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The Impact of Intra-Regional Country to Country-Bilateral Trade Agreements on Trade Flows between Zimbabwe and its SADC Trading Partners

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Abstract
As part of an overall package, open and more liberal trade policies are increasingly being regarded as the main route towards economic growth and development in this fast globalising world. A number of initiatives, including the establishment of a various forms of Free Trade Agreements, have been taken by various countries eying improved terms of trade. This study is an assessment of the ex post bilateral trade effect of Zimbabwe's country to country bilateral trade agreements with its SADC trading partners. The major objective was to find out whether the bilateral trade agreements have been trade creating or trade diverting.Using a country-specific fixed effects panel data estimation of the gravity model of bilateral trade involving a sample of 10 countries (Zimbabwe and its 9 trading partners- Botswana, DRC, Madagascar, Malawi, Mozambique, Namibia, South Africa, Tanzania and Zambia) from 1980 to 2012, the results show that the country to country bilateral trade agreements have been trade creating and expanding. Another important finding of the study is that trading partners' multiple-membership to regional trade agreements has been constraining bilateral trade. The results therefore indicate that Zimbabwe should negotiate for more bilateral trade agreements especially with closer countries such as Zambia, Lesotho and Swaziland. More importantly, it adds voice on the calling for the coming into effect of the establishment of the COMESA-EAC-SADC FTA.
Keywords: Bilateral Trade Agreement, Panel data Estimation, gravity model of bilateral trade, Fixed Effects Model, SADC.

INTRODUCTION

The World Bank (2011), recognised that trade liberalization of economies via the reduction or complete elimination of trade barriers has become the most popular economic policy of developed and developing countries today. Countries in Southern Africa have engaged in a variety of trade liberalization initiatives (TIPS, 2007) in line with the major development in international economics in recent years which has been the unprecedented proliferation of regional trading arrangements (RTAs) (Turkson, 2007). Accordingly, Africa records around 11 economic blocs the major ones being the (ECOWAS), (COMESA) and (SADC). However, well before the proliferation of these RTAs, the majority of Southern African countries have already been engaging in similar Free Trade Agreements (FTAs) in form of country to country Bilateral Trade Liberalisation Agreements (BTAs) as early as the 1950s with the same thrust of increasing bilateral trade flows through deeper opening and access of regional markets. The proliferation of these (FTAs) invited a growing theoretical and empirical interest with regards to their impact on trade flows among trading partners amid leftwing arguements that similarities of comparative advantages and structural supply side characteristics imply that there is scant scope for the Heckscher-Ohlin forces to operate and the potential trade benefits expected from South-South bilateral trade agreements have to be asked with a very big question mark (Chacha, 2008).

BACKGROUND TO THE STUDY

Zimbabwe's Bilateral Trade Agreements

Zimbabwe has a total of 5 country to country Bilateral Trade Agreements (BTAs) with SADC member states (National Trade Policy, 2012). It signed four before the SADC Trade Protocol/FTA with Botswana (1988), Namibia (1992), Malawi (1995), and South Africa (1964). In terms of these agreements, goods – those grown, produced or manufactured in the territory of either contracting party - originating from Zimbabwe do not attract customs duty and surtax in the importing countries and goods originating from the exporting countries enter Zimbabwe duty and surtax free as well (ZIMRA, 2012). The category of goods qualifying in the agreement include mineral products extracted from the soil, agricultural products harvested or gathered therein, live animals born and raised therein, products obtained from live animals, forest products harvested therein, fish and other fish products gathered therein or from its marine economic zone, scrap and waste resulting from manufacturing operations within that country. In relation to manufactured goods, they qualify if they attain a minimum local content of 25%. This is meant to ensure that the component of local materials, including local labour, used in the manufacturing process of a product should be at least 25%.

Zimbabwe's Trade Flows: Despite a plethora of efforts embedded in these agreements, there is little trade between Zimbabwe and its SADC trading partners relative to its trading partners from the North, with the

exception of South Africa being an important destination for exports (TIPS, 2007). Statistics on SADC trade point to the fact that although total SADC exports increased by more than 100% between 2006 and 2010 the leading destination markets are the European Union, Eastern Asia and the North American Free Trade Area, (TIPS SADC Database, 2012). According to the EU Trade Statistics (2013) on average, South Africa aside, Zimbabwe traded more with European and Asian countries than its neighbours in between 2008 and 2012.

