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The effect of tax harmonisation in the Southern African Development Community on Foreign Direct Investment

Michael Ade*, Jannie Rossouw[†] and Tendai Gwatidzo[‡]

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Abstract

This paper investigates the effect of tax harmonisation on foreign direct investment (FDI) in the Southern African Development Community (SADC) region. Findings of a first attempt to investigate the linkage between taxation (tax rates and policy) and FDI (in all 15 countries), using an eclectic panel data modeling approach from 1990-2010 are presented. A new value added tax (VAT) harmonisation variable is introduced (in addition to a corporate income tax (CIT) harmonisation variable) via a tax policy harmonisation measure (TPHM) in the panel empirical investigation, complemented by a sensitivity analysis (using the extreme-bound analysis (EBA) technique) on the impact of taxation on FDI inflows to the SADC.

The investigation shows that when errors in the regressors (for instance contemporaneous correlation, heteroskedasticity, cross-sectional dependence, endogeneity) are controlled for, tax harmonisation (amongst other contributing factors) does indeed have a significant causal relationship with FDI in the SADC. The study generally provides empirical evidence to support the argument for effectively using taxation towards higher FDI inflows in the region. Policy considerations towards improved tax harmonisation emanating from the paper include the need for individual SADC governments to promote national tax policies aimed at supporting regional tax harmonisation objectives, through strengthening existing tax agreements and treaties. This is necessary to reduce disparity in tax rates (including the definition of tax bases), improve existing level of tax co-movement, mitigate tax leakages and promote FDI inflows.

JEL codes: E60, F15, F21, H25, H27

Keywords: SADC, FDI and Tax Policy Harmonisation, Panel Data, cross-sectional dependence, Sensitivity analysis

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1 Introduction

Multinational enterprises (MNEs) 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 quality infrastructure, market size, regulations, institutional quality and the return on investment (Asiedu, 2002; Mbakile-Moloi, 2006). More often than not, taxation is not at the fore of these considerations even though it is a very definite and important factor. Taxation provides governments with the funds needed to stimulate economic growth, invest in development, relieve poverty, provide public services and help restore parity in societies where income inequality prevails (African Economic Outlook (AEO) 2013)

Taxation is also very instrumental in promoting investment and advancing regional economic integration amongst countries in regional economic communities (RECs). Increased divergence in tax policy will eventually affect investment (including foreign direct investment - FDI) at both the micro and macro levels, which would warrant the need for some sort of co-ordination (Sudsawasd and Mongsawad, 2011). As highlighted by AEO (2013) and Hansson and Olofsdotter (2010), many RECs in the world and in Africa (including the SADC) are specifically pursuing enhanced tax harmonisation as an important step towards improved investment (including FDI) and regional economic integration.

Recent studies on the SADC by Robinson (2004), Mbakile-Moloi (2006) and Letete (2011) have concluded that it is possible to harmonise VAT, but no link was made between VAT² harmonisation and FDI inflow³. This paper builds on the existing studies by introducing a tax policy harmonisation 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 harmonisation of taxation, aimed at enhancing regional integration (and tax revenue). Although the SADC is heterogeneous with different country characteristics (including varied tax systems) and overlapping memberships to other regional groupings, this study proposes tax harmonisation⁴ in line with the stated objectives of existing regional pro-

¹The SADC consists of Angola, Botswana, DR Congo, Lesotho, Madagascar, Malawi, Mauritius, Mozambique, Namibia, Seychelles, South Africa, Swaziland, Tanzania, Zambia and Zimbabwe (SADC, 2011).

²The potential liability for VAT registration, the basic structure of VAT or the design (often for non-tax policy objectives) can influence investment decisions (or locations) in countries of regional blocs. Differences between VAT systems create difficulties for both businesses and tax administrations, generate tax competition and double taxation and lead to tax avoidance. This hinders international trade. Also, varied VAT rates can perpetuate VAT fraud, including VAT carousel (Itriago, 2011).

³Although the general levels of FDI inflows for the SADC have been increasing consistently from 2000 to 2010, there is still need to improve on FDI given its importance (SADC, 2011; UNCTAD, 2011).

⁴This study proposes tax rates harmonisation through a process whereby member countries can first gradually reduce the current range of tax rates (both CIT and VAT); converge at an acceptable robust range of rates, before aiming for a uniform harmonisation. In harmonising regional tax policies, systems and laws, the study proposes enhanced regional co-operation by member states in tax-related matters.

tocols⁵. This study seeks to improve on the tax literature by accounting for some econometric issues⁶ that were not previously considered. The study will be of interest to policy makers in the SADC, in regional groupings and economic communities in Africa that are considering harmonisation of policies to enhance regional economic integration processes.

The remainder of the paper is organised as follows: Section 2 provides a brief literature review. Sections 3 and 4 present the data, study methodology and empirical results. Section 5 presents the robustness and sensitivity analyses. Section 6 concludes the study.

2 Literature review

The theoretical literature involving tax effects on economic and investment activities stems from the eclectic theory of international production, otherwise known as the eclectic paradigm. The paradigm includes three variables: ownership-specific (O), location-specific (L), and internalisation (I), also called the OLI framework. The key assertion is that all three factors (OLI) are interdependent and are important in determining the extent and pattern of FDI (Dunning, 1980).

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 MNEs to be located in their home country and use exports (rather than foreign production) to serve their foreign markets. Hence high taxes tend to discourage production as firms consider ways of maximising profits and the return on their investments. The argument is in line with the neo-classical investment framework (as expounded by Darp, 2000 and 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 harmonisation).

