ANALYSING SUB-SAHARAN AFRICA TRADE PATTERNS IN THE PRESENCE OF REGIONAL TRADE AGREEMENTS-THE CASE OF COMESA, SADC, ECCAS AND ECOWAS

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ABSTRACT

This paper uses data on the four largest Regional Trade Agreements (RTAs) in sub-Saharan Africa to argue that the dynamic form of the gravity equation is the appropriate model to estimate the effect of RTAs on intra-African trade. The paper also suggests a better approach to examining trade relationship between members of RTAs and nonmembers. The paper uses System Generalized Method of Moments estimator to overcome econometric issues associated with estimating dynamic models with persistent variables. The paper reports three important findings. First, a formal model selection test confirmed that the dynamic gravity model performs better than the static version. Second, the creation of COMESA and SADC has led to significant increase in trade among members. ECOWAS has increased intra-ECOWAS trade but in total has reduced intra-African trade. ECCAS has had a negative impact on both intra-ECCAS and extra-ECCAS bilateral trade flows. Third, our proposed approach to examining member-nonmember trade relationships provided the true estimates as compared to results from employing the usual approach in the literature.

1. INTRODUCTION

International trade has been recognized as one of the most powerful engines for economic growth and development. There are various channels through which international trade affects economic growth. According to Grossman and Helpman (1991), international trade leads to the transmission of technological innovation, exposure to foreign markets and competition, and possibilities of higher specialization. These are important components of economic development. Though there is some evidence of this happening in some regions of the world, the experience in sub-Saharan African (SSA) has been markedly different. The region has gone through extended periods of different trade regimes and varying growth outcomes since independence. Currently, most countries have opened their economies and adopted export led growth strategies.

Keywords: Regional Trade Agreements; sub-Saharan Africa; Gravity model; Trade; System GMM

JEL Classification: F13; F14; F15; O55; O1

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In an effort to achieve economic growth and development after attaining independence, most African countries followed economic policies that existed under colonization. These economic policies were oriented towards dependence on the north (developed nations) for meaningful and productive cooperation on the principle of comparative advantage arising from differences in factor endowment between the south (developing nations) and the north. This north-south relationship was suitable since most of the African countries were in a similar economic position: underdeveloped and did not have the economic capacity to provide meaningful support for each other. Regardless of the perceived benefits of the north-south cooperation, per capita incomes of most of the SSA countries either dwindled or remained stagnant. A major reason for the little to no economic improvement is that these economies were reliant on high cost western technology that were not suitable or did not match their primary production systems. This led to the formation of the Non-Aligned Movement and the United Nations Conference on Trade and Development (UNCTAG) as steps towards collective self-reliance for developing nations (south-south cooperation).

The theories of the south-south cooperation began to be an integral part of economic policies of most developing countries during the late 1970's. Leaders of developing nations believed that they could gain from low cost and suitable solutions to their economic problems from other developing countries. Regional integration in the form of free trade agreements became the key strategy to enable African nations to economically transform their small economies and benefit from economies of scale. These free trade agreements were aimed at increasing bilateral trade between its members by reducing trade barriers and providing an enabling environment for growth in trade.

Following the proliferation of regional trade agreements in sub-Saharan Africa, their impact on economic growth and development has become a major research area. The World Bank (2010) argued that south-south cooperation is likely to generate trade diversion if external tariffs are higher. The report argued that when these RTAs reduce or eliminate tariffs on goods produced by its members, it makes goods originating from outside the regional bloc more expensive because they attract high tariffs. Also, according to a 2010 report by the United Nations Economic Commission for Africa (ECA), a key remaining challenge to the positive effect of regional integration is the low level of trade within Africa. The report indicated that more than 80 percent of African countries exports are destined for markets outside the continent. Trade with the EU and the United States account for more than 50 percent compared to 10 to 12 percent with other African countries. Though most reports indicate that intra-African trade is low or at an unappreciable level in the presence of free trade agreements, empirical studies aimed at investigating this notion have concluded differently.

In our opinion, earlier studies that seek to determine the effect of regional trade agreements on bilateral trade in SSA have not paid particular attention to the dynamics of trade relationship among nations and how that could be appropriately dealt with in their empirical analyses. Specifically, those studies have used a static version of the gravity model that fails to account for trade dynamics in the region. In addition, the methodology used by those studies to determine the trade relationship between RTA members and non-members is incorrect.

This paper attempts to address these problems by examining the impact of the four largest RTAs in SSA; Economic Community of West African States (ECOWAS), Common Market for Eastern and Southern Africa (COMESA), Southern African Development Community (SADC) and Economic Community of Central African States (ECCAS) using a dynamic version of the gravity model and the appropriate estimation technique[6]. The paper also proposes a different approach to estimating the trade relationship between members and non-members of RTAs.

The paper, therefore, has two important contributions to the existing literature on SSA. Firstly, it examines the effects of RTA's in SSA by estimating a dynamic panel gravity model using the system GMM (SYS-GMM) estimation technique. We argue that, it is important to introduce dynamics into the gravity model to account for hysteresis in trade. This is because, prior to the formation of RTAs, countries may have established distribution network that leads to entrance and sunk cost. As a result, current trade between two countries will depend on past trade. Secondly, one caveat of most studies is the formulation of dummies to examine trade relationship between members and nonmembers of an RTA. Those studies fail to account for the fact that two countries may both be nonmembers of the RTA being examined but may be members of another RTA in the region. Therefore, classifying this pair of countries under member–nonmember sample biases the estimated variable. This paper seeks to address this problem by proposing a more efficient definition of the member-nonmember dummies.

Our findings are relatively very easy to report. First, the estimation of the static and dynamic gravity models revealed that the coefficients of the traditional gravity model variables in the static model are larger than those in the dynamic model, and the lagged dependent variable in the dynamic gravity model is significantly different from zero. This confirms our claim that the static gravity model biases coefficients upwards and ignores an important determinant of trade. A formal test of model selection confirmed that the dynamic gravity model performs better than the static version. Second, the creation of COMESA, SADC and ECOWAS has increased trade between its members by 5.42, 2.56 and 1.89 percent annually respectively. ECCAS however has reduced trade among its members. Also the formation of COMESA and SADC has increased trade between members and nonmembers, whereas ECOWAS and ECCAS have a negative effect on trade flows between members and nonmembers. Third, our proposed approach to examining member-nonmember trade relations provided lower estimates compared to the usual approach in the literature, since our approach eliminates the bias in estimated coefficients resulting from countries pairs belonging to more than one RTA in the sub-region.

The rest of the paper is organized as follows. Section 2 presents a brief review of the relevant literature. Section 3 provides an overview of COMESA, SADC, ECCAS and ECOWAS. Section 4 presents the model and discusses the econometric issues associated with the estimation of the model. Section 5 discusses the econometric results and section 6 provides the summary and conclusions of the study.

