TIPS Small Grant Research Paper Series 2014

Modeling Trade Flows:

A Comparative Study of Mercosur and SADC

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August 2014

Abstract

One of the major international economic developments in recent years has been the growth in the prevalence of regional trade agreements (RTAs). In addition to the political implications of participating in RTAs, the perception that membership in such agreements could provide some of the benefits attributed to free trade with fewer of the associated adjustment costs, has contributed to the rise in regionalism (Krugman, 1993). However, with the exception of a few, there are criticisms that RTAs, which comprise mainly of developing and LDCs, have not yielded the expected benefits. As such, the focus of this paper is to determine the impact of engaging in regional initiatives for two groupings comprising of developing and least developed countries from two different continents, namely MERCOSUR and SADC. Using a gravity model, we show that membership in both MERCOSUR and SADC impact bilateral trade positively if the two partners are both from the same RTA, while the impact is found to be negative if only one of the partners is a member to the RTA under investigation, albeit the results not being statistically significant. Using the Generalized Method of Moments (GMM Dynamism was also incorporated in the model,) we modelled the effect of lagged trade flows on current ones. Trade flows of the past year were found to impact the current year's bilateral flows positively for both RTAs being investigated and in this present instance, both results were found to be highly statistically significant.

1.0 Introduction

The end of the twentieth century has witnessed an increasing interest in regional trade agreements. The World Trade Organization notified 34 new RTAs between 1990 and 1994 and this figure doubled in the period 1995 to 2001. As of 31 July 2013, 575 notifications of RTAs were received by the WTO. Given the increasing prevalence of regional initiatives, it has become essential to assess the potential benefits *vis-à-vis* the less desirable outcomes of RTAs. Theoretical work concerning RTAs conclude that net effects of RTAs might be positive or negative depending on the countries engaging in the RTA and the extent of trade creation relative trade diversion.

The impact of RTAs has been differing widely depending on their member countries. North-north regional agreements, as exemplified by the EU, tend to be more successful than south-south agreements. As put by Venables (1999), regional trade agreements between developed countries tend to foster convergence in the per capita income of its members while regional agreements between developing countries have been associated with divergence in economic performance of members. For instance, it was found that the per capita income differences in member countries narrowed, with Ireland having an income per capita of 91% of the large EU countries' income by the late 1990s, while in the Economic Community of West Africa for example, industry, commerce and services were found to be more concentrated in Abidjan and Dakar.

While many countries have benefited from increased trade and regional integration, some RTAs mainly those regrouping developing countries have underperformed. In this regard, the present study attempts to unravel the impact of two regional initiatives namely SADC and MERCOSUR on trade flows into the respective regions. A first analysis of the overall trade performance in both MERCOSUR and SADC for the past 10 years indicates an increase in both imports and exports for the two trading blocs; albeit less than one fifth of these trade flows are from within the RTA for both MERCOSUR and SADC. This suggests, according to Park (1995), who identified low intra-regional trade as a share of total trade to be a predictor of trade diversion, that the net outcome of membership in the two RTAs could be trade diversion instead of trade creation. However, as Burfisher et al. (2001) put it, *"whether or not a regional trade agreement benefits its members […] is essentially an empirical issue that must be settled by data analysis".*

As such, the objective of the present study is to analyse the effect of regional trade agreements on trade for two RTAs namely MERCOSUR and SADC. Our methodology rests on the application of the gravity model for 29 countries within the two regional initiatives for the time horizon of 13 years (2000-2012) to model whether these regional economic communities have had an impact on the trade flows between their respective member nations.

The study is structured as follows. Section 2 reviews the theoretical and empirical literature on regional trade agreements and their implication on trade flows among member nations. This section also includes the literature on gravity modeling and reviews the work undertaken on RTAs and also the studies using the gravity model. Section 3 briefly focuses on the two regional trading blocs. The econometric analysis on the selected RTA performance is

discussed in section 4 via the application of the gravity model. The findings are thus explained and analysed. We finally conclude in section 5 with policy implications.

2.0 Literature Review

The international trade literature recognizes the potential of regional trading agreements to increase trade among its members. However, writers such as Panagariya (2000) have argued that the welfare derived from regional agreements depends very much on the countries considered and the extent of trade creation versus trade diversion. Concerns about regionalism enhancing trade within the bloc or diverting it away from non-members of the bloc can be attributed back to Viner (1950) and Meade (1955) who were pioneers in distinguishing between trade creation and trade diversion.

Following Viner's seminal work, many empirical studies tried to measure both concepts with the ultimate purpose to evaluate the effects of trade agreements. For example, potential net trade creation effects for custom unions were investigated by Kemp and Wan (1976). In the first instance, analysis of market-shares and income elasticities were common methods to investigate trade effects (Balassa, 1974; Truman 1969), although more recently, there has been a shift to gravitational models which can be estimated using econometric tools.

2.1 Theoretical Review

Ghosh and Yamarik (2004) stated that, *"... the international trade literature recognizes the potential of regional trading arrangements to increase trade among its members"*, however, the literature suggests that RTAs reduces trade outside the grouping. On the other hand, Lee et al. (2004) found that increased trade between member countries tend to benefit those member countries in terms of increased market size, investment and income growth, which in turn provides trading opportunities for non-member countries and help reduce the trade diversion effect. This results in RTAs contributing towards global free trade as pointed out by Baldwin (1995). Lawrence (1996) drew a similar conclusion when indicating that over time, identified growth effects of RTAs offsets initial trade diversion effect as import demand from non-members can be stimulated by growth or economies of scale. Benefits derived from the latter permits previously inefficient members to lower their production costs thereby becoming more efficient and reducing the trade diversion effect (Wonnacott & Lutz, 1989; Wonnacott, 1996). For instance, Wonnacott (1996) argues that trade diversion would provide an incentive for import-competing industries to lower trade barriers to non-member country in response to increased competition from intra-RTA imports.

A number of studies have also investigated the membership intricacies of RTAs to delineate whether there are pre-conditions to be satisfied, favouring net gains in a RTA. For instance, domestic security in countries, political and civic commitment and mutual trust among countries, minimum levels of macro-economic stability, effective financial management in countries and sufficiently broad national reforms to open markets, were identified as preconditions for regional integration (Khan & Sustainable Development Institute, 2006). Cernat (2001) also found that greater trade facilitation amongst members of RTAs contributed to his observed strong case of trade creation between African RTAs.

Furthermore, the concept of "natural trading partner" suggests that some characteristics of RTA members can maximize the positive welfare gains of membership in RTAs (Wonnacott & Lutz, 1989; Summers, 1991; Krugman, 1993; Frankel et al., 1995). With larger pre-RTA trade volumes and lower transportation costs between members, RTAs are more likely to be welfare-improving. For instance, it is natural to form a RTA between geographically close neighbours for which transportation costs are comparably cheap. Since trade diversion occurs when discriminatory tariff liberalisation makes imports from higher-cost member countries more attractive than those from more efficient non-member countries, the negotiation of trade agreements with natural trading partners mitigates the trade diversion impact since they are lower-cost producers in light of their geographic advantage.

However, an opposing argument was put forward by a number of authors who argue that neighbouring countries are not necessarily natural trading partners (Bhagwati & Panagariya, 1996; Krueger, 1999; Panagariya, 1999). For example, in NAFTA, the United States is Mexico's natural trading partner but the reverse is not true. Lawrence (1996) concludes that there is no clear evidence of the "natural trading partner" concept as regards the ability of neighbouring trading countries to be a motivator of a net trade creation effect from RTAs. In addition, Krueger (1999) and Lawrence (1996) further argued that natural trading partners may not create a net trade creation effect when neighbours have similar endowments. In this respect, Grimwade's (1996) study pointed out the importance of complementary economic structures between potential RTA members in guaranteeing welfare effects.

Schiff (1997), based on a homogenous goods assumption, argued that an RTA among small developing countries will be most likely to replace imports from more efficient producers by dearer intra-bloc products. Arguing from a different perspective, Park (1995) stated that; *"the smaller the intra-regional shares in total trade […] the more likely the trading blocs would become trade diverting"*. Given the lower intra-trade shares of South-South RTAs as compared to North-North or North-South RTAs, one can infer using the above reasoning that South-South RTAs are potentially more trade diverting than other RTAs. Negative impacts of South-South RTAs were found or predicted not only in Africa but also in Latin America.

Bhagwati (1993) summarizes very well the above concerns with the following question*: Will proliferation of RTAs be a "building block" or a "stumbling block" to global free trade?* A question which Lee et al. (2004) tried to answer by identifying two important issues: firstly, whether RTAs enhance trade and welfare among grouping's members without hindering the welfare of non-members, i.e. whether 'trade creation' occurs without associated 'trade diversion'; and secondly by trying to uncover the effect of the proliferation of RTAs on global trade over time. They argue that if the net trade creation effects of RTAs are positive, excluded countries can be impelled to seek membership of existing RTAs or negotiate new RTAs, thereby influencing global trade over time.