Literature has strongly suggested that most developing countries are not natural trading partners, Venables, (2003), Turkson (2007), Afesorgbor and van Bergeijk (2011). It is also a fact that SADC countries have comparative advantages in products they are well endowed in and which are quite similar. Moreover they have the same disadvantages in machines and road vehicle. This tends to suggest that complementarity as a way to stimulate trade might be difficult among SADC countries. Given the structural and institutional bottlenecks and a narrow range in factor endowments and income levels between Zimbabwe and its trading partners in SADC, there is scant scope for the Heckscher-Ohlin forces to operate and the potential trade benefits expected from bilateral trade agreements have to be asked with a very big question mark.

This study therefore examines the impact of the country to country bilateral trade agreements between Zimbabwe and its 9 major trading partners in the Southern Africa Development Community (SADC) region namely South Africa, Botswana, Namibia, Mozambique, Malawi, Zambia, Tanzania, Madagascar, Mauritius and the Democratic Republic of Congo (DRC). The primary objective of this study is to examine the impact of country to country bilateral trade agreements on trade flows between Zimbabwe and its SADC trade partners. Specifically the study investigates whether the country to country bilateral trade agreements have been trade creating or trade diverting. The study also analyses the impact of multiple-membership to regional trade agreements on trade flows between Zimbabwe and its trade partners.

The answer to the question of whether regional and bilateral trade agreements increase bilateral trade flows among member countries has remained inconclusive ever since the seminal study by Tinbergen (1962).Even the various recent studies that have attempted to estimate the ex post effects of country to country bilateral agreements have at best come up with mixed results. Whilst studies on North to South and North to North agreements, Jordaan and Kanda (2011), Ghosh and Yamarik (2004), Clausing (2001) have been many , findings on South to South bilateral trade agreements have not only been relatively inconclusive but scant as well , and this has increased the importance for more empirical findings on them. In addition, very few researchers e.g Chacha (2008), Afesorgbor and Bergeijk (2011), bothered to extend their examination to the impact of trading partners' multiple-membership to regional trade agreements. This has been a thorny issue in preferential trade agreements which have seen some countries pulling out of regional groupings citing conflict of interest on the rules of origin.

RESEARCH METHODOLOGY

Model Specification: The Gravity Model: To examine the trade flow effects of the bilateral trade agreements between Zimbabwe and its trading partners, the study uses the gravity model of international trade first used by Tinbergen in 1962. The model, originating from Newtonian physic notion, is an ex-post -analysis approach which uses historical data to guide policy by explaining its effect where it has already been implemented. The gravity model of international trade, in its basic form explains that flows of export between two countries, exporter ***i*** and importer ***j,*** are primarily explained by their economic sizes (GDP or GNP), population and direct geographical distances between the countries.

The model specified in this study takes a leaf from one by Ghosh and Yamarik (2004) which takes the logarithmic form:

$$\log EX_{ijt} = \beta_0 + \beta_1 \log GDP_{it} + \beta_1 \log GDP_{jt} + \beta_3 \log DST_{ij} + \gamma \log X_{ijt} + \varepsilon_{it} \quad \text{.....(1)}$$

Equation (1) is the basic gravity model of bilateral trade which specifies that total trade, EX*ijt*, between country pairs *i* and *j* at time *t* depends positively on national incomes, GDP_{it} and GDP_{jt} , and negatively on bilateral distance, *Dij*. A matrix of covariates, X_{ijt}, is included to represent alternative trade theories and to proxy for unobservable trade costs. Following Maringwa, (2009), Coulibaly (2004) and Afersorgbor and Bergeijk (2011) the Ghosh and Yamarik (2004) matrix X_{ijt} is split into trade agreement related dummies and other covariates which were subsequently included in this study. The key difference between these models and the one used in this study is on the trade agreement variable. The trade agreement dummy variables included by the studies are regional, whilst the trade agreement dummy used in the current study is a country to country bilateral trade agreement. Thus the econometric model used for this study is specified as follows:

$$\log EX_{ijt} = \beta_0 + \beta_1 \log GDP_{it} + \beta_2 \log GDP_{jt} + \beta_3 \log POP_{it} + \beta_4 \log POP_{jt} + \beta_5 \log BTA_{ijt} + \beta_6 BTA_{it} + \beta_7 \log MRTA_{ijt} + \beta_8 \log DST_{ij} + \beta_9 \log HST_{ij} + \beta_{10} LLK_{ij} + \varepsilon_{it} \quad \text{.....(2)}$$

Justification of variables

Control Variables. The dependent variable is measured in terms of total exports between Zimbabwe and its trading partner at time *t*. EX_{ijt} is the total annual merchandise exports in US million dollars from country *i* to *j* at time *t.* The choice of exports in favour of imports follows Baldwin (1993) who argued that the use of exports as a measure of bilateral trade is to account for the fact that most importers especially in African countries tend to

deliberately underreport their imports as means to avoiding excessive import duties and thus will not be reliable.
The important control gravity model variables frequently used are historical ties, geographical factors and development factors .For historical ties, the study used the dummy $HST_{ijt,}$ which takes a value one if Zimbabwe and its trading partners share a common language and /or coloniser and 0 if otherwise and is expected to take a positive value since historical ties lead to similar institutions and similar levels of development, implying reliable contractual and legal standards, as well as trust in shared values. In the geography category, we used CBD_{ij}, a dummy variable with a value of 1 if Zimbabwe shares a common border with its trading partner and 0 otherwise. According to Gomez (2010) firms in adjacent countries are likely to know more about each other and to understand each other's business practices better than firms operating in less-similar and are therefore expected to trade more. A positive value is expected.
Lastly, the study includes trading partners' populations as a development/factor endowments variable which brings together the Heckscher-Ohlin factor endowments driven trade theory with Linder's (1961) hypothesis that similar countries trade more due to comparable tastes. According to Zarzoso and Lehmann (2003) and Kwentua (2001), there is no clear a priori relationship between exports and the populations of both the exporting and importing countries and as such their estimated coefficients could either be positive or negative depending on whether the exporter has a large population and exports more (economies of scale) or the fact that the exporter has a large population but exports less (absorption effect).
Variables of Interest: FTA variables BTA_{ijt} and BTA_{it} have been used to estimate the possible amount of trade creation and trade diversion emanating from the trade agreement between Zimbabwe and its SADC trading partners. BTA_{ijt} is a dummy variable with a value of 1 if Zimbabwe and its SADC trading partner have a country to country bilateral trade agreement at time t and, 0 if otherwise. BTA_{it} is a dummy variable with a value of 1 if Zimbabwe is a net importer from its trading partner at time t and, 0 if otherwise. BTA_{ijt} and BTA_{it} are the variables under the spotlight and whether they take positive or negative values has not yet been empirically clear and universal from previous studies and is the primary motivation for carrying out this study. Thus they may have a positive or negative impact depending on whether the trade agreements have been trade creating or trade diverting.
To examine the impact of overlapping multiple RTA membership outlined by Yang and Gupta (2005) and Chacha (2008), the study follows Afersorgbor and Bergeijk (2011) and adds another dummy variable, $MRTA_{ijt}$. $MRTA_{ijt}$ is the number of FTAs to which Zimbabwe and its trading partner both belongs to at time t. Three of Zimbabwe's trade partners, Zambia, Malawi and Madagascar are members of both SADC and COMESA FTAs. South Africa and Botswana are non COMESA members. There has been a theoretical contest on the impact of overlapping multi RTA membership on trade flows between trading partners hence the inclusion of the variable. The variable may have a positive or negative impact on bilateral trade flows.
Lastly, the Ghosh and Yamarik (2004) framework is extended to include country-pair fixed effects in order to account for the possibility of "natural trading partners" advocated by Wonnacott and Lutz (1989) and Krugman (1995). According to Eicher et al (2008), Egger (2000) and Baldwin (2005) if country-pair fixed effects are omitted, trade agreement co-efficients will be mis-specified and biased for they will not control for unobserved heterogeneity and if they capture trade creation that will be due to deep seated unobservables. However, by controlling for country-pair fixed effects using OLS, the ability to estimate the direct effect of time-invariant variables, such as distance, history and common border, is lost. How this problem is overcome is discussed in the coming section.
Model Estimation: In this study, panel data approach with country-pair specific fixed effects was used to estimate the augmented gravity model outlined in the previous section. This follows Matyas (1997) who advanced that the cross-section approach is affected by misspecification and Egger (2000), who found out that panel data methods incorporate bilateral specific effects and are therefore the most appropriate for dealing with issues of endogeneity bias and allow for heterogeneity when estimating the gravity model. More importantly, panel data has been elected since it completely avoids the problem of potential multi-collinearity that sometimes arises from cross-section data (Gomez and Baleix, 2010).
Fixed Effects (FE) and Random Effects (RE) Models: Panel data methods, the Fixed Effect Model (FEM) and Random Effect Model (REM), have been recently and frequently applied in estimating the gravity model in order to address the endogeneity issues and to allow for heterogeneity as well as to check the robustness of the estimation technique and results. This study used the FEM over REM. The choice has been based on a priori information and econometric strength. Egger (2000) postulates that from an a priori point of view, REM would be more appropriate when estimating typical trade flows between randomly drawn samples of trading partners from a larger sample. On the other hand, FEM would be a better choice when one is interested in estimating trade flows between an ex ante predetermined selection of nations, which is the case in this study. In addition, an econometric justification has been based on the Hausman Test which favoured the FEM. The Hausman χ^2 test consists in testing the null hypothesis of no correlation between unobserved characteristics and some explanatory variables (Carrere, 2004).In the presence of correlation of the unobserved country specific