[6] See Appendix I for a list of members of the RTAs.

2. LITERATURE REVIEW

The increasing importance of RTAs in today's liberalized trade regime has led to increase in studies that seek to determine their effect on trade among members and between members and nonmembers. These studies have predominantly used the gravity model first introduced by Tinbergen (1962) and Poyhonen (1963) to study bilateral trade flows. David Gould (1998), Lee and Park (2005) and Soloaga and Winters (2001) amongst others have estimated the impact RTAs have on members trade in different regions. David Gould (1998) examined the impact of NAFTA on its members' trade. Using pre and post NAFTA quarterly trade data, he found that NAFTA has had a significant positive effect on trade flows between US and Mexico. This was not the same for trade between US and Canada or Canada and Mexico because of the already existing bilateral trade relationships between them before the formation of NAFTA. Lee and Park (2005) investigated the trade creation effect of existing East Asian RTAs and proposed FTAs such as the ASEAN plus three. They found that on the average, countries experienced 75 percent increase in trade after joining an RTA. Trade between members and non-members also increased by 3.5 percent. However, they found that AFTA and EFTA have negative effects on intra-bloc trade and CARICOM has a negative impact on both intra and extra RTA trade. Soloaga and Winters (2001) estimated the effects of newly created preferential trade agreements such as the ANDEAN Pact, Central American Common Market and the revamped PTAs such as the Common Market of the South and North American Free Trade Association on trade flow. They found no evidence that RTAs lead to increase in intra-bloc trade. They also found that some PTAs (EU and EFTA) had trade diversion effects.

Over the past three decades, RTAs among developing nations, especially in SSA have increased. However, the claim that post-RTA intra-African trade is still low, has triggered increase in studies to access the impact of RTAs in the region. Musila (2005), Kirkpatrick and Watanabe (2005), Salisu and Ademuyiwa (2012), Negasis (2009), Afesorgbor and Bergeij (2011) and Gbetnkom (2006) have used the gravity model to examine the impact of various RTAs in Africa on intra-African trade. Like other studies on RTAs elsewhere, these studies have introduced common dummies for variables such as common official language, adjacent countries and landlocked countries to accounts for the mutual attraction between two countries. These studies have used various econometric techniques such as the weighted least squares (WLS), OLS and tobit regression to examine the trade creation and trade diversion effects of RTAs in SSA such as COMESA, ECOWAS and ECCAS, East African Cooperation (EAC) and West African Monetary Zone (WAMZ). Their results have however been mixed. For example, Kirkpatrick and Watanabe (2005) concluded that the EAC, ECOWAS and SADC had a positive impact on intra-bloc. Salisu and Ademuyiwa (2012) on the other hand concluded that intra-WAMZ and extra-WAMZ export had reduced over the period indicating export diversion.

Although the static gravity model used by the studies discussed above has become the most popular model for examining RTAs effect on trade, its ability to fully account for trade relationship between two countries has been questioned. For this reason, other studies in the literature have extended the basic static model to include a range of non-trade variables. Geda and Kebret (2008) used COMESA as a case study to examine the effect of African RTAs on trade by estimating a gravity model that accounts for the institutional and political characteristic of the region. They argued that, the results from earlier studies that suggest that RTAs in Africa have failed in increasing intra-African trade are due to the limited scope of the gravity models used by those studies.

To remedy this, they included infrastructure, policy, political, and macroeconomic variables in the gravity model. Results indicated that harmonization of good macroeconomic policies and infrastructure development has a positive relationship with intra-RTA trade. They concluded that the impact of RTAs in Africa is limited by lack of harmonized macroeconomic policies and infrastructure, overlapping RTA membership, and limited scope of commodities traded. Hanink and Owusu (1998) used trade intensity index as a dependent variable for a static gravity model to determine the effect of ECOWAS on trade among its members. They concluded that even though the coefficient of the dummy measuring the impact of ECOWAS on trade is positive, post-ECOWAS and pre-ECOWAS trade patterns were similar, therefore ECOWAS has not significantly promoted trade among its members. Negasi (2009) included GDP per capita, the infrastructure level of trading nations, and trade openness index for importer and exporter countries in his analysis. He used data on SADC countries to estimate bilateral trade flows for agriculture commodities, fuels and minerals, heavy manufacturing and light manufacturing sectors. He concluded that SADC increased trade in some sectors and reduced trade in others. Deme (1995) controlled for trade resistance in ECOWAS and CEAO. The trade resistance variable was calculated as a function of distance and preferential trade agreements. The results indicated that ECOWAS and CEAO have positive impact on the trade flows of members. Gbetnkom (2006) examined the determinant of intra-RTA trade and the impact of tariff reduction on trade among members of ASEAN, CEMAC, COMESA and ECOWAS. He included the difference in per capita income between importing and exporting countries to account for difference in living standards. The results suggested that ECOWAS, COMESA and ASEAN have positive effect on members' trade. However, CEMAC has no effect on trade within central Africa. He then concluded that unilateral reforms such as the structural adjustment program increased trade within the region. The extensions of the gravity model to include other variables have been done by earlier studies without any specific selection criteria. Ghosh and Yamarik (2004) employed a more rigorous test of the effects of model specification on results using extreme bound analysis on a static gravity model. The results suggested that most RTAs were not trade creating, and that omitted variables instead of RTAs may explain trade between two countries.

Although the above studies have examined the trade creation effect of RTAs in Africa, none of them explicitly examined the claim that intra-Africa trade is still low in the presence of RTAs. Foroutan and Pritchett (1993) have attempted to address the issue by using the gravity model and a unique empirical analysis. They used data on SSA countries and other developing countries that have similar characteristics as SSA countries. They estimated the gravity model without SSA countries and used the estimated coefficients to predict intra-SSA expected level of trade. They then included SSA countries in the sample and re-estimated the gravity model introducing regional integration dummies for the Communaute Economique de l'Afrique de l'Ouest (CEAO), ECOWAS and Union Duaniere et Economique de L'Afrique Centrale (UDEAC). The results suggested that the SSA share of imports plus exports were an average of 8.1 percent. This is higher than the 7.5 percent predicted by the gravity model, implying that SSA trade is higher than what the gravity model predicts. The results for RTAs showed a positive impact of CEAO on trade while ECOWAS and UDEAC had insignificant results.

As mentioned earlier, most studies, especially in the SSA literature, have employed different versions of the static gravity models to estimate the effect of RTAs on regional trade. Critiques of the static gravity model argue that, it is important to introduce dynamics into the gravity to control for the continual relationship between past and present trade and also account for adjustment cost. Recent studies have used the dynamic version of the gravity model to access the impact of RTAs on bilateral trade.