2.2 Empirical Review

There are currently two distinct stands of studies estimating changes in trade patterns due to regionalism. Ex-post studies examine trade flows after the RTA has been implemented and compare the actual levels of trade with a prediction of trade in the absence of the RTA. On the other hand, ex-ante studies use trade patterns and estimated elasticities or computable

general equilibrium models prior to the agreement to calculate the predicted effect of eliminating trade barriers with a partner country.

Wonnacott & Lutz (1989) and Krugman (1991) have proposed a "natural trading partner" hypothesis according to which the countries will tend to form the regional agreements if they have already significant bilateral trade, and that such agreements are likely to be trade creating. An extreme case of the Krugman hypothesis even ignores the impact of RTAs and explains the entire tendency in trade volumes by the trade costs and the historical ties. Bayoumi & Eichengreen (1997) and Frankel (1997), both of whom examined the effect of RTAs on non-members as well as members, try to separate the "trade creation" and "trade diversion" effects of RTAs. Low (2003) discusses some of the practical issues relating to RTAs and particular relevance to APEC and ASEAN.

Based on the traditional concept of gravity model as specified above, bilateral trade can be explained by using GDP and GDP per capita and both trade impediment (distance) and preference factors (common border, common language, etc.). Various studies have investigated whether RTAs are trade-creating or trade-diverting. The majority of the research uses the gravity model to test for the trade effects of RTAs. By estimating various forms of the gravity model equations, researchers have reached the consensus that RTAs are trade-creating. As Burfisher et al. (2001) put it, *"whether or not a regional trade agreement benefits its members will depend on parameter values and initial economic structure — it is essentially an empirical issue that must be settled by data analysis."* Further, the measurement of success or failure of RTAs has been examined in economic terms, mainly in the form of trade diversion or trade creation, but little work has been done examining the political, socio-cultural and other environmental dimensions (Woodcock, 2001).

Venables (1999) investigated the benefits and costs of a free trade area which was segregated according to a generalised Heckscher-Ohlin trade model, where the technology was the same for all countries but differences in endowment of skilled and unskilled labour provided the grounds for each country's comparative advantage. The results of the study demonstrated that free trade agreements between low income countries were likely to cause divergence in member countries' incomes while convergence was observed for high income countries. An implication of such results would be that developing countries will benefit more from 'north-south' than by 'south-south' free trade agreements.

Furthermore, Soloaga and Winters (1997) found convincing evidence of trade diversion for EU and EFTA as EU's and EFTA's propensity to import were significantly lower in 1995-96 than in 1980-82. The latter used annual non-fuel imports data for 58 countries from 1980 to 1996 from the UN-COMTRADE database. This set of countries represented around 70% of total world imports in the period covered. They extended the basic gravity model by defining three sets of dummy variables for each trade bloc: one that captured intra-bloc trade, a second that captured imports by members from all countries (members and non-members), and a third that captured exports by bloc members to all countries. The last two dummies reflected respectively overall bloc "openness" to imports and exports, while the intra-bloc dummy reflected the additional effect of a given PTA on members' trade. These bloc related coefficients were statistically tested for changes "before and after" blocs revival/formation.

The authors found no indication that the "new wave" of regionalism boosted intra-bloc trade significantly. When testing intra-bloc trade "before and after" years of bloc revamping/creation they found no statistically significant change in the propensity for intra-bloc trade.

In addition, Coulibaly (2006) focused on six developing RTAs covering Sub- Saharan Africa (ECOWAS and SADC), Asia (AFTA) and Latin America (CACM, CAN and MERCOSUR) over the period 1960-1996, and two developed ones (EU and NAFTA) for the sake of comparison to estimate their trade as well as welfare impacts. A gravity model was combined with kernel and bootstrap estimation techniques to investigate the trade and welfare profile along with the number of years their members participated over the period 1960-1996. Recent RTAs (AFTA, CAN, MERCOSUR, NAFTA and SADC) appeared to be associated with positive welfare effects during first years of existence, while "older" RTAs (CACM, ECOWAS and EU) depicted more volatile welfare effects. The author also found that the trade and welfare impacts of developing and developed RTAs evolved non-monotonically over time.

Muhammad and Yucer (2010) investigated the effects of RTAs in the Western Hemisphere. Annual data from 38 countries covering six RTAs for the years 1986–2005 was used. The regression estimates for the effects of the different RTAs varied remarkably. All RTAs were found to foster greater trade and so were welfare enhancing except LAIA and NAFTA. While LAIA, NAFTA and MERCOSUR showed a significant trade diversion effect, ANDEAN and CACM had a positive significant trade diversion coefficient which indicated that these RTAs were not only helping in boosting the trade within the region but also contributing the overall world trade.

Cernat (2001) explains that in a simple partial equilibrium model under perfect competition RTAs may have a positive impact on the level of trade between members at the expense of less efficient domestic producers (trade creation) but also of more efficient third countries (trade diversion). The net effect of RTA on trade thus depends on the relative size of these two effects. Esteban and Anesa (2006) postulate that RTAs are in line with the principles of multilateral trade as long as they are trade creating. These arguments are based on the theory of comparative advantage; free trade motivates the operation of the principle of comparative advantage by curbing the discrimination between the existing sources of supply. To the contrary, RTAs shift the discrimination between the existing sources of supply among trading partners by granting preferential market access to its signatory members. Cernat (2001) found a strong case of trade creation between African RTAs which he attributed to greater trade facilitation amongst members of RTAs. This is an evident indication that RTAs in Africa have good chances of being trade-creating, especially in light of the sum of the welfare effects on all RTA members.

Khan & Sustainable Development Institute (2006) further argue that as shown by the EU's experience, trade agreements can also imply deep and profound economic, social and political changes. Imports become cheaper and export more valuable, thus promoting foreign direct investment (FDI), improving economic growth, improving a countries' balance of payments position, and open access to new skills and technology. While economic self-

interest is generally the principal motivation of RTA implementation, such agreements are also more and more being directed by political, strategic and security concerns. The Association of Southeast Asian Nations (ASEAN) was initially created as a response to the perceived spread of communism in the region in the 1960. Regional blocs are a powerful tool to negotiate common interests both within and outside the WTO. In the case of Latin American countries, regional integration has been used to counter the negotiating power of the US, for instance.

Foroutan (1998) found that the countries which were currently member of an effective RTA, namely Israel, Mexico, and Turkey which were in an effective RTA arrangement with the US and/or the EU as well as the Latin American countries that belonged to an effective regional grouping are also the ones that had most radically liberalised their trade regimes in the past decade. Thus, to the extent that any relation between regionalism and trade liberalism could be established, it appeared that the acceptance of a liberal trade policy might be a requirement for the survival and deepening of a meaningful RTA whereas belonging to a regional scheme constitutes neither a necessary nor a sufficient condition for an open and liberal trade regime.

2.3 Gravity Literature

Pomfret (1997) mentions a number of incredible results in studies using the gravity model to measure the trade effects of RTAs and concludes the inadequacy in this approach. Furthermore, the estimates of the gravity model calculating the RTA effects are also sensitive to the sample of countries chosen for the analysis. Haveman and Hummels (1998) demonstrate that changing the country sample results with a different prediction of trade in the absence of the RTA, and thus the estimates of RTA effects vary considerably in their conclusions. More recently, Ghosh and Yamarik (2004) make a case that the gravity model results are very sensitive to the variables included in the regressions and to the prior beliefs of the researchers. They find a remarkable drop in the number of regional agreements that are trade creating when they incorporate the researcher's prior beliefs into the estimation.

In addition, the economic framework used in most studies was cross section analysis (Wang & Winters, 1991; Hamilton & Winters, 1992; Brulhart & Kelly, 1999; Nilson, 2000; among others). Only a few studies made use of (random effects) panel econometric methods (Baldwin, 1994; Gros & Gonciarz, 1996; Matyas, 1997; Egger, 2000). The traditional cross section approach is affected by severe problem of misspecification. Matyas (1997), notes that the most natural representation of bilateral trade flows is a three-way representation. Thus eliminating one of the three dimensions (time) implies that the natural representation of a time-averaged gravity model is a two-way panel with (fixed or random) exporter and importer effects. Since these are the most important dimensions of variation, convenient OLS estimates are more likely to result in inconsistent estimates (Egger, 2002). A panel framework reveals several advantages over the cross section analysis. On the one hand panels allow to capture the relationships between the relevant variables over a longer period and to identify the role of the overall business cycle phenomenon. On the other hand, the panel approach allows disentangling of the time invariant country-specific effects (Egger 2000). Nevertheless, so far only a few authors in this field investigated a panel framework

(Baldwin, 1994; Matyas, 1997, 1998). But it seems not clear whether one should apply a random (REM) or a fixed effects model (FEM) (Egger, 2000).

For instance, Matyas (1997) argued that the correct gravity specification is a three-way model. One dimension is time (reflecting the common business cycle or globalisation process over the whole sample of countries) and the other two dimensions of group variables are time invariant export and import country effects. While Baldwin (1994) employs a REM, Matyas does not give preference to the FEM over the REM or vice versa. Egger (2000) in turn shows that there are problems associated with random effects gravity approaches and argue for the superiority of a fixed effects model based on the Hausman test.