Deveroux (2006) presents a simple model describing different decisions faced by MNEs when deciding on a new investment, otherwise known as “Deveroux’s decision tree”. The paradigm consists of four stages or decisions namely: investing abroad or at home (and exporting), location, scale of investment and re-allocation of profit among locations (or repatriation to parent companies). All four decisions are influenced among other factors, by the home country or grouping of countries’ taxation system (including tax coordination). The main offering of Deveroux’s (2006) paradigm is consistent with that of the OECD (2007) theoretical framework

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

⁵See the 2002 memorandum of understanding (MOU) on taxation and the 2006 finance and investment protocol (FIP) (SADC, 2002; 2006).

⁶For example testing for and correcting for cross-sectional dependence (CSD), contemporaneous correlation and country-specific challenges.

countries (LDCs) for the period 1970-95. The study found that low CIT rates and a fair level of harmonisation of tax policy could also influence significantly the flow of FDI to host countries, as companies will strive to maximise the advantages of location in such countries.

Sudsawasd and Mongsawad (2011) investigated the impact of tax harmonisation on FDI and total investment shares of a country. The study used panel data from over a hundred countries including most SADC countries⁷ from 1995 to 2006. The empirical findings indicate that more harmonisation 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 harmonisation on FDI in the European Union (EU). The results generally highlight the benefits of enhanced tax coordination towards improved FDI inflows. The findings align with Mbakile-Moloi (2006) who concluded that there is evidence of increased levels of coordination and fiscal mimicking behaviour (in setting VAT rates) and copycat behaviour in SSA (including the SADC⁸), enhancing economic activities.

Doubleglist (2013) used a simple linear regression, (the OLS technique) to investigate the impact of taxation on FDI in Nigeria. The empirical findings revealed the existence of a linear relationship between FDI (dependent variable) and CIT (independent variable) being positive. The findings generally align with Asiedu (2002) and Tax Justice Network-Africa and ActionAid International (2012) who all emphasise the importance of taxation (including effective coordination of tax policies and institutions) as a key determinant of FDI to Africa. The prospect of tax harmonisation by neighbouring states in a region to improve FDI inflow seems logical. However, Troeger (2013) has highlighted the existing ambiguity arguing against the benefits of tax harmonisation, stating that such co-operation sometimes have huge hidden costs (for participating countries), effectively contradicting the view supported by the proponents of tax harmonisation.

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 harmonisation variables and FDI in all SADC countries. This paper intends to fill this gap in the investment and tax literature using recognised methodology

⁷ Angola, Botswana, Lesotho, Madagascar, Malawi, Mauritius, Mozambique, Seychelles, South Africa, Swaziland, Zambia were included while the DR Congo, Namibia, Tanzania and Zimbabwe were excluded.

⁸ Mimicking behaviour is explained here specifically in terms of countries adopting VAT as their neighbours adopt it and setting their VAT rates close to or similar to those of their neighbours, leading to harmonisation of the VAT (Mbakile-Moloi, 2006:119).

3 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)⁹. The empirical analysis basically tests the impact of tax rates and tax policy harmonisation (sparsely used) including other proffered determinants, on FDI (mostly used as the dependent variable), by means of two time-frames (1990-2010 and 2000-2010¹⁰). The investigation obtains four models, juxtaposes the empirical findings and gains insight into which set of tax variables (that is the current tax rates or a tax policy harmonisation measure, TPHM) are better in influencing FDI flows to the SADC. The TPHM of Sudsawasd and Mongsawad (2011:665) is specified as follows:

$$TPH_{i,t} = \frac{|\tau_{i,t} - \bar{\tau}_t|}{\bar{\tau}_t} x 100 \quad (1)$$

Where TPH_{it} is the tax policy harmonisation 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.

The study employed both panel and dynamic panel estimation techniques namely, the feasible generalised least squares (FGLS) by Park (1967) and Kmenta (1986) and the difference GMM by Arellano and Bond (1991). The panel data modeling (PDM) enhances the degrees of freedom, delineates the extent of the causation, investigates the consistency of the findings from previous preliminary tests, captures country-specific differences, highlights spatial dynamics (such as structural differences in tax regimes, heterogeneity in economies) and other unobserved effects (Baltagi, 2008). 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 (URTs), co-integration tests¹¹, descriptive statistics, pair-wise granger causality test, cross-correlation analysis¹²) are also conducted on the panel (full sample, 1990-2010) prior to the

⁹For the dataset and *a priori* expectations, see Tables A.1 and A.2 respectively of Appendix A. A high variation in tax rates (high TPHM) is indicative of increased tax competition as countries seek conducive conditions for FDI inflows; while a low variation in tax rates (low TPHM) is indicative of high harmonisation. On this basis and in order to avoid duplication, no separate tax competition variable is used in this study.

¹⁰The start date (1990) represents significant political changes in the SADC (Matlosa, 2005; SADC, 2011). The year 2000 is coincidentally delineated as the year of stronger FDI flows to the SADC and increased momentum towards domestic resource mobilisation (DRM) initiatives (UNCTAD, 2011; AEO, 2013). 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. The second time-frame (2000-2010) allows for an in-dept analysis of the dynamic nature and persistence of FDI flows to the SADC.

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

¹²Cross-correlation results between FDI and explanatory variables (FDI_1(0.56***),

model specification. Selected URTs which assume individual UR processes and accommodate cross-sectional dependence (CSD) to some extent (Baltagi, 2008) are applied. Specifically, 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).

3.1 Model specification (models 1 and 2) (sample 1990-2010)

The investigation in this section of the study makes use of the least squares dummy variables (LSDV) model (complemented by the FGLS model) to account for country heterogeneity, specified as follows:

$$Y_{it} = X_{it}\beta + \sum_{j=1}^{N-1} \delta_j D_{jit} + \mu_{it} \quad (2)$$

Where Y_{it} = dependent variable, X_{it} represents the regressors, β = the slope coefficient, D_{jit} is the set of country dummies, μ_{it} is the idiosyncratic error term.