characteristics with some of the explanatory variables, the Random Effect Model leads to biased and inconsistent estimates of the parameters. According to Corporale et al (2008) the correlation can be eliminated by using the traditional "within estimator or fixed effect estimator" method which consists of transforming the data into deviations from individual means. However, it was outlined and underlined by Hausman and Taylor (1981), Buam (2006) and Kennedy (2008) that OLS coefficients from the transformed data (fixed effect estimators/ within estimators) have two major problems. Firstly, all time invariant variables are wiped out by the transformation which makes it impossible to estimate the co-efficients of these variables. This is because the deviations of the time invariant variables from their average mean are all zero, (Park, 2011). Secondly, the within- group estimators may not be fully efficient since it ignores variations across individual countries in the sample. However, a number of researchers Zarzoso and Lehmann (2003) and Coulibally (2004), suggested that the variables can easily be estimated by using a Two-Stage Regression procedure, which has been adopted for estimating equation (2).

The first stage regression includes only all time varying variables such that variables distance, history and land-lockedness are excluded from the first stage regression. Withdrawing all time invariant variables from (2) gives the first stage regression equation:

Stage (1)

$$\log (EX_{ijt}) = \alpha_0 + \alpha_{ij} + \alpha_t + \beta_1 \log GDP_{it} + \beta_2 \log GDP_{jt} + \beta_3 \log POP_{it} + \beta_4 \log POP_{jt} + \beta_5 \log BTA_{ijt} + \beta_6 BTA_{it} + \beta_7 MRTA_{ijt} + \varepsilon_{it} \quad \text{.....(3)}$$

α_0 is the intercept common to all years and country-pairs, α_{ij} is the estimated country-pair fixed effects intercept of countries i and j. The country-pair intercept includes the effects of all omitted variables that are cross-sectionally specific but remain constant over time, such as distance, language/coloniser, and land-lockedness and α_t is a time fixed effects common to all country-pairs.