3.0 Regional Trade Agreements: SADC and MERCOSUR

3.1 Southern Common Market (MERCOSUR)

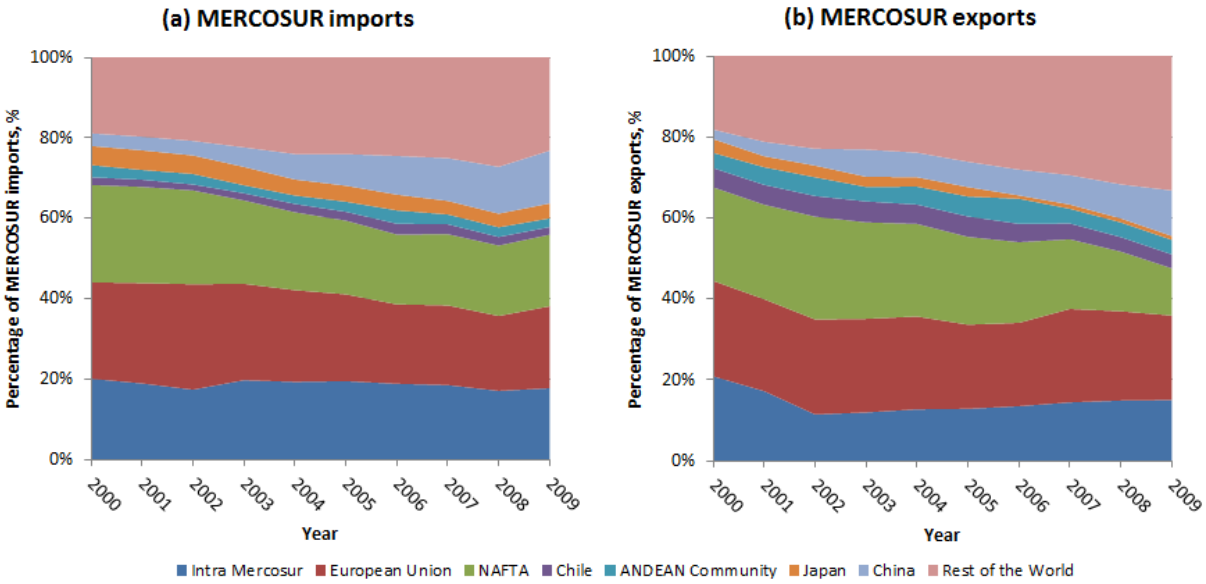
In the Americas, regionalism has become a common theme and with the involvement of the USA and Canada, such a process has gained visibility and credibility. With an ultimate objective of economic integration, coupled with promises of enhanced international competitiveness, South American economic blocs, such as MERCOSUR, the Andean Community and CARICOM, amongst others, were established.

MERCOSUR is an ambitious economic integration project which was founded in 1991 under the treaty of Asuncion among Argentina, Brazil, Paraguay and Uruguay. The treaty was later amended by the Treaty of Ouro Preto in 1994. The combined population of Mercosur's full members totalled 260 million people in 2011, the region has a collective GDP of $2.9 trillion and is the world's fourth largest trading bloc. Bolivia, Chile, Colombia, Ecuador and Peru currently have associate member status whilst Venezuela became an accessing member in 2006. Following Paraguay's suspension from the RTA in 2012, Venezuela gained full membership in the bloc.

Despite the relatively homogenous level of development of member countries in MERCOSUR, approximately 75% of production at the regional level can be attributed to Brazil[1], while trade between the largest players in the group accounts for the majority of intra-MERCOSUR trade. The resulting asymmetry within the group's members can be seen as an impediment to its future endeavours. MERCOSUR members were to converge towards a common external tariff (CET), in an attempt to pursue the grouping's objective of reaching full harmonization of its members' trade policies. However, members still have their own across-the-board extra duties and members are also allowed to engage into preferential agreements with third party, which ultimately leads to an unevenly achieved integration at the regional level.

[1] See Korinek & Melatos (2009)

Figure 3.1.0 MERCOSUR imports and exports by main trading partners, 2000 to 2009

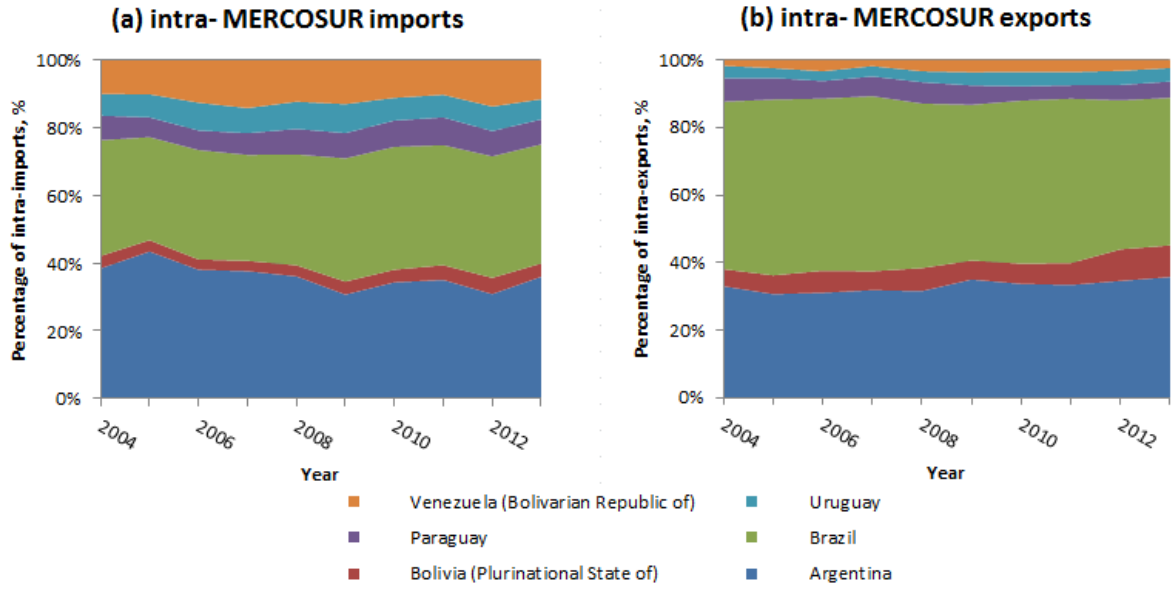


Source: CEI based on Indec

From 3.1.0 (b), it can be seen that the composition of export destinations has been changing. The EU remains the main trading partner with an almost unchanged share of the group's total exports over the years considered. On the other hand, China is gaining prominence as a trading partner over the years. According to Connolly & Gunther (1999), the lowering of internal trade barriers under the treaty of Asuncion led to a marked increase in trade among member countries. However, the ability of MERCOSUR to absorb its members' exports was seen to be limited, with intra-exports stagnating around 15% as shown above.

With respect to import partners, the trends exhibited by MERCOSUR, as shown in Figure 3.1 (a), are more stable than when compared to its export partners. However, although the proportion of imports sourced from China has been increasing over the years, nevertheless NAFTA, the EU and Intra-MERCOSUR still account for the majority of the group's imports.

Figure 3.1.1 Intra- MERCOSUR imports and exports by member country, 2004 to 2013



Source: UNCTAD, UNCTADstat

From figure 3.1.1, it can be seen that Brazil and Argentina account for the majority of intra-MERCOSUR imports and exports. Bolivia's intra-group exports is also seen to increase while the trends in the shares of intra-group trade for the other members are stable on average.

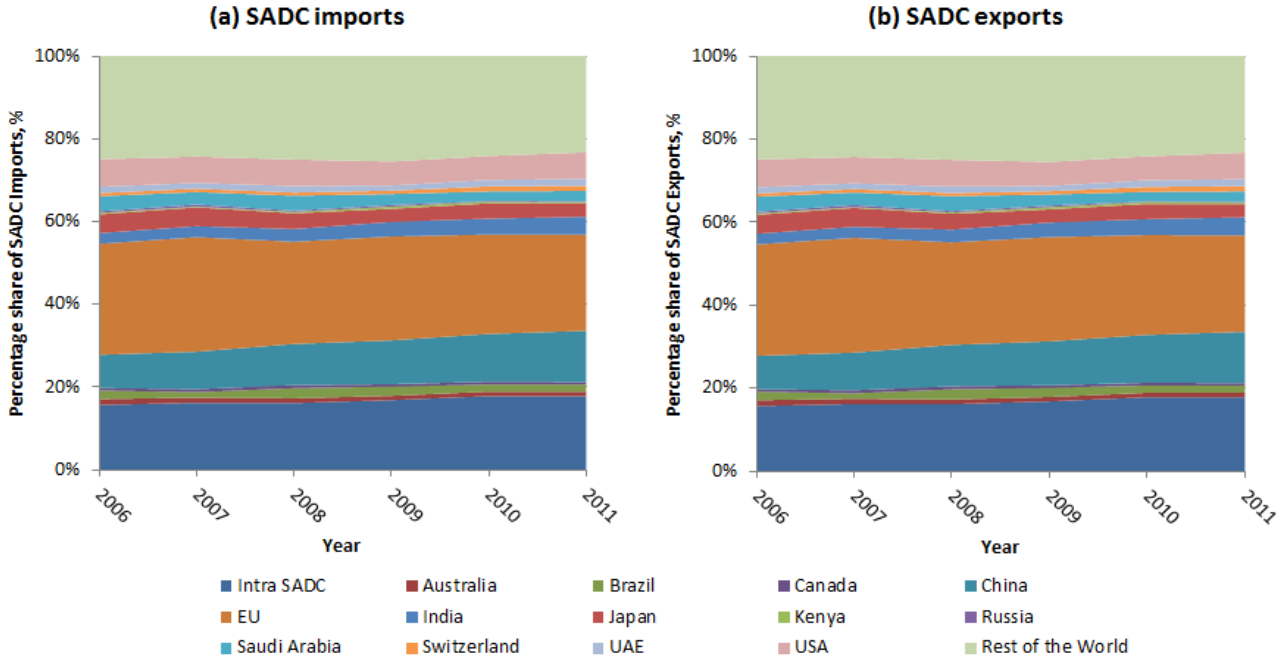
3.2 Southern African Development Community (SADC)