$N - 1$ individual dummies for both the country-specific effect and the impact of recession are included. South Africa a magnet for FDI in SADC is the benchmark.

Empirical specifications:

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

$$FDI_{it} = \alpha_0 + \beta_1 CIT1_{it} + \beta_2 VAT1_{it} + \beta_3 TREV_{it} + \beta_4 GOV_{it} + \beta_5 DCR_{it} + \beta_6 EXPO_{it} + \beta_7 INF_{it} + \beta_8 Dum_{it} + \mu_i + \lambda_i + v_{it} \quad (3)$$

$$FDI_{it} = \alpha_0 + \beta_1 CHAR_{it} + \beta_2 VHAR_{it} + \beta_3 TRHA_{it} + \beta_4 GOV_{it} + \beta_5 DCR_{it} + \beta_6 EXPO_{it} + \beta_7 INF_{it} + \beta_8 Dum_{it} + \mu_i + \lambda_i + v_{it} \quad (4)$$

Where in both equations, i represent the cross-sections, t the time, FDI_{it} is the FDI share of GDP to the SADC, α_0 is a simple constant, $\beta_1, \beta_2, \dots, \beta_7$ are positive slope coefficients, GOV_{it} is government expenditure, DCR_{it} is the growth rate of domestic credit, $EXPO_{it}$ is export, INF_{it} is inflation, Dum_{it} is the recession dummy, μ_{it} and λ_{it} are the unobservable individual and time effects respectively, v_{it} is the stochastic disturbance (idiosyncratic error term)

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%

and is the sum of the above three components. In equation 3 $CIT1_{it}$ and $VAT1_{it}$ represent the statutory CIT tax and standard VAT rates; $TREV_{it}$ is tax revenue share of GDP. In equation 4 $CHAR_{it}$ and $VHAR_{it}$ are the statutory CIT and standard VAT policy harmonisation indicators; $TRHA_{it}$ is collected tax revenue policy harmonisation indicator.

3.1.1 Initial diagnostic tests results (IDTs) - (models 1 and 2, sample 1990-2010)

Some IDTs are conducted on the data to ascertain the direction of the empirical modelling. Summarily, fixed, random and time effects are valid in both models and there is positive first order serial correlation. The Breusch-Pagan (1980) test results (suited for when $T > N$ as directed by De Hoyos and Sarafidis, 2006:484) indicate the presence of cross-sectional dependence (CSD) (cross-sections are inter-dependent; the errors of cross-sections are correlated) and the errors exhibit both groupwise heteroskedasticity and contemporaneous correlation. No endogeneity exists in both models but the FGLS estimator (which is perfectly suited to data with individual effects, groupwise heteroscedasticity, serial correlation and CSD) is employed to cater for mild levels of endogeneity (Hicks, 1994; Owusu-Sekyere, 2011).

3.2 Model specification (models 3 and 4) (sample 2000-2010)

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

$$Y_{it} = \alpha y_{it-1} + X_{it}\beta + \mu_{it} \quad (5)$$

Where Y_{it} = dependent variable, y_{it-1} represents the lag of the dependent variable, X_{it} 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 IDTs results for model 3 (using tax rates) and model 4 (using TPHM) are consecutively specified as follows:

$$FDI_{it} = \alpha_0 + \beta_1 FDI_{it-1} + \beta_2 CIT1_{it} + \beta_3 VAT1_{it} + \beta_4 TREV_{it} + \beta_5 GOV_{it} + \beta_6 DCR_{it} + \beta_7 EXPO_{it} + \beta_8 INQP_{it} + \mu_i + v_{it} \quad (6)$$

$$FDI_{it} = \alpha_0 + \beta_1 FDI_{it-1} + \beta_2 CHAR_{it} + \beta_3 VHAR1_{it} + \beta_4 TRAH_{it} + \beta_5 GOV_{it} + \beta_6 DCR_{it} + \beta_7 EXPO_{it} + \beta_8 INQP_{it} + \mu_i + v_{it} \quad (7)$$

Where in equations 6 and 7, the additional variable $INQP_{it}$ is the institutional quality strength of protection of investors, μ_i is the fixed effect error term and v_{it} is the idiosyncratic error term.

3.2.1 Initial diagnostic tests (IDTs) results - (models 3 and 4, sample 2000-2010)

Summarily the IDTs results reveal that individual effects and pool model are valid, time effects are invalid, heteroscedasticity exists and there's no CSD. Model 3 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 harmonisation variable) in model 4 is derived from the CIT rates (used as a variable in model 3). Endogeneity is corrected 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 IDTs results 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 behaviour 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 Bover, 1995). 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 all four models as directed by Gujarati (2003) and Baltagi (2008). After having corrected where necessary, there is improvement in the results (standard errors and t-statistics) and the respective models are estimated.

4 Empirical results

4.1 Empirical results presentation (models 1 and 2, sample 1990-2010)

Table 1 below reports the panel empirical results derived by estimating equation 3 and 4 on the full sample. The coefficients of the REM estimations in both models (which assumes μ_i to be orthogonal to the independent variables, that is, $E(\mu_{it}|X_{it})$ and the LSDV1 (with fixed effects or 'within Q' estimations) are largely insignificant. Most of the LSDV1 estimates have been corrected upwards (after rectifying errors of CSD and contemporaneous correlation in the error term) as captured by the improved coefficients of both the LSDV2 and FGLS estimation results.