Martinez-Zarzoso et al. (2009) examined the effects of 6 RTAs using both the static and dynamic gravity models for 47 countries between 1980 and 1999. Comparing the results from the static and dynamic gravity models, they concluded that since the lagged dependent variable in the dynamic model had positive and significant coefficients for the various estimators, then the adjustment cost and the relationship between past and present trade play important roles in the estimation of RTA effect on trade.

To the best of our knowledge, there is no study in the SSA literature that used the dynamics gravity model to account for adjustment cost and the relationship between past and present trade when examining the effect of RTAs on intra-African trade. In addition, RTAs in SSA are characterized by a high incidence of overlapping membership, an important characteristic that studies in SSA have not taken into account when formulating RTA dummy variables. This paper seeks to fill in the gap within the SSA literature by employing a dynamic gravity model and proposing a better formulation of RTA dummy variables.

3. OVERVIEW OF THE RTAs IN SSA

This section gives a cursory glance at the political and economic rationales that led to the formation of RTAs in Africa and discusses the extent to which the four RTAs chosen for this study have achieved their goals. The new globalization phase that characterized the post-Cold War period gave impetus to African countries to adjust to the rapid evolution in international trade and development. The struggle for independence by most African countries and its subsequent attainment during this period provided further incentive for continent-wide integration to seek a new identity. It was crucial that the African continent took strides towards improving governance and political stability, achieving sustainable economic growth and competitiveness in the international market, and reducing dependence on colonial masters. Efforts were made by leaders of western and northern Africa countries to integrate their economies. However, no consensus was reached on how integration and consolidation was to be maintained. Sub-regional groupings such as the Pan-African Freedom Movement of East and Central Africa began to emerge. African leaders eventually came together to form the Organization of African Unity (OAU) in 1963 with the aim of promoting African solidarity, economic cooperation, and eradication of colonialism. Though the OAU was instrumental in eradicating colonialism and the formation of regional trade agreements such as ECOWAS and Southern African Development Coordination Conference (SADCC), it was criticized for contributing little to achieving significant economic corporation in the continent. The Abuja Treaty of 1991 and the Lagos Plan of Action provided a platform for the intensification of regional economic integration in Africa towards the formation of the African Economic Community (AEC). The treaty was to be implemented in six stages with the main aim of strengthening the existing RTAs, and establishing new RTAs in other parts of Africa. The first stage required the reinforcement of existing regional economic communities within a five-year period. It was during this period that RTAs that existed prior to 1991 such as SADCC were revamped. The AEC is intended to become an economic and monetary union at the end of 2028, and implement its goals through the RTAs in Africa (AEC, 1991).

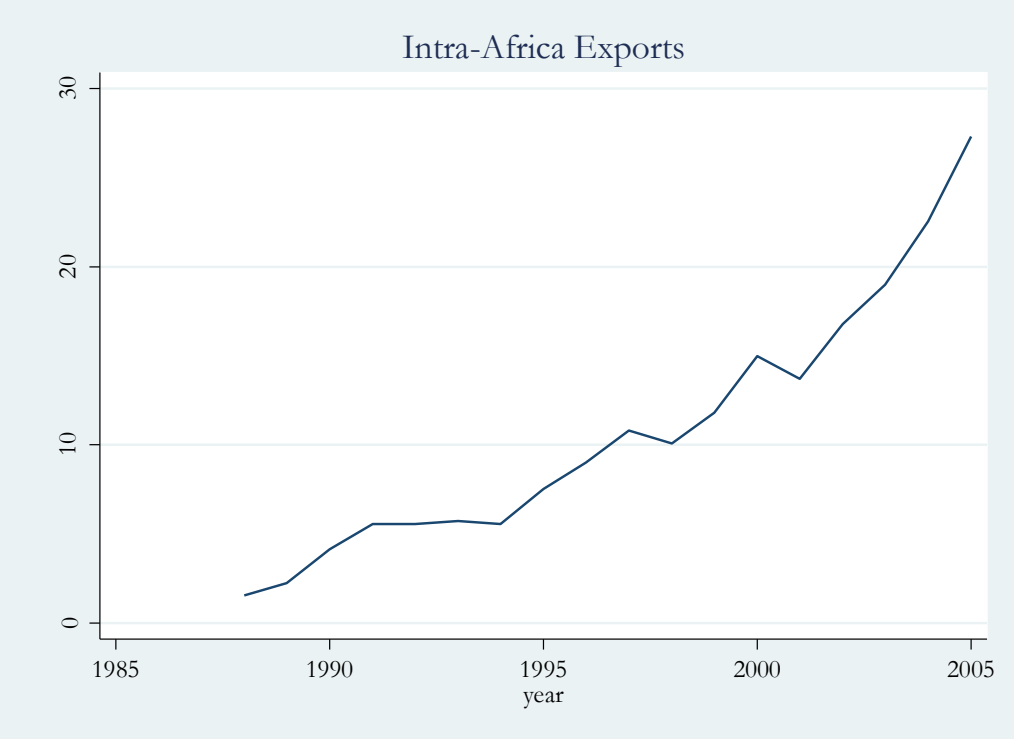
Founded on 28th May 1975, ECOWAS became a trading bloc after the signing of the ECOWAS treaty by fifteen West African countries. Its mission was to promote economic integration across the region and achieve *"collective self-sufficiency for its member states by creating a single large trading bloc through an economic and trading union"* (Grimm, 1999). The West African Economic Community, a free trade area, became an integral part of ECOWAS at its inception. Its main aim was to extend ECOWAS into a custom union by 2001. In line with this goal, it advocated for the introduction of a regional cooperation tax, a preferential import duty applied on a product-by-product basis. ECOWAS also reduced the tariffs on imported industrial commodities originating from member countries. The ECOWAS Trade Liberalization Scheme was initiated in the first five years of its inception but not implemented until 1990. Initially, agricultural products, handicrafts and crude products were allowed to benefit from the liberalization scheme. Coverage was extended to industrial products in 1990. These groups of products were granted total exemption from taxes, import duties and quantitative restrictions as long as they complied with the rules of origin. The West African Economic Community was replaced with the West African Monetary and Economic Union in 1994 as a step towards the formation of a monetary union. In 2006, the ECOWAS Common External Tariff (CET) was established. It imposed no duties on essential social goods, a 5 percent duty on goods of primary necessity, raw materials and specific inputs, a 10 percent duty on intermediate goods, a 20 percent duty on final consumption goods and a 35 percent duty on specific goods for economic development (ECOWAS, 2012). ECOWAS is currently embarking on trade diversification projects to increase intra-regional trade.