SADC established in 1992, is one of the most important regional groupings in Africa with an accumulated population size exceeding 283 million inhabitants, with a Gross Domestic Product (GDP) of 655.142 US$ billion as of 2012 (Southern African Development Community, 2012). The SADC Summit in August 2008 launched a comprehensive SADC Free Trade Area (FTA) for growth, development and wealth creation. Based on the implementation of the agreed phased down commitments, SADC attained the FTA status as of January 2008. Such a FTA does provide certain opportunities for member countries, nevertheless certain challenges subsist, in the form of too small economies to support large ranges of viable productive investments, among others. Makochekanwa (2013), further argues that despite the gradual reduction in imports duties or trade tariffs, other non-tariff measures or non-tariff barriers have nullified the potential benefits associated with the FTA status. Intra-SADC trade is still low and largely concentrated in the countries of the Southern African Customs Union (SACU); Botswana, Lesotho, Namibia, South Africa, and Swaziland.

The structures of the SADC countries are diverse and at varying stages of development. However, common features among several of the SADC countries do exist and include: small domestic markets, landlocked locations, linked infrastructure networks, and reliance on a few primary commodity exports. The reliance on natural resource commodity exports leaves most SADC countries, and to a lesser extent South Africa, vulnerable to external shocks of

international market price fluctuations according to the World Bank. South Africa is by far the dominant economy within SADC with a contribution of almost 60% to the SADC GDP.

Figure 3.2.0 SADC imports and exports by main trading partners, 2006 to 2011

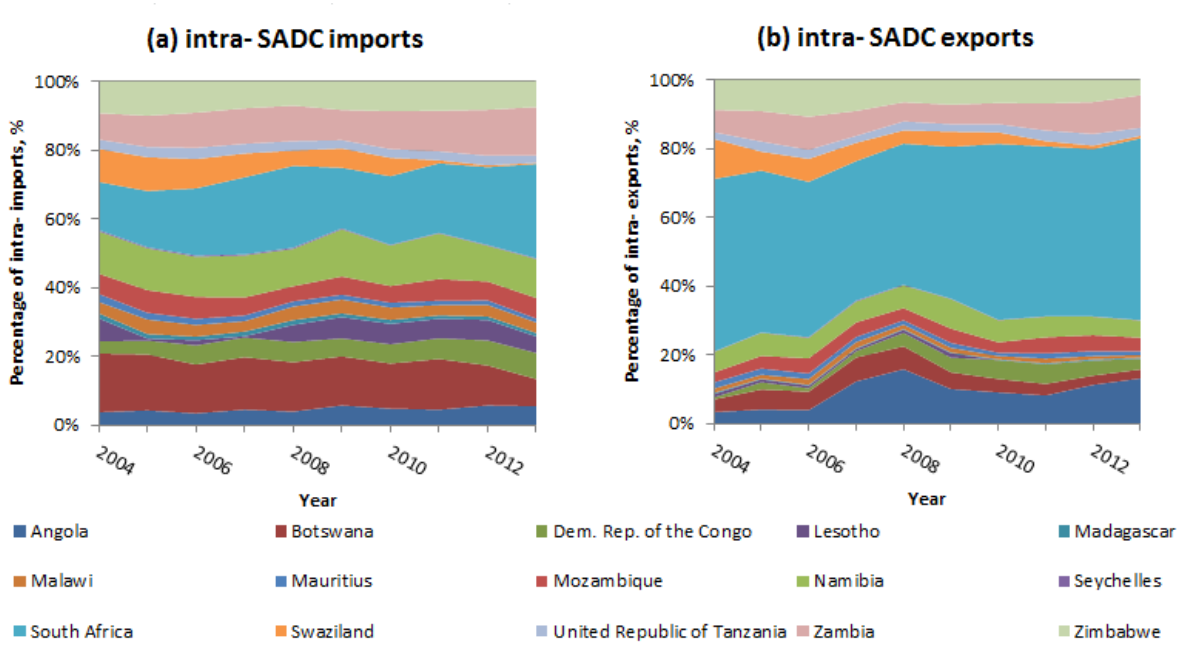


Source: SADC Statistics Yearbook

Figure 3.2.0 clearly shows that SADC's is overtly concentrated towards the European Union, with exports to the EU accounting for approximately one fifth of total exports, on average, for 2006 to 2011. Intra-SADC exports are relatively stable around 12% of total exports. Interestingly, exports to China are rising as is the case for MERCOSUR.

SADC imports follow the same trends as for its exports with intra-SADC imports averaging 17% during the 6 years described. SADC is sourcing most of its imports from the European Union while China and India are improving their status of important imports sources over the years.

Figure 3.2.1 Intra-SADC imports and exports by member country, 2004 to 2013



Source: UNCTAD, UNCTADstat

Figure 3.2.1 (a) indicates that South Africa accounts for the highest shares of intra-SADC imports and exports. However, intra imports are more evenly distributed across member states when compared to intra exports. Interestingly enough, Mauritius saw its intra-SADC exports rise and its intra-group imports stabilise for 2004 to 2013.

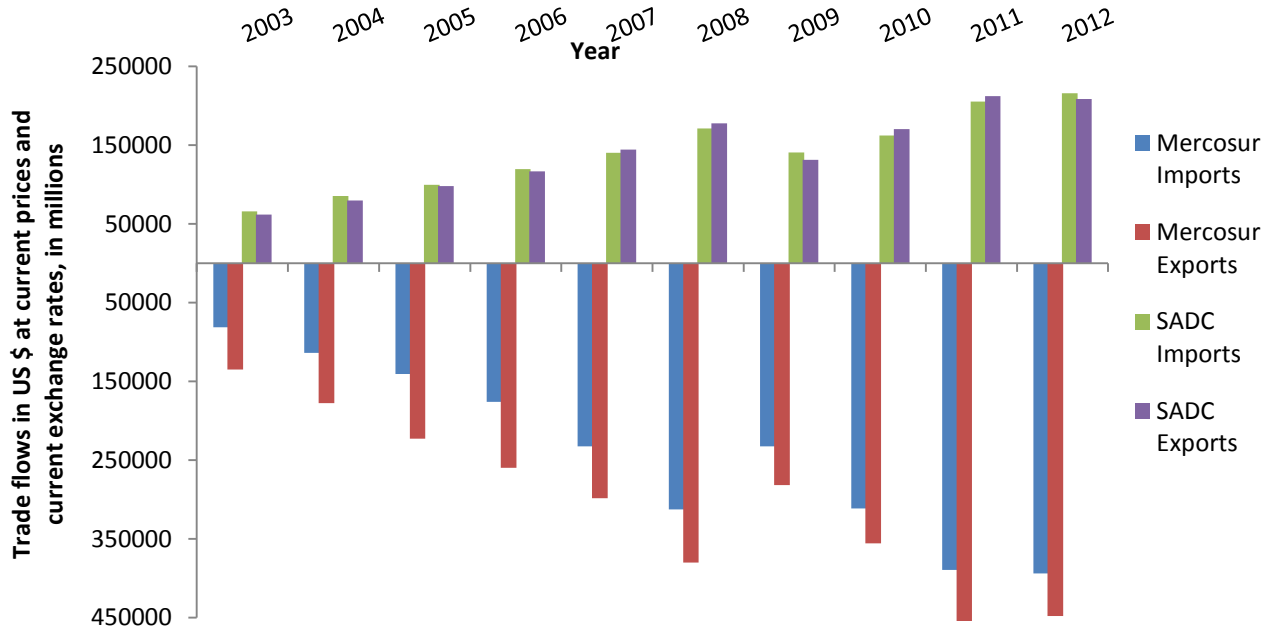
3.3 Overall Trade Performance for MERCOSUR and SADC

MERCOSUR countries have seen their share of world exports continuously increasing since 2003 despite the crisis and falling external trade flows[2] with both intra bloc and extra bloc flows contributing to such an expansion of member countries' exports. Similarly, for the period 2000-2005, SADC's total trade with the rest of the world almost doubled[3]. However, the regional deficit grew from US$2.1 bn to US$7.7 bn for same period, which may be explained by the continuous import of manufactured goods while the region's exports mainly consist of raw materials.