It can be observed that the results of the LSDV2 estimation (which also captures the structural differences among the countries of the SADC) are significantly no different from FGLS estimation results, showing that they are likely good estimates of the true parameters of the variables. The statistically significant individual effects results, including the recession dummy (LSDV2 model), highlight country heterogeneity (such as the differences in economic policies, FDI regimes and tax structure) also confirming the counter-cyclical flow of FDI to the SADC countries during the recession period. This is partly explained by

the resilience of the economies of the SADC countries including international demand for the commodities and natural resources during the recession. Based on the IDTs results, the FGLS estimator is selected as the main estimator of models 1 and 2.

4.1.1 Discussion of FGLS regression results (models 1 and 2, sample 1990-2010)

As per the FGLS results in model 1, the coefficients of the CIT and the VAT rate indicators are positively signed and statistically significant at the 1% level. The results denote that during the period 1990-2010 both tax rates have considerably improved on FDI inflows to the SADC. This is consistent with Hansson and Olofsdotter (2010) and Sudsawasd and Mongsawad (2011), which generally highlight the positive effect of low levels of CIT and VAT rates by neighbouring states on FDI. Both findings also align with the a priori expectation and correlation analysis (except for the VAT results).

The coefficients of the CIT and VAT policy harmonisation indicators (CHAR and VHAR) in model 2 are negatively signed and statistically significant at the 1% and 5% levels respectively. The findings suggest that increased variation (less synchronisation) in both CIT and VAT rates (from the SADC average) and relevant tax policy lead to a reduction in FDI. The CHAR evidence is consistent with previous studies (see Mesa and Parra-Pena, 2008; Hansson and Olofsdotter, 2010) and aligns with the correlation results and the a priori expectations. Alternatively, the VHAR evidence improves on the findings by Sudsawasd and Mongsawad (2011) but is consistent with Letete (2011) who recommended a broad base, single taxation VAT rate harmonisation towards improved economic activities. The result also aligns with the a priori expectations and correlation result.

The coefficients of both the collected tax revenue indicator (TREV) and the tax revenue policy harmonisation indicator (TRHA) in model 1 are positively signed and statistically significant at the 1% level. The results indicate that improved harmonisation (less variation) and coordination in SADC regional tax policies deepen tax bases and improve both collected tax revenue and FDI, during the period under investigation (1990-2010). The findings generally support the argument for coordination of regional tax policy in the SADC, given the varied tax bases, in line with Sudsawasd and Mongsawad (2011). Both results are consistent with the cross-correlation analysis and the economic specification.

As expected, the FGLS results for domestic credit (DCR) and export (EXPO) in both models 1 and 2 are statistically significant. Also the results for government expenditure (GOV) and inflation (INF) align with the a priori expectation in model 1 and model 2 respectively. However, strangely GOV is found to be insignificant and unimportant in model 2 while INF is found to be insignificant and unimportant in model 1. All the significant findings are consistent with empirical studies in the field.

4.2 Empirical results (models 3 and 4, sample 2000-2010)

Table 2 below presents the empirical results for dynamic panel models (DPM) derived by estimating equations 6 and 7. The difference GMM by Arellano and Bond (1991) is employed to correct for endogeneity. The results compare favourably 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 3 (tax rates), it meets the requirements in the endogenous model 4 (TPHM). In model 4, the Sargan (1958) or Hansen (1982) test for over-identification does not reject the null of no mis-specification and suggests that the instruments set are emphatically 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.

4.2.1 Discussion of GMM regression results (models 3 and 4, sample 2000-2010)

Based on the GMM result in Table 2 above, the coefficients of lagged FDI in both model 3 and 4 are positively signed and significant at the 1% level. This confirms the persistent behaviour of FDI flows to the SADC countries in the panel. The finding also aligns with the correlation analyses results. In model 3, 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 improved FDI inflows. The findings align with the economic expectations and with Sudsawasd and Mongsawad (2011), who generally highlight the importance of improved coordination of corporate and indirect taxes towards FDI. The CIT result aligns with the correlation analyses while the VAT result modifies the correlation analysis.

In models 3 and 4, the coefficients of the CIT and VAT policy harmonisation 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 from both models are consistent with the observation by Robinson (2004) that most SADC countries have already started adjustments towards harmonising indirect taxes (including VAT) towards improved economic activities. The findings align with the economic expectations but modify 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 and statistically significant at 1% levels (in models 1 and 2) in the first time-frame (1990-2010), seemingly effective over a longer time period.

In both models 3 and 4, the coefficients for domestic credit (DCR) and export (EXPO) are statistically significant as expected. Contrary to expectations, the

coefficients for government expenditure (GOV) and the institutional quality (INQP) in both models are statistically insignificant and unimportant. All the empirical findings are consistent with or modify 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.

5 EBA - robustness and sensitivity check (tax rates and TPHM)

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

$$Y_{it} = \alpha_i \sum_{j=1}^n \delta_j X_{jit} + \beta M_{it} + \sum_{j=1}^k \gamma_j Z_{jit} + \varepsilon_{it} \quad (8)$$

Where Y_{it} is FDI flows into country i at time t , X_{jit} is the j th 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_{jit} is the set of optional explanatory variables and ε_{it} is the error term.