The second stage regression on pooled data uses the estimated country-pair specific effects (alphafehats) as the dependent variable and includes both time varying and time constant variables dropped in the first stage. Similarly, the coefficients in the second stage measures cross section specification effects. The second stage regression equation is as follows:

Stage (2)

$$\alpha_{ij} = \alpha_0 + \beta_1 \log GDP_{it} + \beta_2 \log GDP_{jt} + \beta_3 \log POP_{it} + \beta_4 \log POP_{jt} + \beta_5 \log BTA_{ijt} + \beta_6 BTA_{it} + \beta_7 MRTA_{ijt} + \beta_8 \log DST_{ij} + \beta_9 \log HST_{ijt} + \beta_{10} \log CBD_{ijt} + \varphi_{it} \quad \text{..... (4)}$$

Data Sources: The sample consists of 10 SADC countries, Zimbabwe and its major trading partners in SADC namely South Africa, Botswana, Malawi, Mozambique, Namibia, Zambia, Tanzania, Madagascar and the Democratic Republic of Congo (DRC). The time period under study is 1980 to 2012. Therefore, the data consists of 9 country pairs with 297 observations. Bilateral export flows measured at current million US$ are taken from the International Monetary Fund Direction of Trade Statistics (DOTS) database. Data on GDP current US$ and Population (in million) has been taken from the World Bank's World Development Indicators (WDI). Historical links, distance (in kilometres) land-lockness are compiled from CEPII Data base.

PRESENTATION AND INTERPRETATION OF RESULTS

Panel Unit Root Tests: The Fisher ADF Test: The Fisher Type Panel Unit Root tests were performed on the logs of GDP_{it}, GDP_{jt}, POP_{it} and POP_{jt}. Exporter and importer populations are stationary in levels whilst the GDPs are non stationary in levels but became stationary in the 1st level after differencing. The differenced GDPs are coded as DGDPs. The results are summarised in table 4.1 below.

Table 4.1 Fisher ADF Unit Root Test

Variables	p statistic	z statistic	L*	P_m	Probability	Order of Integration	Decision
$logEXP_{ijt}$	65.5309	-4.0286	-5.551	8.5885	0.0000***	1(0)	Stationary
$logDGDP_{it}$	244.189	-13.988	-22.675	37.6977	0.0000***	1(1)	Stationary
$logDGDP_{jt}$	465.16	-19.532	-43.198	74.5268	0.0000***	1(1)	Stationary
$logPOP_{it}$	648.786	-24.378	-60.247	105.131	0.0000***	1(0)	Stationary
$logPOP_{jt}$	160.407	-4.3781	-11.786	23.7345	0.0000***	1(0)	Stationary

[#] *$logDGDP_{it}$ and $logDGDP_{jt}$ is the differenced log of exporter and importer GDPs*

*, **, ***: *statistically significant at the 10%, 5% & 1% levels respectively.*

Variance Inflation Factor- (Multicollinearity Tests): The Variance Inflation Factor (VIF) was calculated to ensure that multi-collinearity does not affect the quality of estimates. In all the estimates shown on table 4.2 below, VIF did not exceed the threshold of 10, with the average being a low of 2.55, indicating that there is no multi-collinearity. In addition, the fact that the standard errors of the regression coefficients of the predictor variables are very small, and that all except only two out of ten predictor variables are statistically significant point to the fact that multi-collinearity among the variables is not an issue.

Table 4.2 Variance Inflation Factor (VIF)

Variable	$logGD_{it}$	$logGDP_{jt}$	$logPOP_{it}$	$logPOP_{jt}$	BTA_{ijt}	BTA_{it}	$MRTA_{ijt}$	$logDST_{ij}$	HST_{ij}	CBD_{ij}
VIF	1.15	1.17	2.06	2.08	2.51	1.44	1.72	6.25	1.65	2.51
Tolerance	0.867767	0.854849	0.486556	0.479716	0.397789	0.692571	0.582278	0.159888	0.605030	0.183847

*Mean VIF 2,55

Estimation Results: The model specified in the preceding section has been estimated by means of panel data techniques for eliminating the endogeneity bias. The Fisher test suggests the introduction of effects (fixed or random) to improve the estimation results. More specifically, the Fixed Effect Model (FEM) with country pair specifics was used to estimate the coefficients of the independent variables in the model. The choice of Fixed Effect Model (REM) over the Random Effect Estimator (REM) follows the results of the Hausman Test which rejected the null hypothesis of no correlation between the country-pair specific effects and explanatory variables in the model. The results of **stage 1** (fixed effects) and of stage 2 (pooled) are summarised on table 4.3 below.

