	Positive/ Negative	Good institutional quality, such as better strength of investor protection or property rights improves business confidence and resultantly FDI (Positive relationship). Alternatively, poor institutional quality where investors are protected the least, business environment is difficult and export days are long (especially in resource rich countries), surprisingly have the reverse psychology of attracting FDI inflows driven by profit motives and return on investment (negative relationship).

Source: Table motivated by various studies (including Montiel, 2003; Sudsawasd and Mongsawad, 2011).

Note: The summarised hypothesis presents a two-way causality relationship between FDI and some explanatory variables namely CHAR, VHAR, TRHA, DCR, GOV and INQP. In all four models we use the standard deviation of inflation (STINF) and standard deviation of domestic credit growth (STDCR) exclusively in the EBA, as directed in the tax and investment literature (see for instance Levine and Renelt, 1992 and Sudsawasd and Mongsawad, 2011). These are traditionally used to increase the pool of variables employed in robustness tests. The real interest rate variable (RIR) is used as an instrument in correcting for endogeneity.

TABLE B.3: EBA ROBUSTNESS AND SENSITIVITY RESULTS (DEPENDENT VARIABLE: FDI)

MODEL 3: EBA SENSITIVITY RESULTS (DEPENDENT VARIABLE: FDI) FOR SADC TAX RATES-FULL SAMPLE PERIOD (1990-2010)

Variables of interest (M)	Description	Coefficient (β)	t-stats	Standard error	z-variables/ Optional variables	Robust/ Fragile	Predicted Sign
CIT1	High	0.162367	0.975036	0.166524	EXPO, DCR, INF, STDINF, STDCR	Fragile	Negative/ Positive
	Base	0.107801	0.701129	0.153754			
	Low	0.089861	0.527750	0.170271	EXPO, DCR, GOV, INF		
VAT1	High	-0.482565**	-2.020227	0.238867	EXPO, INF	**Robust**	Negative/ Positive
	Base	-0.485183**	-2.051392	0.236514			
	Low	-0.665476**	-2.375243	0.280172	EXPO, DCR, GOV, STDINF, STDCR		
TREV*	High	0.020529*	1.886264	0.010883	INF, EXPO, STDINF	**Robust**	Positive
	Base	0.020174*	1.871057	0.010782			
	Low	0.020219*	1.681273	0.012026	EXPO, DCR		

Derive using Eviews 8

*Note: ***, **, * denote 1%, 5%, 10% significant levels respectively. The estimated results are based on the fixed effects model estimator on 315 observations. The pool of variables used in the EBA is FDI, CIT, VAT, TREV, EXPO, INF, DCR, GOV, STDINF and STDCR. The variables CIT1, VAT1 and TREV represent corporate tax rates, value added tax rates and collected tax revenue respectively. *TREV has marginally robust coefficient results.*

MODEL 4: EBA SENSITIVITY RESULTS (DEPENDENT VARIABLE: FDI) FOR SADC TPHM (1990-2010)

Variables of interest (M)	Description	Coefficient (β)	t-stats	Standard error	z-variables/ Optional variables	Robust/ Fragile	Predicted Sign
CHAR	High	-0.060731***	-6.108561	0.009942	EXPO, GOV, DCR, INF	**Robust**	Negative/ Positive
	Base	-0.062713***	-6.963893	0.00905			
	Low	-0.063741***	-6.643633	0.009594	EXPO, DCR,		
VHAR	High	-0.003378*	-1.678085	0.002013	EXPO, STDINF, STDCR	**Robust**	Negative/ Positive
	Base	-0.004099*	-1.937687	0.002116			
	Low	-0.006037***	-2.658726	0.002271	EXPO, STDCR, GOV, INF		
TRHA	High	-0.009162***	-4.665528	0.001964	EXPO, INF, DCR	**Robust**	Positive
	Base	-0.009870***	-6.370959	0.001549			
	Low	-0.009889***	-6.382235	0.001549	EXPO, STDINF		

Source: Derived using Evies 8

*Note: ***, **, * denote 1%, 5%, 10% significant levels respectively. The estimated results are based on the fixed effects model estimator on 315 observations. The pool of variables used in the EBA is FDI, CHAR, VHAR, TRHA, EXPO, INF, DCR, GOV, STDINF and STDCR. The variables CHAR, VHAR and TRHA represent measures of CIT policy harmonisation, VAT policy harmonisation and collected tax revenue harmonisation policy respectively.*

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