Based on equation 8, an EBA equation for the first set (tax rates) and second set (tax policy harmonisation) of tax variables of interest are consecutively specified as:

Tax rates:

$$FDI_{it} = \alpha_i + \delta_i EXPO_{it} + \beta CIT1_{it} + \sum_{j=1}^k \gamma_j Z_{jit} + \varepsilon_{it} \quad (9)$$

$$FDI_{it} = \alpha_i + \delta_i EXPO_{it} + \beta VAT1_{it} + \sum_{j=1}^k \gamma_j Z_{jit} + \varepsilon_{it} \quad (10)$$

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

TPHM:

$$FDI_{it} = \alpha_i + \delta_i EXPO_{it} + \beta CHAR_{it} + \sum_{j=1}^k \gamma_j Z_{jit} + \varepsilon_{it} \quad (12)$$

$$FDI_{it} = \alpha_i + \delta_i EXPO_{it} + \beta VHAR_{it} + \sum_{j=1}^k \gamma_j Z_{jit} + \varepsilon_{it} \quad (13)$$

$$FDI_{it} = \alpha_i + \delta_i EXPO_{it} + \beta TRHA_{it} + \sum_{j=1}^k \gamma_j Z_{jit} + \varepsilon_{it} \quad (14)$$

Where FDI_{it} is FID 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 harmonisation variables respectively, $TRHA_{it}$ is the collected tax revenue harmonisation 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.

Tables B.1 and B.2 of Appendix B presents the EBA results for the full sample period (1990-2010), based on estimating equations 9 to 14. In Table B.1 the estimated coefficients of the CIT rate are found to be statistically insignificant and fragile. Alternatively, the estimated coefficients of the VAT rate and TREV indicators are found to be statistically significant and robust with negative and positive signs respectively. The fragile empirical result of the CIT rate is contrary to the a priori expectation, while the robust empirical results of the VAT rate and TREV indicator are consistent with the earlier a priori expectations. The robust findings of VAT and TREV indicators confirm their importance in influencing FDI decisions in the SADC. This generally shows the extent of sensitivity of FDI to changes in the standard VAT rate, the tax bases and revenue collection methods in line with the earlier empirical results. The results significantly improve on the findings by Sudsawasd and Mongsawad (2011) which used consumption tax instead of VAT.

Model 2 presents the EBA sensitivity results of the three tax harmonisation variables CHAR, VHAR and TRHA. All the estimated coefficients of the tax policy harmonisation indicators are found to be having a statistically significant negative robust correlation with FDI (at various levels of significance). The results indicate that FDI inflow is very sensitive to all tax policy harmonisation (including changes in tax policy regarding tax bases and taxable activities) indicators in the SADC. The findings on CHAR and VHAR modify the EBA results of Sudsawasd and Mongsawad (2011), while the results for TRHA are generally consistent. In the main, the EBA results show that within the time-frame 1990-2010, capital inflow is more sensitive to the three tax policy harmonisation measures than the tax rates.

6 Conclusion

This paper evaluates the effect of tax harmonisation on FDI in all 15 SADC countries for the period 1990-2010, by means of an eclectic panel data modeling approach. In particular, the cross-section SUR (derived from the SUR approach of Zellner, 1962), the FGLS (Park, 1967; Kmenta, 1986) and the difference GMM (Arellano and Bond, 1991) techniques are employed. The techniques are used to estimate various models and test the efficacy of taxation and proffered determinants of FDI to the SADC.

The results of the tax variables provide an empirical basis and justification for increased FDI flows to the SADC, improving on preceding studies by Robinson (2004), Mbakile-Moloi (2006), Letete (2011) and Sudsawasd and Mongsawad

(2011). The findings also provide empirical evidence to support the argument for harmonising taxes in the SADC (given its heterogeneity) towards higher FDI inflows. The study introduces a VAT harmonisation variable in the literature (and additionally made use of the CIT harmonisation variable), employs panel data modeling (including dynamic panels) and the EBA sensitivity techniques in delineating the causal relationship between taxation and FDI in the SADC. This study differs from the previous studies by testing and correcting for cross-sectional dependence (including contemporaneous correlation) of SADC countries, thereby addressing a major critique of panel data modeling and tax models for RECs. Accordingly, the paper improves the relatively small but growing empirical literature on FDI and taxation in Africa.

The empirical results denote that tax harmonisation (reduced tax competition) in the SADC will be conducive to improved FDI in the region, thus warranting some policy implications. First, individual governments should promote national policies aimed at supporting the SADC regional tax harmonisation objectives in order to reduce disparity in tax rates (including the definition of tax bases) and enhance the already existing level of tax co-movement. Second, efforts aimed at harmonising VAT policy in the SADC should be improved, especially given its regressivity and its massive revenue generating potential if well designed and targeted. Third, SADC member countries should promote a tax policy position geared towards enhanced coordination, mitigating corporate income tax (CIT) leakages (through unjust corporate practices, thin capitalisation, opacity of accounts), consolidate revenue and improve on FDI.

References

- [1] AEO (2013). Financial Flows and Tax Receipts [Online]. Available: http://www.africaneconomicoutlook.org/en/outlook/financial_flows (Accessed 03 December 2013).
- [2] Arellano, M. and Bond, S. (1991). Some tests of specification for panel data: Monte Carlo evidence and an application of employment equations. *Review of Economic Studies*, 58:277-297.
- [3] Arellano, M, and Bover, O. (1995). Another look at the Instrumental Variable Estimation of Error Component Model. *Journal of Econometrics*, 68:29-52.
- [4] Asiedu, E. (2002). On the Determinants of Foreign Direct Investment to Developing Countries: Is Africa Different? *World Development*, 30 (1): 107–119.Africa.
- [5] Baltagi, B. H. (2008). *Econometric Analysis of Panel Data*. 4th edition. West Sussex. John Wiley & Sons Ltd.