$logEXP_{ijt}$ = -3.731208 + 0.2647116$logGDP_{it}$ - 0.2677155$logGDP_{jt}$ -2.711747$logPOP_{it}$ + 4.287878$logPOP_{jt}$ + 0.259792BTA_{ijt} - 0.041266$logBTA_{it}$ - 0.109069$MRTA_{ijt}$ + 0.04111

The equation above presents the results of within effect estimation of the gravity model. A weak R^2 of 0.009 and a rho of 0.97336283 imply that a significantly high variation in the trade flows has been explained by the time invariant variables (distance, history and common border) which have been omitted because of data transformation. The effects of these variables have been estimated in **stage 2** giving the results below:

$logEXP_{ijt}$ = -5.88333 + 0.1684091$logGDP_{it}$ + 0.1634575$logGDP_{jt}$ + 4.7777451$logPOP_{it}$ – 3.481527$logPOP_{jt}$ + 0.5032388BTA_{ijt} + 0.109801BTA_{it} – 2.8461303MRTAijt – 1.387118$logDST_{ij}$ + 0.612489HST_{ij} + 0.97853CBD_{ij} + 0.03318

Table 4.3 Regression Results

FIXED EFFECTS ESTIMATOR STAGE (1)					POOLED ESTIMATOR STAGE (2)			
Variable	**Coefficient**	**Stand Error**	**t statistic**	**Prob**	**Coefficient**	**Stnd Error**	**t statistic**	**Prob**
Constant	-3.73121	3.121597	-1.3	0.2330	-5.8834	4.8182	-1.22	0.223
$logDGDP_{it}$	0,2647116	0.381702	0.69	0.4890	0.1684	0.5315	0.32	0.752
$logDGDP_{jt}$	-0.26772	0.155633	-1.72	0.0870	0.1635	0.2172	0.75	0.452
$logPOP_{it}$	-2.71175	1.014543	-2.67	0.0008	4.7777	0.6274	7.62	0.000***
$logPOP_{jt}$	4.28787	0.85298	5.03	0.0000	-3.4815	0.0973	-37.14	0.000***
BTA_{ijt}	0.259792	0.092091	2.82	0.0050	0.5032	0.1116	4.51	0.000***
BTA_{it}	-0.04127	0.064646	-0.64	0.5240	0.1098	0.0853	1.92	0.199
$MRTA_{ijt}$	-0.10907	0.057211	-1.91	0.0580	-2.8461	0.0613	-4.64	0.000***
$logDST_{ij}$	Omitted	----	----	----	-1.38711	0.5259	-2.64	0.000***
HST_{ij}	Omitted	----	----	----	0.6125	0.9155	6.69	0.000***
CBD_{ij}	Omitted	----	----	----	0.9785	0.1574	6.22	0.000***
	R^2 Within			0.3074	**R^2**			0.9412
	R^2Between			0.046	**Adjusted R^2**			0.9392
	R^2 Overal			0.009	**SE of Regression**			0.3318
	SE of Regression			0.4111	**Sum Squared Resid**			1603.735
	F-Statistic			86.02	**FStatistic**			454.88
	Prob(F-Statistic)			0	**Prob(F-Statistic)**			0

*, **, ***: *statistically significant at the 10%, 5% & 1% levels respectively.*

Interpretation of Results: The results confirms to the null hypothesis of a statistically significant relationship between country to country bilateral trade agreements and Zimbabwe's trade flows with its trading partners within SADC. The estimated gravity equation has a R^2 value of 0.9412.This means that the explanatory variables in the model has been responsible for approximately 94% variations in trade flows between Zimbabwe and its SADC trading partners. In addition the F value of 454.88 implies that in total, the explanatory variables used to estimate trade flows have been very significant in determining the trade flows between Zimbabwe and its trading partners in SADC.