[2]See MERCOSUR Report No 14.

[3] See Intra-SADC Trade Performance Review (2007)

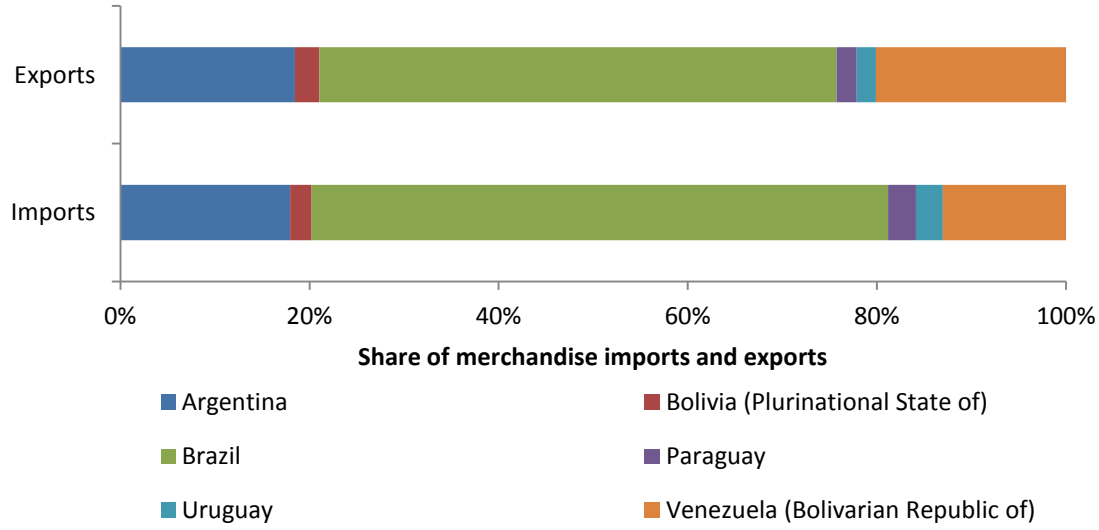
Figure 3.3.0 Overall Trade Performances of MERCOSUR and SADC from 2003 to 2012



Source: UNCTAD, UNCTADstat

Figure 3.3.0 shows an increased overall trade performance for both MERCOSUR and SADC for the last ten years, although the trade flows for MERCOSUR were larger in magnitude. In addition, net exports remained positive for MERCOSUR while an inconsistent trend was depicted for SADC during the same period.

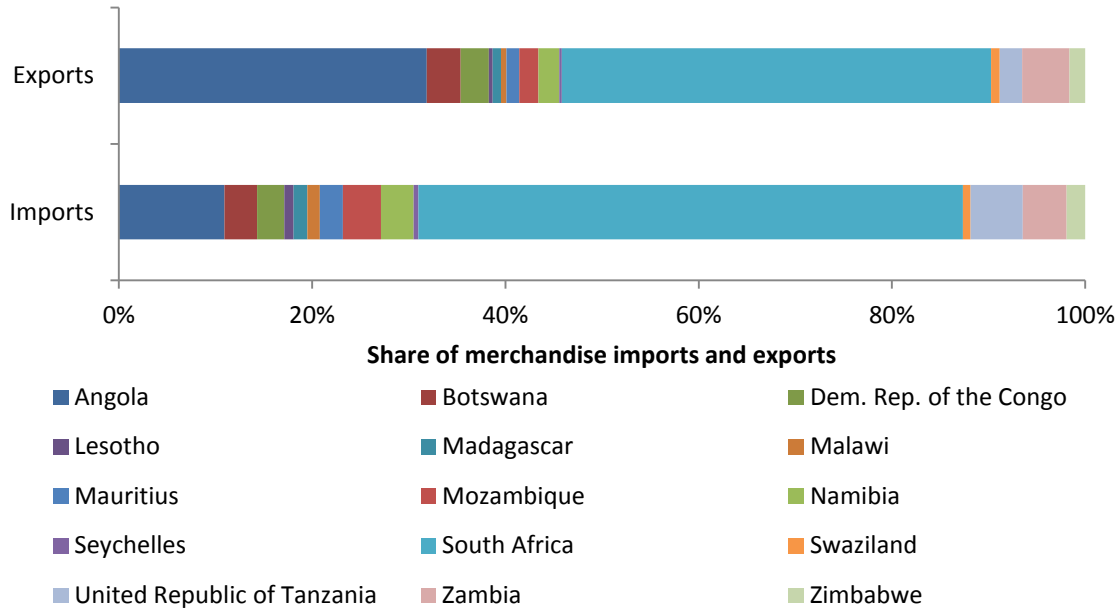
Figure 3.3.1 Shares of MERCOSUR imports and exports by member country, 2013



Source: UNCTAD, UNCTADstat

From figure 3.3.1, it can be seen that Brazil account for approximately 60% of MERCOSUR's total trade, followed by Argentina and Venezuela. Imports and exports for Bolivia, Paraguay and Uruguay account for less than 20% of the total values for 2013.

Figure 3.3.2 Shares of SADC imports and exports by member country, 2013



Source: UNCTAD, UNCTADstat

Figure 3.3.2 shows that the largest share, 44%, of SADC's total exports is born by South Africa followed by Mauritius accounting for 13% of the group's exports. SADC's imports are still in majority sourced by South Africa with 56% of the group's total imports in 2013.

4.0 Methodology

4.1 Data set and Data sources

The present study makes use of data for 29 countries with a time frame spanning from 2000 to 2012 (13 years). Data has been retrieved from UN COMTRADE. Current GDP data (in U.S. dollars) and population data have been obtained from the World Bank Development Indicators database.

Since the purchasing power parity rates are subject to large measurement error, nominal trade flow data and production and expenditure for country i and j will be used Srinivasan (1995). Little difference was observed in the gravity equation when using real data as discussed by Frankel (1997). Moreover, the use of fixed effects estimates allows us to control for inflationary pressures and the growth in world trade over the sample period.

Distance, landlocked, colonial ties and common language indicators were extracted from the *Centre d'Etudes Prospectives et d'Informations Internationales* database (Head & Mayer, 2013; Head, Mayer & Ries, 2010). The common border variable has been constructed from the CIA World Fact Book (available at www.cia.gov).

4.2 Methodological framework

RTA effects, trade creation and trade diversion can be quantified by using two main methods: the Computable General Equilibrium modeling, mostly used for *ex ante* analysis, and the gravity model, which is more appropriate for *ex post* analysis (Cernat, 2003).

In its most basic form, the gravity model states that bilateral trade flow (either export or sum of import and export) between two countries (i and j) is a function of GDP of each country, and geographical distance between them. In a log-linear form it is written as follows:

$$Ln(X_{ij}) = a + \beta_1 Ln\,(GDP_i) + \beta_2 Ln\,(GDP_j) + \beta_3 Ln\,(D_{ij}) \qquad \textbf{(Eq 1)}$$

In the recent past, the basic gravity model has been augmented to include a number of other variables in different forms as explanatory variables of trade. However, there has been an intense debate on variables to be used in gravity models. Rahman (2003) and Sharma and Chua (2000) favoured the use of trade value (i.e. sum of imports and exports) as dependent variable, while others, including Adams, Dee, Gali and McGuire (2003) use only exports value. Baldwin and Taglioni (2006) suggested the use of one-way trade, solving the dilemma, and this is the model followed in this study. For a given country pair, two datasets were derived, with one in which country x is exporting to country y and the second one in which country y now export to country x.

On the explanatory variables side, GDP, GNP, GDP per capita, GNP per capita, sum of GDP and products of GDP have all been used to represent income[4]. Higher trade is associated with larger economic size, proxied by GDP in our model. A high level of income in an exporting country implies a high level of production giving rise to increased products available for exports; on the other hand, a high level of income for an importing country suggests higher demand and higher imports.

Predicting the relation between population size variables and bilateral trade flows has been subject to ambiguity; the direction in which bilateral trade flows are impacted by population sizes was found to be inconsistent in the literature[5]. Some studies using gravity models argue that trade flows are inversely related to size variables (e.g. population size) due to countries with a large population size having, higher productive capacity and higher chance of being self-sufficient. On the other hand, if population size accounts for the level of demand for imports and supply of exports, bilateral trade flows should vary positively with size variables.

Geographical distance is expected to be negatively related to the trade flows as it is used as a proxy for transportation costs. However, Peguin et al. (2009) show that the larger the trading partner country's GDP, the lower the effect of geographical distance on trade flows.