- [6] Breusch, T. and Pagan, A. (1980). The LM Test and Its Applications to Model Specification in Econometrics. *Review of Economic Studies*, 47, 239-254.
- [7] Darp (2000). The Effects of the Taxation of Foreign Direct Investment: An empirical assessment.
- [8] De Hoyos, R.E and Sarafidis, V. (2006). Testing for cross-sectional dependence in panel-data models. *The STATA Journal*, 6(4): 482-496.
- [9] Deveroux M.P. (2006). The Impact of Taxation on the Location of Capital. Oxford University Centre for Business Taxation.
- [10] Doubleglist (2013). Impact of Taxation on Foreign Direct Investment in Nigeria. [Online]. Available: <http://www.doubleglist.com/impact-taxation-foreign-direct-investment-nigeria/> (Accessed 17 April 2013).
- [11] Dunning, J. H. (1980). The Eclectic Paradigm of International Production: A Restatement and Some Possible Extensions. *Journal of International Business Studies*, 19(1), 1-31.
- [12] Gastanaga, V., Nugent, J. B. and Pashamova, B. (1998). Host country reforms and FDI inflows: How much difference do they make? *World Development*, 26(7), 1299-1314.
- [13] Gujarati, D.N. (2003). *Basic Econometrics*. McGraw-Hill:New York.
- [14] Hansen, L.P (1982). Large Sample Properties of Generalised Methods of Moments Estimators. *Econometrica* 50:1029-1054.
- [15] Hansson, A. and Olofsdotter, K. (2010). Tax differences and foreign direct investment in the EU27. Lund University Sweden.
- [16] Hicks, A. (1994). Introduction to Pooling, in Janoski, T and Hicks, A. *The Comparative Political Economy of the Welfare State*. Cambridge University Press. Cambridge.
- [17] IMF, (2014). International Financial Statistics (IFS). [Online]. IMF. Available: <http://www.imf.org/external/data.htm>. (Accessed January 31 2014).
- [18] Im, K., Pesaran, M. H. and Shin, V. (IPS) (2003). Testing for unit roots in heterogeneous panels. *Journal of Econometrics* 115, 53-74.
- [19] Itriago, D. (2011). *Owning Development. Taxation to fight poverty*. Oxfam.
- [20] Kmenta, J. (1986). *Elements of Econometrics*. 2nd edition. New York. Mcmillan. London. Collier McMillan.
- [21] Leamer, E. E. (1983). Let's take the Con Out of Econometrics. *American Economic Review*. 73:31-43.

- [22] Letete, P. (2011). Harmonisation of value added taxes in the Southern African Development Community. *International Journal of Private Law*, 4(3): August 391-405.
- [23] Matlosa, K. T. (2005). Political parties and democratisation in the Southern African Development Community region: the weakest link? EISA.
- [24] Mbakile-Moloi, C. E. (2006). Testing for Fiscal Policies Harmonisation in the Southern African Coordinating Community (SADC) and Sub-Saharan Africa (SSA). Economics Dissertation. Paper 27. Georgia State University.
- [25] Mesa, F. and Parra-Pena, R.I. (2008). Tax Policy as a competitiveness mechanism to attract manufacturing FDI inflows: An application to the Latin-American case.
- [26] Montiel, P.J. (2003). *Macro-economics in Emerging Markets*. Cambridge. Cambridge University Press.
- [27] OECD (2007). *Tax Effects on Foreign Direct Investment no. 17. Recent Evidence and Policy Analysis*. OECD publishing.
- [28] Owusu-Sekyere, E (2011). Foreign inflows of remittances into Sub-Saharan Africa, PhD thesis. Pretoria: University of Pretoria. Available: [http://upetd.up.ac.za/thesis/available/etd-05082012-152750 />D12/4/323/ag](http://upetd.up.ac.za/thesis/available/etd-05082012-152750/>D12/4/323/ag). (Accessed 20 August 2013).
- [29] Park, R.W. (1967). Efficient Estimation of a system of Regression Equations when Disturbances are both serially and Contemporaneously Correlated. *Journal of the American Statistical Association*. 62:500-509.
- [30] Robinson, Z. (2004). An Overview of Commodity Tax Reform in Southern Africa. *SAJEMS NS*, 7(2):387-426.
- [31] SADC (2002). Memorandum of Understanding on Co-operation in Taxation and Related Matters. [Online]. Available from: <http://www.sadc.int/documents-publications/show/1020>. (Accessed 6 July 2014).
- [32] SADC (2006). *Finance and Investment Protocol*. Pretoria: The National Treasury.
- [33] SADC (2011). *SADC Statistics Yearbook*. [Online]. Available from: <http://www.sadc.int/information-services/sadc-statistics/sadc-statiyearbook>. (Accessed 22 July 2013).
- [34] Sargan, J. (1958). The Estimation of Economic Relationships using Instrumental Variables. *Econometrica* 26(3):393-415.
- [35] Sudsawasd, S. and Mongsawad, P. (2011). Tax policy harmonisation and FDI: An empirical assessment. International conference on applied economics. ICOAE 2011.

- [36] Tax Justice Network-Africa & ActionAid International (2012). Tax competition in East Africa: A race to the bottom? [Online]. Available: <http://www.actionaid.org/sites/files/actionaid/eacreport.pdf>. (Accessed 1 August 2012).
- [37] Troeger, V. (2013). Tax Competition and the Myth of the Race to the Bottom. Why Governments still tax capital. University of Warwick CAGE Working Paper No. 4.
- [38] UNCTAD (2011). Direct Investment Statistics. [Online]. UNCTADSTAT. Available: <http://www.unctadstat.unctad.org/reportfolders/reportfolders.aspx>. (Accessed July 21 2013).
- [39] World Bank, (2012). Doing business. Measuring Business Regulations. [Online]. World Bank. Available: <http://www.doingbusiness.org/data/exploretopics/starting-a-business> (Accessed December 17 2013).
- [40] World Bank, (2013). World Development Indicators (WDI). [Online]. World Bank. Available: <http://data.worldbank.org/indicator/BX.KLT.DINV.CD.WD>. (Accessed July 17 2013).
- [41] Zellner, A. (1962). An efficient method of estimating seemingly unrelated regressions and tests for aggregation bias. *Journal of the American Statistical Association*, 57, 348-368.