COMESA was formed in December 1994 to replace the former Preferential Trade Area that existed since 1981. The United Nations Economic Commission for Africa recommended its formation at a meeting organized for leaders of independent states in eastern and southern parts of Africa in 1965. Its implementation was however delayed until 1981 as a result of political instability in the region. The collapse of initial regional integration schemes such as the EAC also dampened the willingness of countries to establish the union. In 1994, the COMESA treaty was signed in Malawi. It was inaugurated as an organization of free independent sovereign states which have agreed to *"co-operate in developing their natural and human resources for the good of all their people"* (COMESA, 2010). It is comprised of 21 countries. Considering the economic status of most countries that made up COMESA, their main focus was to form a large economic and trading unit that will enable them to overcome the barriers to economic development as individual states. Currently, members of COMESA are at different stages of trade liberalization. In 2000, nine member states eliminated their tariffs on COMESA originating products as a step towards creating an FTA.[7] Cameroon, Eritrea, Rwanda and Uganda apply 20 percent of Most Favored Nation (MFN) duty rates, Burundi maintains 40 percent of the MFN duty rates, Ethiopia applies 90 percent of the MFN duty rates, and Angola, Democratic Republic of Congo, Swaziland, Namibia and Seychelles apply full MFN rates. In addition to the elimination of trade barriers, trade information networks have been established to provide businesses with reliable information on market conditions. In 2009, members of COMESA met in Zimbabwe to inaugurate the COMESA customs union after postponing it in 2006. This included the implementation of the COMESA Common External Tariff (CET). The CET has three categories, a rate of 0 percent on raw materials and capital goods, 10 percent on intermediate goods, and 25 percent on finished goods. The transition into a custom union is supposed to be a gradual process involving mandatory evaluation of members. This is to ensure uniformity and the achievement of scheduled goals. Currently, COMESA has provided a fund to supplement revenue losses at the initial stages of implementing the CET for members.

The SADC was formed in 1992 to replace the SADCC that existed since 1980. The initial objective of the SADCC was to gain political liberation of southern Africa. The need for integration was further intensified by high poverty levels and the threat of white minority in southern Africa. Subsequently after the independence of most of the southern African countries, SADC shifted its aim *"to promote sustainable and equitable economic growth and socio-economic development through efficient product systems, deeper co-operation and integration, good governance and durable peace and security so that the region emerges as a competitive and effective player in international relations"* (SADC, 2003). The long-term goal of the SADC is to establish a custom union (CU) by 2010, a common market (CM) by 2015, a monetary union (MU) by 2016 and a single currency by 2018. Member states signed the SADC protocol on trade in 1996 that legalized the implementation of a free trade area in 2000 to promote intra-regional trade. As part of its liberalization strategy, the community has harmonized customs procedures and classification and also introduced a single standardized document for customs clearance throughout the region. The SADC prohibits quota restrictions. Duties on 85 percent of the harmonized system tariff lines have been eliminated within the region. As at 2010, the average trade-weighted applied tariffs and MFN tariff on intra-SADC imports were 1.4 percent and 7.6 percent respectively. Intermediate goods account for 41 percent of SADC exports with raw materials, consumer goods and capital goods accounting for 29, 17 and 12 percent respectively (Mashayekhi et al., 2012).

[7] The nine countries are: Djibouti, Egypt, Kenya, Madagascar, Mauritius, Malawi, Sudan, Zambia and Zimbabwe.

The formation of ECCAS in 1983 came about as a result of the expansion of the then Central African Customs and Economic Union to form a wider economic region of central African states. It consists of eleven countries in the central sub region of Africa. Their aim is *"to promote and strengthen harmonious cooperation and balanced and self-sustained development in all fields of economic and social activity, particularly in the fields of industry, transport and communications, energy agriculture, natural resources, trade, customs, monetary and financial matters, human resources, tourism, education, further training, culture, science and technology and the movement of persons, in order to achieve collective self-reliance, raise the standard of living of its peoples, increase and maintain economic stability, foster close and peaceful relations between Member States and contribute to the progress and development of the African continent"* (ECCAS, 1983). The long-term goal was to establish a CU by the end of 2003. However, little progress was made to achieve this goal due to financial difficulties and socio- political disturbances that characterizes central Africa. In 1999, ECCAS came to consensus on establishing the Council of Peace and Security in Central Africa (COPEX) at the United Nations Consultative Committee on Security in Central Africa. The COPEX operates through the Central African Early-Warning System (MARAC) that helps detect and prevent crises, the Defense and Security Commission that organizes and advices the other organs, and the Multinational Force of Central Africa, responsible for executing peace missions and providing humanitarian relief. In 2004 an FTA was implemented. A discount of 100% was to be extended to traditional craft and crude products. Mining and manufactured goods were to receive a reduction of custom duties of 50 percent in 2004, 70 percent in 2005, 90 percent in 2006 and 100 percent in 2007. However none of these reductions has been implemented (AUC, 2013). The region continues to allocate most of its resources and time in maintaining peace and stability in the individual countries as opposed to promoting economic integration.



Source: Total Commodity Exports, Trade Analyzer

Fig1: Intra- African Trade in Billions of US Dollars

Despite the numerous challenges that RTAs in Africa (including the four major RTAs discussed above) face, trade within the region has steadily increased. Figure 1 shows an increase in intra-SSA trade after the proliferation of RTAs in Africa. On the average, intra-SSA trade has increased between 1988 and 2005. Trade within SSA was stable between 1992 and 1994 however it began to increase significantly in 1995. Between 1988 and 2005, SSA recorded a reduction in trade levels only in the years 1998/1999 and 2003. This confirms that trade within Africa has increased over the study period.

4. MODEL SPECIFICATION AND ECONOMETRIC ISSUES

The gravity model was first used by Tinbergen (1962) and Poyhonen (1963) to estimate bilateral trade flows of countries. The standard traditional gravity model states that the flow of trade between two countries *i* and *j* is a function of each country's trade potential and their mutual attraction. A country's trade potential is dependent on its economic size represented by its GDP and other factors such as area and population. The standard gravity model is specified as:

$$T_{ij,t} = \beta_0(GDP_{it}^{\beta 1} GDP_{jt}^{\beta 2} / D_{ij}^{\beta 3})\eta_{ij} \quad (1)$$

Where $T_{ij,t}$ is the volume of trade between countries i and j including zero trade, GDP_{it} and GDP_{jt} are Gross Domestic Product (GDP) for the importing and exporting countries respectively, D_{ij} denotes the distance between the two countries, β_i (i = *1*……..3) are parameters of the equation, β_0 is the constant and η_{ij} represents an error term. To be able to interpret the coefficients of the gravity model as elasticities, we take natural log of equation (1). We also measured the trade variable as $t_{ij,t} = \ln(1 + T_{ij,t})$ to enable us include zero trade values in the study.

Various authors have included different variables in the standard gravity model to account for mutual attractions between two countries. Studies like Musila (2005), Martinez-Zarzoso et al (2009) and Foroutan and Pitchette (1993) included a number of dummy variables to account for factors that could influence trade between two specific pair of countries. The list of such dummy variables is enormous and cannot be exhausted in the estimation of the gravity model. In this study, we treat all variables that account for mutual attraction as fixed effects pertaining to a specific pair of countries.