It is also common to integrate additional variables to the basic equation to estimate the trade effects of RTAs. RTA-specific dummies to capture the trade creation and trade diversion of RTAs have been widely used in the literature. Aitken (1973), Braga, Safadi and Yeats (1994) have used one dummy for each RTA which captures the intra trade-bloc effect, whereas other

[4] For a review on the explanatory variables included in past studies refer to Adams, Dee, Gali & McGuire (2003)

[5] See Oguledo and MacPhee (1994)

studies made use of two dummies, to capture separately intra and extra trade-bloc effects (Bayoumi and Eichengreen, 1995; Frankel, 1997). Soloaga and Winters (2001) integrated a third dummy, in addition to the two mentioned above, to distinguish between extra-bloc effects on imports and exports. For the purpose of this study, two RTA-specific dummies were used to capture the impact on trade flows of the two countries constituting the pair being members of the RTA and of only one country in the pair being a member of the RTA.

The findings from the literature on the analysis of flow effects have produced mixed results. Baier and Bergstrand (2007), for instance, highlighted the case of the European Union (EU) integration and pointed out that some studies have found positive and significant effects[6], whereas others have found insignificant and, in some cases, negative trade flow effects[7]. These conflicting results can be explained by the use of differing methods for sample selection and model specifications and approaches in the use of the methodology. According to Egger (2000) and Egger and Pfaffermayr (2003), many studies in the past have estimated the gravity model of bilateral trade using a cross-section methodology. However, it was shown that cross-sectional gravity equations produced unstable results (Ghosh & Yamarik, 2004; Baier & Bergstand, 2007). Panel data estimation of the gravity model of bilateral trade has many advantages over cross-section analysis; the role of the business cycle and the interactions between variables over a long period of time can be captured by using panel data analysis. In addition, country specific effects that do not change over time can be neutralised (Egger, 2000; Egger & Pfaffermayr, 2003; Martinez-Zarzoso & Nowak-Lehmann, 2003). Another benefit of using panel data analysis is that the risk of getting biased estimates due to autocorrelation and multicollinearity is lowered. Finally, Aranello (2003) emphasizes accounting for heterogeneity as the main advantage of using panel data.

The present study follows Baier & Bergstand's (2007) and applies the panel data framework.

A typical log-linear gravity equation to investigate the trade flow effects of RTAs includes variables like size, distance and geographic and preference similarities, is as follows:

$$X^{ijt} = GDP_{it} + GDP_{jt} + POP_{it} + POP_{jt} + D_{ij} + ADJ_{ij} + LANG_{ij} + LL_{ij} + COMCOL_{ij} + COL_{ij} + RTA_{ijt} + RTAINTRA_{ijt} + t$$

(Eq 2)

where:

X_{ijt} is the value of trade from country i to country j (measured by export from country i to country j in $ terms);

GDP_{it} and GDP_{jt} are the gross domestic product of the exporting and importing country as a proxy for economic size (measured in $ terms) in year t;

D_{ij} is the distance between countries i and j used to proxy for transportation costs;

POP_{it} and POP_{jt} are the population size of the exporting and importing country in year t;

[6] Tinbergen (1962), Aitken (1973), Brada & Mendez (1985)

[7] Frankel, Stein, & Wei (1995, 1996), Frankel (1997), Krueger (2000)

t is the time factor element.

Dummy Variables:

ADJ_{ij} whether the two countries share a common border;

$LANG_{ij}$ whether these two countries share a common language;

LL_{ij} whether any of these two countries is landlocked;

Each of these three variables takes the value of unity if they share a common border or language or if they are landlocked;

RTA_{ijt} is a dummy variable indicating the existence of a regional trade agreement between countries i and j. It takes the value of unity if one of the countries forms part of the RTA under investigation, namely MERCOSUR or SADC;

$RTAINTRA_{ijt}$ takes the value of unity if both countries in the pair form part of the RTA under investigation;

$COMCOL_{ij}$ takes the value of unity if both countries were/are colonies of the same country;

COL_{ij} takes the value of unity if one of the countries in the pair was/is a coloniser to the other.

Given the above, the econometric formulation can be written in a log-linear form as follows:

$$Ln(X_{ijt}) = \alpha + \beta_1 Ln(GDP_{it}) + \beta_2 Ln(GDP_{jt}) + \beta_3 Ln(POP_{it}) + \beta_4 Ln(POP_{jt}) + \beta_5 Ln(D_{ij}) + \beta_6(ADJ_{ij}) + \beta_7(LANG_{ij}) + \beta_8(LL_{ij}) + \beta_9(COMCOL_{ij}) + \beta_{10}(COL_{ij}) + \beta_{11}(RTA_{ijt}) + \beta_{12}(RTAINTRA_{ijt}) + \beta_{13}t + \varepsilon_{ijt}$$

(Eq 3)

Zero Trade Flows

We present results with the Heckman estimates which takes into account zero trade flows. When the zero values are thrown away, this gives rise to the so called "selection problem" which can be handled through a Heckman two-steps procedure (Heckman, 1979). Such a methodology treats zero trade to imply that the countries which have a positive intra-trade will be included in the sample. The sample selection model allows us to account for the unobserved selection criterion that leads to positive trade in the current time period. The Heckit estimator combines probit analysis of zero trade flows with OLS analysis of trade volumes (Helpman et al., 2006; Iwanow, 2008).

Including the Dynamic Trade Dimension in Gravity Modeling of the RTAs:

So far, it has been assumed that trade is a static concept, implying that trade at one point in time does not depend on previous years' trade. However, economic arguments suggest that bilateral trade between a country pair is dynamic. Ignoring the effects of lagged trade on current trade might lead to incorrect inferences. Following the recent trend to incorporate

dynamism into trade analysis[8], the static model used in this study has been extended to include the dynamic implications. The equation above has therefore been rewritten as an AR (1) model in the following form:

$$x_{it} - x_{it-1} = \alpha_t + vx_{it-1} + \beta z_{it} + \mu_i + \varepsilon_{it} \quad \textbf{(Eq 4)}$$

where x_{it} is the logarithm trade, x_{it} - x_{it-1} is the rate of trade growth, x_{it-1} is the initial level of trade, z_{it} represents a vector of explanatory variables as per the original model, μ_{it} is an unobserved country specific effect, ε_{it} is the error term and the subscripts i and t represent country and time period respectively. α_t = the period specific intercept terms to capture changes common to all countries. Equivalently, equation **(Eq 4)** can be written as

$$x_{it} = \alpha_t + (x+1)x_{it-1} + \beta z_{it} + u_i + \varepsilon_{it} \quad \textbf{(Eq 5)}$$

and taking the first differences to eliminate country-specific effects, we obtain

$$\Delta x_{it} = \alpha_t + (v+1)\Delta x_{it-1} + \beta \Delta z_{it} + \Delta \mu_{it} \quad \textbf{(Eq 6)}$$

5.0 Data Analysis

5.1 Econometric Analysis

The present section presents figures and analyses on MERCOSUR and SADC trade flows and patterns, with particular reference to intra-regional trade.

As mentioned before, the Heckman estimate is used to estimate the following:

$$\begin{aligned} Ln(X_{ijt}) = \alpha &+ \beta_1 Ln(GDP_{it}) + \beta_2 Ln(GDP_{jt}) + \beta_3 Ln(POP_{it}) + \beta_4 Ln(POP_{jt}) + \beta_5 Ln(D_{ij}) \\ &+ \beta_6(ADJ_{ij}) + \beta_7(LANG_{ij}) + \beta_8(LL_{ij}) + \beta_9(COMCOL_{ij}) + \beta_{10}(COL_{ij}) \\ &+ \beta_{11}(RTA_{ijt}) + \beta_{12}(RTAINTRA_{ijt}) + \beta_{13}t + \varepsilon_{ijt} \end{aligned}$$

Eq (1)

[8] See De Grauwe and Skudelny (2000)

Table 5.0 Gravity model- Heckman estimates (MERCOSUR and SADC)

Dependent variable: Ln Exports; time period 2000 to 2012

Variables	MERCOSUR	SADC
	Heckman Estimates (1)	Heckman Estimates (2)
	Coef. (T-ratio)	Coef. (T-ratio)
Ln GDP exporting country	0.510 (4.23)***	0.543 (4.33)***
Ln GDP importing country	0.850 (6.43)***	0.705 (4.22)***
Ln population size of exporting country	0.524 (0.66)	1.246 (2.08)*
Ln population size of importing country	-0.064 (-0.09)	0.645 (1.62)
Ln distance	-0.734 (-3.1)***	-0.864(-6.42)***
RTAintra	0.211(0.37)	0.073 (1.43)
RTA	-0.055(-0.07)	-0.334 (-1.04)
Common border	-0.26 (-2.23)**	1.15 (5.45)***
Linguistic similarity	0.557 (4.11)***	1.023 (4.64)***
Common colony	-0.146 (-1.37)	0.323 (2.41)***
Coloniser	-0.226 (-1.34)	0.361 (1.88)*
Land locked	0.727 (0.361)	-1.054 (-1.8)**
Constant	-22.37 (-1.27)	-44.23 (-6.26)**

LRχ2 (chi^2)	2444.76	6453.14
R^2	0.8	0.78
No of Observations	936	2730

Source: Author's calculation. Note: significant at 10%, **significant at 5%, ***significant at 1%*
The small letters denotes variables in natural logarithmic and t values are in parentheses (robust to heteroskedasticity).