Table 1: Models 1 and 2: Empirical results: REM, LSDV1, LSDV2 and FGLS (sample: 1990-2010) Dependent Variable: FDI

Variables	Model 1: Tax rates				Model 2: TPHM			
	REM	LSDV1	LSDV2 ¹	FGLS ²	REM	LSDV1	LSDV2	FGLS
	(Random effects model)	(Least squares dummy variables, Fixed-effects)	(Least square dummy variables-Fixed-effects CS SUR)	(Feasible generalised least squares)	(Random effects model)	(Least squares dummy variables, Fixed-effects)	(Least square dummy variables-Fixed effects CS SUR)	(Feasible generalised least squares)
CIT1	0.346 (0.000) ***	0.414 (0.081) *	0.337 (0.034) **	0.282 (0.000) ***				
VAT1	0.199 (0.474)	-0.460 (0.801)	-0.461 (0.071) *	0.187 (0.000) ***				
TREV	0.058 (0.167)	0.051 (0.282)	0.057 (0.000) ***	0.053 (0.000) ***				
CHAR					-0.045 (0.022) **	-0.055 (0.013) **	-0.062 (0.000) ***	-0.054 (0.000) ***
VHAR					0.003 (0.774)	0.005 (0.702)	0.001 (0.805)	-0.007 (0.012) **
TRHA					0.002 (0.806)	-0.005 (0.533)	-0.003 (0.034) **	0.015 (0.000) ***
DCR	-0.009 (0.397)	-0.008 (0.608)	-0.008 (0.000) ***	-0.010 (0.000) ***	-0.013 (0.286)	-0.008 (0.617)	-0.010 (0.000) ***	-0.023 (0.000) ***
GOV	-0.076 (0.150)	-0.134 (0.026) ***	-0.120 (0.000) ***	0.027 (0.023) **	-0.040 (0.449)	-0.089 (0.122)	-0.078 (0.000) ***	0.011 (0.366)
EXPO	0.089 (0.001) ***	0.107 (0.000) ***	0.108 (0.000) ***	0.070 (0.000) ***	0.063 (0.014) **	0.073 (0.019) **	0.076 (0.000) ***	0.047 (0.000) ***
INF	-1.28E-08 (0.557)	-1.49E-08 (0.499)	-1.39E-08 (0.000) ***	-5.48e-09 (0.115)	-9.36E-09 (0.668)	-9.40E-09 (0.668)	-9.30E-09 (0.001) ***	-7.19e-09 (0.048) **
Dum	1.789 (0.062)*	1.833 (0.067) *	1.835 (0.000) ***		1.343 (0.166)	1.327 (0.173)	1.443 (0.000) ***	
Adjusted R ²	0.061	0.246	0.715		0.036	0.254	0.714	
Observations	315	315	315	315	315	315	315	315
RSS	7175.916	6852.824	312.091		7237.471	6787.864	309.374	

Source: Derived using Eviews 8 and statistical analysis software (STATA) 13

P-values are in parentheses. *Significant at 10%, **Significant at 5%, ***Significant at 1%. Model 1 reflects the 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 TPHM.

¹ The LSDV2 estimation with CS SUR improves the overall explanatory power of the model (see adjusted R² and the RSS) from LSDV1 to LSDV2. By extension the Hausman test suggested the REM over the FEM because the estimated coefficients from these two models are indifferent. However the REM results were not meaningful.

² The FGLS by Park (1967) and Kmenta (1986) also corrected for errors in the panel thereby significantly improving the results of the estimations (De Hoyos and Sarafidis, 2006).

Table 2: Models 3 and 4: Empirical results - OLS, FGLS, Difference GMM (sample: 2000-2010). Dependent Variable: FDI.

Variables	Model 3: DPM - TAX RATES			Model 4: DPM - TPHM		
	OLS (Ordinary least squares)	FGLS (Feasible generalised least squares)	GMM (Generalised methods of moments) ³	OLS (Ordinary least squares)	FGLS (Feasible generalised least squares)	GMM (Generalised methods of moments)
FDI (lag)	0.206 (0.000) ***	0.420 (0.000) ***	0.378 (0.000) ***	0.219 (0.000) ***	0.538 (0.000) ***	0.362 (0.000) ***
CIT1	0.019 (0.146)	0.201 (0.003) ***	0.212 (0.012) **			
VAT1	0.103 (0.003) ***	0.230 (0.153)	0.327 (0.099) *			
TREV	-0.006 (0.437)	-0.010 (0.769)	-0.029 (0.400)			
CHAR				0.003 (0.547)	-0.004 (0.870)	0.060 (0.004) ***
VHAR				-0.002 (0.507)	0.009 (0.594)	0.020 (0.010) **
TRHA				0.002 (0.115)	-0.019 (0.000) ***	-0.003 (0.322)
DCR	-0.003 (0.085) *	-0.014 (0.042) **	-0.014 (0.063) *	-0.002 (0.180)	-0.008 (0.382)	-0.013 (0.030) **
GOV	0.023 (0.022) **	0.038 (0.453)	0.033 (0.558)	0.002 (0.819)	0.115 (0.007) ***	0.029 (0.573)
EXPO	0.004 (0.423)	0.043 (0.049) **	0.065 (0.057) *	-0.010 (0.018) **	0.027 (0.356)	0.055 (0.064) *
INQP	-0.025 (0.706)	0.538 (0.063) *	0.566 (0.141)	-0.069 (0.254)	-0.1202 (0.744)	0.435 (0.151)
<i>Adjusted R²</i>	0.632			0.615		
Observations	165	150	164	165	150	164
<i>RSS</i>	95.909			100.369		
Sargan/ Hansen (1982) test			0.430			0.769

Source: Derived using Eviews 8 and STATA 13

P-values are in parentheses. *Significant at 10%, **Significant at 5%, ***Significant at 1%. Model 3 reflects the dynamic panel results using tax rates (CIT1,VAT1) and collected tax revenue (TREV) from both CIT and VAT; while model 4 reflects the results obtained from computed TPHM. The lagged FDI estimation results also highlight the importance of agglomeration economies effects in the SADC.