As mentioned earlier, studies that seek to estimate the effect of RTAs in Africa have used the static version of the gravity model. Recent empirical studies on RTAs elsewhere have offered two important reasons for the introduction of trade dynamics into the gravity model. First, countries that trade prior to the formation of RTAs have established distribution and service networks in partner countries leading to entrance and exit sunk costs (Martinez-Zarzoso et al, 2009). Second, prior trade relationships could lead to habit formation of consumers who tend to grow accustomed to partner countries products. This leads to hysteresis of trade relationship where current trade ($t_{ij,t}$) is influenced by past trade ($t_{ij,t-1}$). To account for such dynamics in trade relationships, we follow the Martinez-Zarzoso et al. (2009) formulation by augmenting the log-lineal version of the static gravity equation with a lagged dependent variable to obtain:

$$lnt_{ij,t} = \beta_0 + \psi_{ij} + \lambda lnt_{ij,t-1} + \beta_1 ln(GDP_{it}) + \beta_2 ln(GDP_{jt}) + \beta_3 ln(D_{ij}) + \varepsilon_{ij} \quad (2)$$

Where ln denotes the natural log of variables, λ is the adjustment coefficient and ψ_{ij} is the fixed effects associated with the pair of countries.

Incorporating the lagged dependent variable in the model introduces the entire history of the dependent variable to the right hand side of the equation. This creates endogeneity problem which needs to be addressed carefully. For panel data analysis, the common estimation methods are OLS, Fixed effect, Random effects and DIFF-GMM.

However, these techniques face substantial complications as a result of the introduction of the lagged dependent variable in the model. For the fixed and random effect techniques, the lagged dependent variable is correlated with the disturbance term (ε_{ij}). In addition, the lagged dependent variable $t_{ij,t-1}$is endogenous to the fixed effect (ψ_{ij}) in the fixed effect technique. This arises from the fact that those factors that compose the fixed effects also contribute to the value of the lagged dependent variable. This problem is more transparent in the random effects technique simply because the lagged dependent variable is correlated with the compound disturbance term which enters the model for every observation in the group.

The WG estimator is one approach to dealing with endogeneity problems discussed above. The WG estimator transforms the equation to eliminate the fixed effects by expressing the original observations as deviations from their individual means. Since the mean of the fixed effect is equal to the fixed effect itself, it is removed from the transformed equation. Even though this approach tackles the endogeneity problem, it does not eliminate the dynamic panel bias. According to Bond (2002), under the WG transformation, the lagged dependent variable becomes $y^*_{i,t-1} = y_{i,t-1} - \frac{1}{T} - 1(y_{i2} + \cdots + y_{iT})$ while the error becomes $v^*_{it} = v_{it} - 1/T - 1(v_{i2} + \cdots + v_{iT})$. The $y_{i,t-1}$ in $y^*_{i,t-1}$ correlates negatively with the $1/T - 1\, v_{i,t-1}$ in v^*_{it} while symmetrically, the $-1/T - 1, y_{it}$ and v_{it} terms move together. The continuing endogeneity cannot be tackled by using lags of $y_{i,t-1}$ as instruments because they are also embedded in the transformation error. Arellano and Bond (1991) suggested that the endogeneity can be expunged from the model by taking first difference of equation (2) to eliminate the fixed effects, and estimate the equation by using the two-step Generalized Method of Moments (GMM). Taking first difference of equation (2) yields:

$$dlnt_{ij,t} = \beta_0 + \lambda dlnt_{ij,t-1} + \beta_1\, dln(GDP_{it}) + \beta_2\, dln\big(GDP_{jt}\big) + d\varepsilon_{ij} \qquad (3)$$

Where d denotes first differences. This approach instruments the variables in the first-difference equations by using lagged levels under the assumption that the level residuals are not serially correlated. This amount to the following moment condition: $E(y_{it}\Delta\psi_{it}) = 0$ for all $t = 3, \ldots, T$, where y_{it} is the dependent variable. Even though the fixed effect is eliminated, this approach performs poorly when the dependent variable is persistent. This is because, past levels provide little information about future changes. Due to this, the lagged levels of the variables become weak instruments for subsequent first-differences (weak instrument problem). Since bilateral trade flows (the dependent variable) is highly persistent, Blundell and Bond (1998) argued that DIFF–GMM estimation can be improved by using the SYS-GMM estimator, which supplements the equations in first differences with equations in levels. Lagged levels are used as instruments in the first difference equation while lagged differences are used as instruments in equations in levels. In that case, another moment condition: $E(\Delta w_{it}\psi_{it}) = 0$ is added, where Δw_{it} is the instrument. As a result of exploring more moment conditions, SYS-GMM estimator becomes more efficient in finite sample properties than DIFF-GMM estimator which makes use of a fraction of available linear moment conditions. In view of this, we estimate the dynamic gravity model using the SYS-GMM estimator. The models specification for SYS-GMM becomes:

$$dlnt_{ij,t} = \beta_0 + \lambda dlnt_{ij,t-1} + \beta_1\, dln(GDP_{it}) + \beta_2\, dln\big(GDP_{jt}\big) + \varepsilon_{ij} \qquad (4)$$

and

$$lnt_{ij,t} = \beta_0 + \lambda lnt_{ij,t-1} + \beta_1 ln(GDP_{it}) + \beta_2 ln(GDP_{jt}) + \beta_3 ln(D_{ij}) + \varepsilon_{ij} \quad (5)$$

The System-GMM has performed better than Difference-GMM in empirical studies on international trade using dynamic panel data models. Darku (2010) evaluated the finite sample performance of the DIFF-GMM and SYS-GMM estimators in a study on the effect of trade liberalization and the federal equalization transfers on income convergence among Canadian provinces. After tackling the issues of fixed effects and dynamic panel bias, his empirical results showed that the SYS-GMM estimator compared to OLS and WG estimators is a preferred estimation method in terms of providing consistent and efficient estimates. His approach and conclusions are consistent with Weeks and Yao (2003). In the gravity literature, Martinez-Zarzoso et al. (2009) evaluated the effects of preferential agreement on trade between trade group members and non-members using dynamic gravity model. They estimated the model using DIFF-GMM, FE-GMM and SYS-GMM estimators. They realized that FE-GMM estimates were biased downwards while DIFF-GMM was not suitable for highly persistent panel data. The SYS-GMM estimator provided better results in terms of standard errors.