The above table depicts Heckman estimates and t values for estimated coefficients are in parentheses (robust to heteroskedasticity). The coefficients of conventional variables on the observable effects of bilateral trade are as expected, with some exceptions, and significant to 5% for most of the variables.

For both MERCOSUR and SADC, it is seen that trade is positively related to the GDP of both countries constituting the trading pair. Furthermore, there is no clear expectation about the coefficient of population size which is in line with studies by Martinez-Zarzoso & Nowak-Lehmann (2003), and Oguledo & MacPhee (1994). For MERCOSUR and SADC, the population size of the exporting country varies positively with bilateral trade, whereas that of the importing country is negatively related to bilateral trade for MERCOSUR only. The results are however not significant.

Bilateral trade is negatively related to the distance between trading countries. The coefficients of the distance variable for both MERCOSUR and SADC are negative and significant at the 1% level, confirming the expected trend. In the present instance, a 10% increase in the distance variable would lead to a decrease in trade of 7.34% and 8.64% for MERCOSUR and SADC respectively.

The RTA dummy variable took the value of unity if one of the countries constituting the trading pair formed part of MERCOSUR or SADC trade agreements. The coefficients of this variable for both set of data are negative indicating net trade diversion; however, for both RTAs under investigation, this variable was not found to be significant.

The trade diversion effects observed in MERCOSUR are consistent with the findings of Muhammad & Yucer (2010) where the estimated trade diversion of MERCOSUR was -48% when using the Poisson Pseudo-Maximum Likelihood model to estimate the gravity equation. On the other hand, Flores (1997), using the CGE analysis found trade creation effects for MERCOSUR.

The RTAintra dummy was introduced to capture the effect of membership of both trading partners in the same RTA. This variable took the value of unity when both countries constituting the pair under investigation formed part of the same RTA. The coefficient of this variable is positive for both SADC and MERCOSUR suggesting a positive impact on

bilateral trade between country pairs when both countries are members of the same RTA. However, the coefficients are not significant.

Sharing a common border is expected to foster trade between two trading partners by reducing the costs of doing business. The coefficient of the dummy variable included in the model is consistent with our expectation and highly significant for SADC. However, it was found to impact inversely on bilateral trade in MERCOSUR with a negative coefficient for the 'common border' variable which is significant at 10%. Sharing common borders does not guarantee enhanced bilateral trade as it does not imply ability, in terms of infrastructure and organisation, to transport goods through the border. Sánchez & Tomassian (2003), in a study of the main problems encountered in international land transport at three borders shared by three MERCOSUR members (Argentina, Brazil and Uruguay), estimate the additional costs associated with inefficiencies and poor organisation to $ 32.3 million per year in 2002. As a matter of fact, 80% of the above figure was generated by the Argentina- Brazil border.

In addition, according to Frankel (1997) linguistic similarity is expected to vary positively with trade due to its contribution in reducing cost of unfamiliarity in international trade identified as subjective resistance by Garnaut (1994) or psychic costs by Linnemann (1966). This expectation is reflected in the language similarity variable coefficients, for both RTAs under investigation, which are highly positive and significant.

The Common colony variable took the value of unity if both countries constituting the trade pairs had a common coloniser at some point in time. The positive value of this coefficient for SADC suggests the positive impact on bilateral trade of the inherited common practices, culture and to a certain extent infrastructure. However, the findings displayed mixed results which may be due in part to the different colonizing powers in South America and Africa. The 'common colony' variable is highly significant for SADC and not significant for MERCOSUR.

The Coloniser variable, on the other hand, took the value of unity if one of the countries constituting the pair was a colony of the other at some point in time. The results show that such a variable has a negative, but not statistically significant impact on trade for MERCOSUR but a positive one in SADC. This implies the negative impact of engaging in trade with former colonisers for MERCOSUR member countries while the contrary holds true for SADC countries. MERCOSUR and SADC had different colonisers, in most cases Portugal and Spain for the former and mainly France and the UK for SADC. The differing coefficients for the variable tend to suggests that the effect of the post-colonial trade relationship with former colonisers and their colonies differ among MERCOSUR and SADC.

Finally, the landlocked variable is expected to vary negatively with bilateral trade due to the implied higher transportation costs associated with the lack of sea ports. This is reflected in the negative coefficient obtained for SADC. However, the coefficient is positive but not significant for MERCOSUR. What the above implies is that in the case of SADC, trade is negatively affected if one of the member countries is landlocked whilst the reverse is true for MERCOSUR.

5.1 Dynamic Trade Dimensions in the Modeling of RTAs

So far, it has been assumed that trade is a static concept, implying that trade at one point in time does not depend on previous years' trade. However, economic arguments suggest that bilateral trade between a country pair is dynamic. Long-time trade partners have established distribution and service networks in partner countries which have led to entry and exit barriers due to irrecoverable initial investments costs. The habit formation argument states that consumers' tastes and preferences might have grown with respect to the partner country's product offerings. This contributes to the likelihood that current trade between these country pairs will be high (Eichengreen & Irwin, 1995). Thus, ignoring the effects of lagged trade on current trade might lead to incorrect inferences in such circumstances. Following the recent trend to incorporate dynamism into trade analysis[9], our static model has been extended to include potential dynamism in trade (this involves basically including the lagged on the dependent variable as an explanatory variable). As such, the equation above has therefore been rewritten as an AR (1) model and first differences are taken to eliminate country specific effects obtaining the following equation,

$$\Delta x_{it} = \alpha_t + (\nu + 1)\Delta x_{it-1} + \beta \Delta z_{it} + \Delta \mu_{it} \qquad \textbf{Eq (2)}$$

To overcome the problem of endogeneity, we make use of the generalized method of moments (GMM) estimators (Arellano & Bond, 1991; Arellano & Bover, 1995). The first step GMM estimator is used as it has been shown to result in more reliable inferences (Blundell & Bond, 1998) than the two-step method in which the covariance matrix is robust to panel-specification autocorrelation and heteroskedasticity but where standard errors are subject to a downward bias. The results from estimating equation (2) using the first step GMM estimator are tabled below.

Table 5.1 Gravity model-GMM estimates (MERCOSUR and SADC)

Dependent variable: Ln Exports; time period 2000 to 2012

Variables	**MERCOSUR**	**SADC**
	GMM Estimates (1)	**GMM Estimates(2)**
	Coef. (Z-ratio)	**Coef. (Z-ratio)**
dLn Exports (lagged)	0.373 (9.03)**	0.530 (19.75)**
dlLn GDP exporting country	0.198 (3.89)**	0.666 (12.09)**
dLn GDP importing country	0.408 (7.57)**	0.515 (9.70)**
dLn population size of exporting country	0.472 (7.90)**	-0.124 (-3.01)**

[9] See Eichengreen & Irwin (1997), De Grauwe & Skudelny(2000), Bun & Klassen (2002)

dLn population size of importing country	0.131 (2.71)**	0.078 (1.85)
dLn distance	-7.27 (-8.84)**	-0.681 (-10.89)**
RTAintra	0.276 (2.57)*	0.737 (6.92)**
RTA	0.157 (2.90)**	0.732 (4.90)**
Common border	-0.169 (-1.44)	0.650 (7.62)**
Linguistic similarity	0.236 (2.77)**	0.259 (3.00)**
Land locked	-0.163 (-2.17)*	-0.086 (-1.55)
Common colony	-0.034 (-0.54)	0.105 (1.54)
Coloniser	0.064 (0.66)	0.185 (2.03)*
Constant	-84.796 (3.38)**	65.302 (3.87)**
Sargan Test of Overidentifying restrictions	Prob>Chi2= 0.00	Prob>Chi2= 0.00
Arrelano-Bond Test of 1st order autocorrelation	Pr > z = 0.00	Pr > z = 0.00
Arrelano-Bond Test of 2nd order autocorrelation	Pr > z = 0.439	Pr > z = 0.039

Source: Author's calculation Note: significance at 5% **significance at 1%*

The estimated equations in the above table have also satisfied the Sargan test of Over-identifying restriction and the Arellano-Bond test of 1st order autocorrelation. The lagged exports variable (i.e. the lag of the dependent variable) coefficients are positive and significant for both MERCOSUR and SADC. Such results confirm the presence of dynamism in trade flows between country pairs in our sample.

The coefficients being in difference terms, we can also make inferences about short run effects of the model's variables. The GDP of exporting and importing countries have a similar impact on trade in the short run. However, in the short-run, the population size of the exporting country is positively related to bilateral trade in MERCOSUR but is negatively impacting bilateral trade in SADC. The coefficients are significant for both RTAs under investigation.