Control Variables: Zimbabwe's population had a significant and positive impact on its trade flows with its partners over the period of study. The p-value for exporter population is 0.000 which shows that the variable is significant at all levels. A coefficient of 4.777 implies that a 1% increase in its population has, on average, accounted for approximately 5% surge in exports. This relationship can be linked to the heavy investment the country has been putting in developing its human capital base since gaining independence in 1980. In short, Zimbabwe has managed to take advantage of its abundant skilled labour to exploit the comparative gains from trade. While this finding relates well with the majority of empirical findings, it differs from that of Jordaan and Kanda (2011) who found out that South Africa's population had a negative impact on its trade flows. Trading partner population has a significant and negative effect on exports. The p value of 0.000 means that the variable is significant at all levels. A parameter of -3.48 means that during the period under study, a 1 % increase in importer population led to approximately 3% drop in the volume of trade. This is an indication of an absorption

effect which was also found and justified by Zarzoso and Lehmann (2003). Both GDP measures for Zimbabwe and the trading partner are positive as per a priori expectation but are however statistically insignificant implying that although economic size was positively influencing trade, the impact was rather minimal. Specifically, both exporter and importer output have an almost similar impact on trade with a 1% increase in their economic sizes responsible for approximately 0.17% and 0.16% increase in the volume of trade respectively. This relates very well to the theoretical expectations of the gravity model and studies by Simwaka (2006), Maringwa (2009) and Jordaan & Kanda (2011). The other control variables, namely geographical distance, history and common border between Zimbabwe and its partner are all statistically significant at 1% and their coefficients are consistent with the gravity model. Geographical distance for instance, has a coefficient of -1.387118 implying that Zimbabwe has been trading approximately 1.4 times more with closer countries than further countries. History, with a coefficient value of 0, 1612 implies that Zimbabwe traded more with the countries with which it share a common coloniser and/or language. This represents the conventional argument that common language provides a mechanism for convenience in negotiating transactions between importers and exporters.

Variables of Interest: The positive and statistically significant BTA_{ijt} dummy implies that the country to country bilateral trade agreements between Zimbabwe and its SADC trade partners have been trade creating. The dummy is statistically significant in explaining total trade flows since the absolute t-value of 4.51 is greater than 2, the critical value. The estimated co-efficient of 0.503 indicates the amount of additional trade, beyond the level their economic and geographic characteristics would allow, that had taken place between Zimbabwe and its trading partners in SADC as a result of the formation of the bilateral trade agreements. This important finding goes well with the conventional theory of trade which anticipates that the reduction or elimination of tariff and non tariff barriers between trade partners enhances trade between them and echoes numerous previous studies such as Coulibaly (2004), Chauvin and Gaulier (2002) and Kwentua (2006) which indicated that the overall effect of trade agreements is positive and also lead to stronger trade relations with non-member countries, which led to minimal trade diverting tendencies

A positive but insignificant BTA_{it} dummy implies that bilateral trade agreements were not trade diverting but rather trade expanding. The dummy reflects any trade diversion occurring in Zimbabwe's import structure. In fact, the estimated coefficient of this variable indicates the degree to which Zimbabwe under or over-imported from the rest of SADC countries in the sample. A positive coefficient of 0.1098 against a BTA_{ijt} of 0.5032 shows that Zimbabwe has been increasing its imports from its trading partners, however, the increase has been relatively smaller than the increase in its exports to its trading partners. Therefore it can be concluded that the country to country bilateral trade agreements between Zimbabwe and its SADC trading partners in the sample has been trade creating and expanding. This finding agrees to studies by Jordan and Kanda (2011) and Kwentua (2006) which reported the trade expansion effect of trade agreements

Lastly, multiple-membership to regional trade agreements between trade partners, measured by the $MRTA_{ijt}$ dummy, has a significant and negative effect on trade flows. The p value is 0.000 meaning that the variable has been significant in explaining variations in trade flows over the period of study. Intuitively, a coefficient of -2.846 implies that if Zimbabwe and its trading partner both affiliates to both the SADC FTA and COMESA FTA, they will trade approximately 2.8% less than otherwise. Theoretically this is in line with arguments forwarded by Chacha (2008) and Yang and Gupta (2005) who argued that the differences in the rules of origin from different agreements may undermine the effectiveness of the BTAs by creating a lot of red tape and inconsistencies. This finding justifies why the Heads of States and Government of COMESA, EAC and SADC met in Kampala on 22 October 2008 and conveyed in their communiqué a palpable sense of urgency in calling for the establishment of a Tripartite FTA comprising 26 countries covering COMESA, EAC and SADC (COMESA; 2012).