To capture the effects of the four largest RTAs in sub-Saharan Africa, we introduced two different sets of dummy variables into the model. The first set of dummies ($COMESA_{ij}$, $SADC_{ij}$, $ECCAS_{ij}$, $ECOWAS_{ij}$) captures intra-RTA trade which takes a value of "1" if both countries are members of the RTA in question and "0" if otherwise. $COMESA_{ij}$ captures bilateral trade between members of COMESA, $SADC_{ij}$ captures bilateral trade between members of SADC, $ECCAS_{ij}$ captures bilateral trade between members of ECCAS and $ECOWAS_{ij}$ captures bilateral trade between members of ECOWAS. The second set of dummy variables ($COMESA1_{ij}$, $SADC1_{ij}$, $ECCAS1_{ij}$, and $ECOWAS1_{ij}$) captures bilateral trade between a member of the relevant RTA and a nonmember of the same RTA. As initially stated, most earlier empirical studies do not consider the fact that a pair of countries, *i* and *j* may not both belong to the regional integration in questions but may belong to another regional integration in the sub-region. If this is the case, there will be some trade relationship between these two countries that may not be explained by the RTA in question. The coefficient of the dummy variable (capturing bilateral trade between member and a nonmember of the RTA in question) will be biased upwards since explanatory power belonging to another regressor is being allocated to it. To remedy this, we specify true member-nonmember dummy variables that takes the value of "1" if country *i* is a member of the RTA in question while country *j* is not a member, and both countries *i* and *j* (as a pair) do not belong to any other RTAs in the sub-Saharan region of Africa. To affirm our proposed procedure, we also estimate the gravity model by employing the "usual" procedure of categorizing member-nonmember relationship used in earlier studies. Estimates from these two methodologies are compared to support our argument. The final equations estimated in this study for member-member and member-nonmember trade respectively are:

$$lnt_{ij,t} = \beta_0 + \psi_{ij} + \lambda lnt_{ij,t-1} + \beta_1 ln(GDP_{it}) + \beta_2 ln(GDP_{jt}) - \beta_3 ln(D_{ij}) +$$

$$\gamma_1 COMESA_{ij} + \gamma_2 SADC_{ij} + \gamma_3 ECCAS_{ij} + \gamma_4 ECOWAS_{ij} + \varepsilon_{ij} \quad (6)$$

and

$$lnt_{ij,t} = \delta_0 + \psi_{ij} + \lambda lnt_{ij,t-1} + \delta_1 ln(GDP_{it}) + \delta_2 ln(GDP_{jt}) - \delta_3 ln(D_{ij}) +$$

$$\gamma_5 COMESA1_{ij} + \gamma_6 SADC1_{ij} + \gamma_7 ECCAS1_{ij} + \gamma_8 ECOWAS1_{ij} + \eta_{ij} \quad (7)$$

The variables GDP_{it} *and* GDP_{jt} are expected to have positive coefficients since the trade potential of a country is supposed to have a positive effect on trade flow. The variable D_{ij} is expected to have a negative coefficient because distance is a proxy for transportation cost, hence, the greater the distance the higher the transportation cost and the lower the flow of trade. The regional integration dummies may have positive or negative coefficient. A positive coefficient indicates trade creation effects while a negative coefficient denotes trade diversion effects.

5. ECONOMETRIC RESULTS

This section presents the results of the study. We first present results from both the static and dynamic versions of the model and demonstrate that the dynamic version is superior to the static version. We then proceed to use the dynamic model to determine the effect of RTAs on trade among members in SSA and appropriately estimate the effect of trade between members and non-members. The study used annual data from 1988 to 2005. A sample of 38 countries is used due to the lack of data or missing observations for some SSA countries. The data is an unbalanced panel with a maximum of 11,951 observations (19 x 37 x 17). The annual total bilateral trade data in thousands of US dollars is obtained from World Trade Analyzer. Annual Real GDP figures are obtained from International Macroeconomic dataset provided by United States Department of Agriculture. Data on bilateral distance is obtained from Centre d'Etudes Prospectives et d'informations Internationales's (CEPII) database on distance. Distance is calculated using the geographic coordinates of the capital cities applying the great circle formula.

5.1 Static and Dynamic Gravity Models Results

Earlier studies have used a static form of the gravity model to examine and predict trade patterns between two countries. This study however argues that the dynamic gravity model is more appropriate for the task since it helps to account for the persistent nature of bilateral trade. This is because present trade is dependent on past trade since industries establish trade networks necessary for future trade expansion. In order to confirm this assertion, we estimate and compare the results from the static and dynamic gravity models. The results are reported in Table 1 below.

Table 1: Static and Dynamic Models

Model	$ln(GDP_{it})$	$ln(GDP_{jt})$	$ln(D_{ij})$	$lnt_{ij,t-1}$
Static	0.99 (42.02)*	0.44 (15.60)*	-1.13 (-24.95)*	
Dynamic	0.52 (14.71)*	0.38 (9.74)*	-0.67 (-18.29)*	0.40 (39.47)*

NOTE: Dependent variable is $lnt_{ij,t} = \ln(1 + T_{ij})$. Asterisks *and ** denote significance level at 1% and 5% Values in parentheses are t-statistics.

In table 1, the static and dynamic gravity models have significant coefficients for all the traditional gravity variables. However, all the coefficients in the static model are larger than the corresponding coefficients in the dynamic model. This is because without accounting for the dynamics in trade, OLS allocates predictive power to the traditional variables which actually do not belong to them. The second row reports coefficients of the dynamic gravity model. The coefficients of the traditional variables of the gravity model have the expected sign. The coefficients of GDP of the importing and exporting countries are 0.52 and 0.38 respectively and are significant at the 1 percent level. This indicates that, the larger the country's GDP the higher the flow of trade between the two countries. The coefficient of distance is -0.67 indicating that the greater the distance between a pair of countries, the higher the transport cost and the lower the flow of trade between them. The coefficient of the lagged dependent variable is 0.40.

This means that a 1 percent change in last year's trade increases this year's bilateral trade by 0.40 percent. The positive and significant coefficient of the lagged dependent variable confirms the importance of introducing dynamics into the model. In order to confirm that the dynamic model is superior to the static model, we employed post estimation in-sample forecasting technique which uses the calculated root mean square error as a model selection criterion. A smaller root mean square error value indicates better model to forecast the model. The calculated root mean square errors for the static and dynamic models are 3.587 and 3.012 respectively, implying that the dynamic gravity model forecasts the trade data better.

5.1.1 Results for member-member trade relationship

We now proceed to use the dynamic gravity model to determine the effect of RTAs in Africa on bilateral trade among their members. The results of the SYS-GMM estimation of the dynamic gravity model are reported in table 2. The model was estimated in logarithm form and therefore coefficients are explained as elasticities. It is important to test for over identification restriction of a model to meet the rank condition when using instrumental variables.[8] In the case of over identification where there are more instruments than regressors, excluded instruments must be independent of the disturbance process to ensure that instruments are not weak**.** The Sargan test of over identifying restrictions is computed and the results are not weakened by many instruments. The p-values of the Sargan test suggest that the moment conditions of the SYS-GMM are valid.