Interestingly enough, the short-run impact of the population size of the importing country in both MERCOSUR and SADC impact bilateral trade positively. The coefficient is however significant only for MERCOSUR. In addition, the "RTAintra" and "RTA" variables are positive and significant for both MERCOSUR and SADC, indicating trade creation in the

short run. This is in line with Park (1995), who suggested that intra-regional trade as a share of total trade can be a predictor of trade creation or diversion, at least in the short run.

Most of the coefficients for the variables obtained under the GMM model are similar to those firstly obtained when conducting the Heckman estimation of the gravity model. However, there are still some exceptions which can be attributed to the stickiness of some variables in the short-run. The varying magnitude of the impact of variables identified in the GMM model and from the Heckman estimates allows for further analysis of the short-run and long-run effects of different variables on bilateral trade.

5.2 Discussion of results and implications of study

The objective of the study was geared towards uncovering the impact of RTA on trade flows for two RTAs namely; MERCOSUR and SADC. These two RTAs were chosen to gain some insight on similarities and differences in South-South RTAs. Due to the unique circumstances and characteristics of each RTA, the conclusions from the study cannot be generalized. However, some interesting implications of the study are further discussed.

MERCOSUR was found to be trade diverting. Leipziger et al. (1997) identified high initial trade between country pairs and low external tariffs as preconditions which have to be fulfilled for trade creation to outweigh trade diversion. These are however not met in the present instance for MERCOSUR as exemplified by the low level of intra-trade, double taxation effect, and other tariffs. Intra-trade is currently low despite the deep level of integration reached by the bloc. As argued by Korinek & Melatos (2009), intra-trade in MERCOSUR accounted for 17% of total trade in goods in 2001, after the 1999-2000 currency crisis, and subsequently fell to only 13% in 2005. From CEI Indec data, the intra-bloc imports were also found to average to 18.7% for the years 2000 to 2009 while intra-bloc exports were of the order of 14.5% on average for the same time period.

The double taxation of imports from non-member countries is one of the most important barriers to MERCOSUR intra-trade. The system of rules of origin has the ultimate effect of imposing the CET twice on goods transiting in member countries for re-export and on those that are re-exported following some product transformation. Non-member countries that chose one of the countries in MERCOSUR to supply another country of the entire bloc's market will be facing increased costs in doing so. This results in forgone trade and investment opportunities.

High tariffs still prevail in MERCOSUR which have the overall impact of protecting the relatively inefficient local producers from global competition. Korinek & Melatos (2009) through an analysis of revealed comparative advantage, suggest that Argentina and Brazil are presently trading goods among themselves in which they have no comparative advantage. This can be explained by the non-complementary nature of factor endowments of these two countries, the two largest players in MERCOSUR. For instance, in 2004 they both had comparative advantage in broadly similar agricultural products, such as meat, vegetable oil and margarine, among others (Korinek & Melatos, 2009).

Some of the most entrenched barriers to trade remain in RTAs. One of the most sensitive issues, subsidies, is not tackled at the regional level. The trade costs equivalents of

MERCOSUR NTMs, quantify the cost to cross-border trade of identified NTMs. For example, NTMs are very high for MERCOSUR imports of beverages and tobacco from the EU and was found to be equivalent to a tariff of 160% of the value of the product (Philippidis & Sanjuán, 2007). Some of the trade policy instruments that are most supported by domestic lobbies can only be reduced or eliminated at the multilateral level.

Along the same vein, the trade diversion found in SADC can be explained by the maintenance of non-tariff barriers to trade and low intra-regional trade. Lowered tariff barriers had the ultimate effect of boosting trade within the region whilst licensing rules, rules of origin and corruption affected trade in the opposite direction, the net impact being suboptimal trade flows from and to African countries. Intra trade among five SADC members; namely Malawi, Mauritius, Swaziland, Tanzania, Zambia and Zimbabwe, was found by Imani (2009) to be seriously impeded by non-tariff measures such as transit traffic and/or trucking issues for example.

Intra-regional trade, which is a predicator of potential economic integration, tends to be low within SADC. This can be explained by financial indicators, infrastructure, market sizes and technological capabilities that are very often poor and when coupled with a lack of skilled labour; the ultimate effect is reduced development opportunities through the regionalism route. Furthermore, another issue hindering the intra-regional trade is the lack of ties at the regional level which can be explained by the fact that colonial ties tend to be stronger than the Afro links leading to allegiance to former colonisers and their colonies rather than the whole region. Economic links with former colonisers tend to be larger than with former colonies.

In addition, differing economic development levels among member countries tend to lead to more developed members reaping larger shares of the benefits brought by the RTA. For instance, as mentioned by Venables (1999), the old East African Common Market saw Kenya producing around 70% of the total manufactures which was increasingly exported to the other least developed partners under the agreement, particularly Uganda and Tanzania. The 1977 collapse of the Common Market could, at least partly, be attributed to the least developed members' perception of not receiving a fair share of the benefits under the agreement. More recently, in 2012, South Africa accounted for more than half of the total GDP of the bloc and 45% and 47% of SADC's exports and imports, respectively, highlighting the potential for an unfair distribution of the benefits associated with the agreement among member countries.

Regionalism in Africa has often taken the form of political agreements rather than decisions solely based on economic considerations. This has engendered misunderstandings, which in the worst case leads to de-integration. Another by-product of political motivations rather than economic ones in entering regional trade agreements are multiple RTA membership. The overlapping of membership linked to regional trade agreements was identified by Jakobeit et al. (2005) as a serious issue faced by African RTAs. According to ICTSD (2013), parties with overlapping memberships in RTAs tend to face reductions in any preferential edge under any RTA. The "spaghetti bowl" problem implies compliance efforts, for exporting or importing firms, with different RTA provisions in each bilateral RTA relationship. Despite the conflicting nature of multiplicity of membership in RTAs and that of overall deeper regional

integration, this was the route chosen by many regional states out of strategic and/ or political reasons as stated in UNECA (2004).

Trade costs remain an important impediment to trade. As highlighted by this study, distance between trading partners still impact trade negatively. However, it has been seen that there is a reduced impact of easy access to sea ports (proxied by country being landlocked) on bilateral trade which suggests a lower dependence on sea transport, at least within MERCOSUR members.

Historical trade patterns and traditional economic ties are also important determinants of trade flows. The results suggest that the impact of common colonisers on bilateral trade is positive. However, trading with former colonisers was found to be positive in SADC but negative in MERCOSUR. This might be explained by the strong economic relationship maintained by the most member countries of SADC, with their former coloniser through their adherence to the Commonwealth amongst others; a reality which is not applicable for MERCOSUR member countries. Furthermore, infrastructure and trade policies in African countries, as a result of their colonial past, tend to be geared towards favouring trade outside the continent (United Nations Conference on Trade and Development, 2013).

6.0 Conclusion and Recommendations

The primary objective of the study was to undertake an ex-post assessment of two South-South RTAs. MERCOSUR and SADC were chosen for investigation in an attempt to illustrate possible differences among South-South RTAs from two different continents. The gravity model was used to model trade flows between member countries (intra-bloc) and between member countries and their main trading partners (extra-bloc). The relevance of other variables such economic size of partners, geographic proximity, and common language in affecting bilateral trade is also accounted for in the model. Dynamism is also incorporated to measure the effect of previous trade flows on present ones through the use of the Generalized Method of Moments (GMM) estimates.

The results suggest that both MERCOSUR and SADC are trade diverting, when trading with non-member countries, which are consistent with some of the findings emanating from previous studies and which can only serve to foster the ever growing debate of whether regional initiatives are after all beneficial for their members. However, such a generalisation may prove too simplistic and further research needs to be carried out as regards the non-economic factors that could not be incorporated in the model due to lack of qualitative data. For instance, NTBs which in the light of the existing literature were found to impact transaction costs negatively, sometimes to a greater extent than tariffs, could not be included.

Furthermore, simply implementing RTAs will not replace multilateral liberalisation since some regions do not have sufficient complementarity of natural endowments to benefit fully from regional liberalisation. As such, we believe that given the findings of this paper, it is crucial that we highlight some of the challenges MERCOSUR and SADC are facing in their bid towards full economic integration. The lack of adequate coordination and cooperation among SADC member countries leads to non-complementary goods being produced; there is

therefore no scope for trading such goods within the RTA. The development of productive capacities ensuring economies of scale and ability to serve the regional market should also be accounted for in the policy decisions made by SADC member countries. Sánchez & Tomassian (2003) identified organisational issues pertaining to international land transport, across borders in MERCOSUR members, as more serious than the already problematic physical infrastructure. Harmonisation of processes and rules for member countries was identified as one of the plausible solutions to organisational problems. Addressing the above mentioned concerns, for SADC and MERCOSUR members would certainly contribute to sustainable economic growth based on efficiency and effectiveness which would in turn ease bilateral trade as demonstrated in the study. It is therefore necessary for MERCOSUR and SADC members' governments to come up with policies in line with the objectives under the respective RTAs to effectively deal with the current issues and ultimately benefit from regional integration.

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