³The 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 because the variable mimics the behaviour of CIT rates better. Both variables have the potential of increasing business costs.

Appendix A

Table A.1: Sources and definition of variables

Applicable abbreviation	Variable description	Sources	Definition of variables
FDI	Foreign direct investment net inflows to the SADC	World Bank (2013); UNCTAD (2011)	FDI 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 CIT 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, IMF (2014).	Collected corporate tax on profits, income, and capital gains (CIT2) and also from VAT as a percentage of GDP (VAT2).
GOV	Government expenditure	World Bank (2013).	Share of government expenditure in GDP (GOV)
DCR	Domestic credit growth rate	World Bank (2013).	Growth rate of (net) domestic credit at constant prices
EXPO	Export	World Bank (2013)	Total trade exports of SADC countries to the developed world, share of GDP
INF	Inflation	World Bank (2013); IMF (2014)	Rate of inflation for SADC countries
INQP	Institutional Quality Protection of investors	World Bank (2012; 2013)	Strength of investor protection index (0-10)
RIR	Real Interest Rate	World Bank (2013); IMF (2014)	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

Note: CIT1, VAT1 and TREV are used to calculate the three TPHM, CHAR, VHAR and TRHA respectively. TREV is a proxy for tax bases including tax revenue collection methods.

Table A.2: *A priori* expectations for all four panel models (full sample)

Variable	Expected signs	Deductions
FDI	Dependent variable	Dependent variable
CIT1	Negative/ Positive	The CIT rates applied by SADC member countries during the period under investigation increased business costs and negatively affected regional FDI inflows (negative sign). Alternatively, the CIT rates applied, did not increase business costs, significantly improving on FDI inflows (positive sign).
VAT1	Negative Positive	The VAT rates applied by SADC countries during the period under investigation increased business costs and significantly affected regional FDI inflows (negative sign). Alternatively, the VAT rates applied, did not increase business costs, significantly improving on FDI inflows (positive sign).
TREV	Positive	The tax bases including tax revenue collection methods during the period under investigation have significantly contributed to tax revenue, build investors' confidence and FDI inflows to the SADC (positive sign)
CHAR	Negative/ Positive	More variation upward (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 (less deviation) in a country's statutory CIT rate in line with the SADC group average would improve investors' confidence and FDI (positive relationship).
VHAR	Negative/ Positive	More variation upward (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 synchronisation (less deviation) in VAT rates by member countries in line with the SADC group average would improve investors' confidence and FDI (positive sign).
TRHA	Negative/ Positive	More variation upward (more deviation) in a country's tax policy from that of other SADC countries would lead to a reduction in FDI (negative relationship). Improved coordination (less variation) in tax policies geared towards deepening the tax bases in the SADC would boost investors' confidence, increase tax revenue and FDI (positive sign).
Expo	Positive.	Increased exports improve trade, promote business activities, build business confidence, and positively impacts on FDI flows. The ratio of trade to GDP is often used as a measure of a country's openness (or trade restrictions), thereby influencing FDI confidence and decisions (excluding resource seeking FDI) (positive relationship).
DCR	Positive/ Negative.	Increased 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 established Brownfield investments (positive relationship). Alternatively increased credit growth channeled towards initiation of more domestic investments for indigenous businesses, leads to reduction in FDI (negative relationship).
Gov	Positive/ Negative	Increased 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 resultantly reduce (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 (better strength of investor protection or property rights) improves business confidence and resultantly FDI (Positive relationship). Alternatively, poor institutional quality (reduced investors' protection), difficult business environment and long export days (especially in resource rich countries), surprisingly have the reverse psychology of attracting FDI inflows driven by profit motives and return on investment (negative relationship).
Dit		Dummy variable for recession in individual SADC countries. Values: 1 if recession is present. Value: 0 if otherwise. S.A is the reference country.

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

Note: Standard deviation of inflation (STINF) and domestic credit growth (STDCR) are exclusively used in the EBA to increase the pool of variables employed (Sudsawasd and Mongsawad, 2011).

Appendix B

Table B.1: Model 1-EBA sensitivity results (Dependent variable: FDI) for SADC existing tax rates (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		

Source: Derived using eviews 8

Table B.2: Model 2-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	Negative/ Positive
	Base	-0.009870***	-6.370959	0.001549			
	Low	-0.009889***	-6.382235	0.001549	EXPO,STDINF		

Source: Derived using eviews 8

Note: In Tables B.1 and B.2 ***, **, * denote 1%, 5%, 10% significant levels respectively. All results are based on the fixed-effects model estimator for 315 observations. The variables used are FDI, CIT, VAT, TREV, CHAR, VHAR, TRHA, EXPO, INF, DCR, GOV, STDINF and STDCR. In Table B.1, *TREV has marginally robust coefficient results. Positive and significant coefficients suggest that the specific variables are drifting apart (less synchronisation); while negative and significant coefficients indicates that the variables are drifting closer (more synchronisation) (Sudsawasd and Mongsawad, 2011).