The second column of table 2 presents the results of the equation that examines the impact of RTA's on bilateral trade between members. Most of the traditional variables of the gravity model have the expected signs and are statistically significant at 1 percent level. A 1 percent increase in GDP of both importer and exporter countries will lead to 0.54 percent increase in trade. A percentage increase in distance decreases trade by 0.31 percent. The coefficient of lagged bilateral trade (the persistent term) is 0.709 and statistically significant at 1 percent, implying that a 1 percent increase in past trade increases present trade by 0.709 percent.

[8] A model can be exactly identified, underidentified or overidentified if the number of regressors (k) is equal, greater or less than the number of instruments (z).

Table 2: Dynamic Panel Gravity Equations

Variables	Column 2	Column 3	Column 4	Column 5	Column 6
$\ln t_{ij,t-1}$	0.709	0.62	0.68	0.62	0.48
	(26.05)*	(23.98)*	(21.77)*	(18.45)*	(33.34)*
$\ln(GDP_{it})$	0.54	0.81	0.62	0.69	0.70
	(4.50)*	(8.21)*	(6.40)*	(6.42)*	(11.56)*
$\ln(GDP_{jt})$	0.54	0.60	0.50	0.69	0.50
	(4.50)*	(5.96)*	(4.16)*	(5.07)*	(7.45)*
$\ln(D_{ij})$	-0.31	-1.29	-0.33	-0.24	-0.12
	(-0.90)	(-5.07)*	(-3.60)*	(-1.80)**	(-0.86)
$COMESA_{ij}$	1.86				
	(2.30)*				
$SADC_{ij}$	1.27				
	(1.37)				
$ECCAS_{ij}$	-3.09				
	(-2.35)**				
$ECOWAS_{ij}$	1.06				
	(1.66)**				
$COMESA1_{ij}$		2.50			
		(4.00)*			
$SADC1_{ij}$			1.77		
			(3.08)*		
$ECCAS1_{ij}$				-0.52	
				(-1.02)	
$ECOWAS1_{ij}$					-1.80
					(-4.41)*
Observations	9880	7270	6346	6262	7390
SARG	0.81	0.42	0.49	0.56	0.01

NOTE: Dependent variable is $lnt_{ij,t} = \ln(1 + T_{ij})$. Asterisks *and ** denote significance level at 1% and 5%. Values in parentheses are t-statistics. SARG represents the p-values of the sargan test of the null hypothesis of valid instruments.

This confirms hysteresis in trade among countries where a portion of present trade is as a result of past trade. To determine the effect of RTAs on trade, we follow the literature by including RTA dummies that takes on "1" when pair of countries belongs to a particular RTA and "0" otherwise. All the coefficients for intra-RTA trade except ECCAS are positive. The coefficient for trade between COMESA members is 1.86 and statistically significant at 1 percent level. In the presence of the traditional gravity model variables, COMESA increases bilateral trade flows between its members by 5.42 percent.[9] This suggests that COMESA has trade creation effect and its formation has increased trade between its members. The coefficient of SADC is 1.27, however it is not statistically significant. $ECOWAS_{ij}$ has a positive coefficient of 1.06 which translates into a 1.89 percent increase in trade among ECOWAS members. ECCAS on the other hand has a negative and statistically significant coefficient, implying that the creation of ECCAS has decreased trade between its members by 0.95 percent. This may be as a result of the political instability that characterizes the region and the inability of member nations to reduce trade restriction significantly.

5.1.2 Results for member-nonmember trade relationship

The results on columns three to six represent the effect of the RTAs on member-nonmember trade using our proposed approach discussed in the previous section. The third column presents the results of the equation that examines trade patterns between members and nonmembers of COMESA. A 1 percent increase in GDP of importer and exporter countries leads to increase trade between COMESA members and nonmembers by 0.81 and 0.61 percent respectively. Distance decreases trade between COMESA members and nonmembers by 1.29 percent. Also, a 1 percent increase in past trade increases present trade between COMESA members and nonmembers by 0.62 percent. The coefficient of $COMESA1_{ij}$ is 2.5 and statistically significant at 1 percent level. It measures the trade relationship between a member of COMESA and a nonmember, and both countries are nonmembers of SADC, ECCAS and ECOWAS. Surprisingly, comparing the coefficient of intra-COMESA trade with trade between a COMESA member and nonmember suggests that COMESA members trade more with nonmembers than with fellow members. Specifically, COMESA increases trade between members and nonmembers by 11.18 percent while it increases trade between members by 5.42 percent. This may be because some members of COMESA have not joined the free trade area and this has reduced intra-COMESA trade significantly.

Column four presents result for the dummy variable that measures trade between SADC members and nonmembers. A 1 percent increase in past trade increases present trade between SADC members and nonmembers by 0.68 percent. $SADC1_{ij}$ has a coefficient of 1.77 and is statistically significant at the 1 percent level. The value explains trade patterns between a member of SADC and a nonmember when both countries do not belong to ECCAS, COMESA or ECOWAS. In addition to the positive effect of SADC on member-member trade, this result implies that SADC has a positive effect on total intra-African trade. The results on column five indicate that ECCAS has a negative but insignificant effect on member-nonmember trade. The results of the impact of ECOWAS on member-nonmember trade relationship are presented in column six. Similar to COMESA and SADC, a 1 percent increase in past trade increases present trade between members and nonmembers by 0.48 percent.

[9] The percentage value of the impact of all the RTAs on trade is calculated by $e^{\beta} - 1$, where β is the value of the coefficient of the dummy variables

However, the $ECOWAS1_{ij}$ dummy variable has a negative coefficient (-1.80) which is statistically significant at 1 percent level. This suggests that ECOWAS has reduced trade between members and nonmembers by 0.83 percent.

In order to measure extra-RTA trade flows, earlier studies have introduced dummy variables into the gravity model that "usually" take the value of 1 when country i is a member of the RTA in question and country j is a nonmember. We have argued that this "usual" treatment of member-nonmember relationship biases upwards the estimated coefficients of the dummy variables. In our approach, the dummy variable takes the value of 1 when country i is a member of the RTA in question while country j is not a member, and both countries i and j (as a pair) do not belong to any other RTAs in sub-Saharan Africa. To empirically test the validity of our argument, we estimated the dynamic gravity model by employing the procedure used by earlier studies (with the introduction of $COMESA2_{ij}$, $SADC2_{ij}$, $ECCAS2_{ij}$ and $ECOWAS2_{ij}$ dummies) and compare the results to those from our proposed procedure.