Country-Pair Specific Effects: Country-pair fixed effects are shown in Table 4.4 below. These effects indicate the existence of specific factors that enhance or restrict trade between Zimbabwe and its partner country. Countries with positive fixed effects namely Botswana, Malawi and Zambia have individual specific factors, not included in the model, that enhance their respective trade with Zimbabwe. In the same vein, countries with negative fixed effects such as DRC, Madagascar, Mozambique, Namibia, South Africa and Tanzania have individual specific factors that constrain their respective trade with Zimbabwe.

Table: 4.4 Country Pair Specific Fixed Effects

Country	Botswana	DRC	Madagascar	Malawi	Mozambique	Namibia	S Africa	Tanzania	Zambia
Alphafehat (*aij*)	4.348837	-2.401	-2.8539	0.475417	-0.34825	-29.659	-0.9093	-2.3278	1.0962

CONCLUSION AND POLICY RECOMMENDATIONS

The major objective of this study was to find out whether the country to country bilateral trade agreements between Zimbabwe and its trading partners have been statistically significant in determining their trade flows and to examine the impact of trading partners' multiple-membership to regional trade agreements, particularly the SADC and COMESA FTAs on trade flows. Using a country-specific fixed effects panel data estimation of

the gravity model of bilateral trade involving a sample of 10 countries, - Zimbabwe and its 9 trading partners- Botswana, DRC, Madagascar, Malawi, Mozambique, Namibia, South Africa, Tanzania and Zambia - from 1980 to 2012, the results show that the country to country bilateral trade agreements had a positive and significant impact on trade flows. In fact, the bilateral trade agreements have a trade creation and expansion effect. Another important finding of the study is that trading partners' multiple-membership to regional trade agreements has been constraining trade.

Policy Recommendations: Given the results of the study, Zimbabwe is encouraged to establish more bilateral trade agreements with countries in Southern Africa. It is surprising to note that Zimbabwe and Zambia are still to conclude negotiations on a possible bilateral trade agreement. The two are not only close, but they also share a border and historical backgrounds which have been overwhelmingly shown to significantly enhance trade.

The fact that trading partners' multiple-membership and overlapping regional trading agreements have been a thorny issue in African states trade since the establishment of various regional free trade agreements in the late 1990s and early 2000s is arguably clear. The idea of a tripartite FTA between COMESA, EAC and SADC member states currently being pursued by the Tripartite Trade Negotiating Forum (TTNF) is good news for it has been established primarily to 'remove the inefficiencies and barriers created by overlapping memberships in the regional economic communities and serve as a key stepping-stone towards an Africa-wide free trade area (COMESA; 2012).

To offset the adverse effects of distance on trade, African states in general and Southern Africa states in particular should acknowledge the imperativeness of investment in infrastructure. Whilst it is physically impossible to reduce trading distances between trading partners, oiling off the friction along the distances is possible. Zimbabwe's road network and that of the majority of its partners is in a dilapidated state. According to Simwaka (2006), this poor transport infrastructure network is one of the main problems of bilateral trade in Africa. Therefore improvement in transport and communication infrastructure may be a necessary step for successful trade flows within Africa.

Lastly, the positive impact of common borders can be further increased by upgrading trade procedures and protocols at the borders. It's good to note that the establishments of the Chirundu One Stop Boarder Post (COSBP) between Zimbabwe and Zambia, the first of its kind in Africa, has reduced transactions costs, increased revenue, reduced waiting time at the border as well as duplication of efforts and strengthened political ties between the two nations (Kwaramba; 2010).On this note Zimbabwe is encouraged to push for such border posts with the other countries it shares a border with, particularly with South Africa which is Zimbabwe's world largest trading partner. Congestion at the Beit-Bridge Border Post has been a perennial issue and the establishment of the One Stop Boarder Post and dualisation of the Beit-Bridge-Chirundu border post should be given fiscus priority.

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