Table 3 presents results using the "usual" procedure. As expected, the traditional gravity model variables (GDP_{it}, GDP_{jt} and distance) have the correct signs. Most importantly, the coefficients of $COMESA2_{ij}$, $SADC2_{ij}$, $ECCAS2_{ij}$ and $ECOWAS2_{ij}$ are 3.5, 2.08, -1.07 and -1.90 respectively and are all statistically significant at 1 percent level. The corresponding coefficients of the dummies from our proposed procedure are 2.5, 1.77, -0.52 and -1.80 respectively. All the coefficient estimates are smaller for our proposed approach than those from the "usual" approach used by earlier studies. This confirms our claim that the procedure used by earlier studies biases estimates upwards, because it allocates explanatory power belonging to other RTAs to the RTA in question. Hence, our proposed methodology provides the actual estimates of the coefficients measuring extra-RTA trade flows.

Table 3: Second Dynamic Panel Gravity Equations

Variables	Column 1	Column 2	Column 3	Column 4
$\ln t_{ij,t-1}$	0.75	0.74	0.74	0.74
	(28.66)*	(28.28)*	(27.93)*	(28.34)*
$\ln(GDP_{it})$	0.55	0.44	0.48	0.44
	(5.25)*	(4.22)*	(4.60)*	(4.20)*
$\ln(GDP_{jt})$	0.45	0.51	0.45	0.47
	(4.19)*	(4.6)*	(4.24)*	(4.38)*
$\ln(D_{ij})$	-1.04	-0.63	-0.38	-0.18
	(-4.3)*	(-6.53)*	(-6.58)*	(-0.97)
$COMESA2_{ij}$	3.5			
	(2.82)*			
$SADC2_{ij}$		2.08		
		(3.22)*		
$ECCAS2_{ij}$			-1.07	
			(-2.66)*	
$ECOWAS2_{ij}$				-1.86
				(-3.08)*
SARG	0.36	0.57	0.43	0.26

NOTE: Dependent variable is $lnt_{ij,t} = \ln(1 + T_{ij})$. Asterisks *and ** denote significance level at 1% and 5%. Values in parentheses are t-statistics. SARG represents the p-values of the sargan test of the null hypothesis of valid instruments. The full sample is for each regression (9880 observations)

SUMMARY AND CONCLUSION

The recognition of the importance of trade to economic development for African countries led to the proliferation of RTAs in Africa. This in turn has led to the growing importance of studies that seek to access the effects of RTAs on intra-African trade. In our opinion, earlier studies that seek to determine the effect of regional trade agreements on bilateral trade in SSA have not paid particular attention to the dynamics of trade relationship among nations and how that could be appropriately dealt with in their empirical analyses. Specifically, those studies have used a static version of the gravity model that fails to account for trade dynamics in the region. In addition, we argue that the methodology used by those studies to determine the trade relationship between RTA members and non-members is incorrect. This paper attempts to address these problems by examining the impact of the four largest RTA's in SSA (ECOWAS, COMESA, SADC, and ECCAS) on SSA trade using a version of the gravity model that accounts for the trade dynamics in the region and the appropriate estimation technique (SYS-GMM). This paper, therefore, is the first to use the dynamic version of the gravity model and the SYS-GMM estimation technique to examine trade patterns in SSA. The paper also proposes a different approach to estimating the trade relationship between RTA members and non-members.

Results from the static and dynamic gravity models confirm that the dynamic gravity model is the more appropriate specification for examining trade patterns in SSA. The coefficient of the lagged dependent variable in the dynamic gravity model is positive and significant. In addition, the coefficients in the static model are larger than those in the dynamic model which is mainly due to the fact that OLS allocates predictive power to the regressors that actually belong to the lagged dependent variable. The use of a dynamic model and SYS-GMM therefore provide the true estimates of the impact of RTAs on SSA trade. In order to confirm this, we employed post estimation in-sample forecasting technique which uses the calculated root mean square error as a model selection criterion. The calculated root mean square errors for the static and dynamic models are 3.587 and 3.012 respectively, implying that the dynamic gravity model forecasts the trade data better.

Further results of the study suggest that COMESA and SADC have trade creation effects. However, members of COMESA trade more with non-COMESA members. This may be due to the fact that most COMESA members have not been able to remove or reduce their high tariffs and other barriers restricting intra-COMESA trade. ECCAS has a negative effect on trade between its members. The results also suggest that the formation of ECOWAS has increased trade between members but reduced bilateral trade flow with nonmembers. These results are consistent with result from other studies. Hanink and Owusu (1998) obtained a coefficient of 1.49 for ECOWAS and concluded that the RTA has had a positive impact on member trade. Our results with regards to ECCAS are consistent with Musila (2005) who obtained a negative coefficient for the dummy variable measuring intra-ECCAS trade. Our results are also consistent with Sawkut (2006) who reported a positive coefficient of 1.19 for the dummy variable measuring intra-COMESA trade. With regards to the estimation of the trade relationship between RTA members and non-members, our proposed procedure provided smaller estimates than those reported by studies using the "usual" procedure. This confirms our argument that the usual approach in the literature biases the estimated coefficients upwards. Hence, our proposed procedure is a more efficient approach to examining member-nonmember trade relations.

In conclusion, some RTAs in SSA have trade creation effects. Their creation has led to increase in trade between members and also between members and nonmembers. The negative impact of ECCAS on both intra and extra-ECCAS trade remains a matter of concern. Therefore, future research should be aimed at investigating why ECCAS continues to have a negative impact on intra-African trade.

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APPENDIX I

Member States in COMESA, ECCAS, ECOWAS and SADC

COMESA	ECCAS	ECOWAS	SADC
ANGOLA	ANGOLA	BENIN	ANGOLA
BURUNDI	BURUNDI	BURKINA FASO	BOTWANA
COMOROS	CAMEROON	CAPE VERDE	D.R. CONGO
D.R. CONGO	CENTRAL AFRICAN REPUBLIC	COTE D'IVOIRE	LESOTHO
DJIBOUTI	CHAD	THE GAMBIA	MALAWI
EGYPT	CONGO (BRAZZAVILLE)	GHANA	MAURITIUS
ERITREA	D.R. CONGO	GUINEA	MOZAMBIQUE
ETHIOPIA	EQUATORIAL GUINEA	GUINEA-BISSAU	NAMIBIA
KENYA	GABON	LIBERIA	SEYCHELLES
MADAGASCAR	RWANDA	MALI	SOUTH AFRICA
MALAWI	SAO TOME ET PRINCIPE	MAURITANIA (withdrew in 1999)	SWAZILAND
MAURITIUS		NIGER	TANZANIA
NAMIBIA		NIGERIA	ZAMBIA
RWANDA		SENEGAL	ZIMBABWE
SEYCHELLES		SEIRRA LEONE	
SUDAN		TOGO	
SWAZILAND			
TANZANIA (withdrew in 2000)			
UGANDA			
ZAMBIA			
ZIMBABWE			