Asymmetric Trade Creation Effects Between and Within African Regional Trade Agreements: Does Depth Matter?

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Introduction

Since 1990, economic integration has been pursued by most countries through a multiplicity of regional trade agreements (RTAs). African countries participate in various types of RTAs. Many African countries participate in Free Trade Areas (FTAs) involving the European Union (EU) because of the importance of the EU as a supplier and as a destination for African exports. As for "all-African" RTAs, shallow and deep types are observed. FTAs calls for the phasing out of most tariffs for trade between member countries. Krueger (1997) is critical of FTAs because the rules of origin (ROOs) used to determine whether a good has enough regional content to be exempt from import taxes can be used as instruments of protection. Customs unions (CUs) can be construed as FTAs with members applying common tariffs on imports from non-members while common markets (CMs) can be loosely defined as CUs allowing for free movements of labor and capital within the regional bloc. Finally, CM member countries can adopt a common currency to form a common currency area or monetary union (MU).

FTAs are usually considered as shallow RTAs while CUs, CMs and MUs are branded as deep RTAs. Members participating into a customs union (CU) do not need complex rules of origin that accompany FTAs and in some cases can use their common tariffs to improve their terms of trade (Kennan et al., 1990). On the downside, they lose their ability to individually sign RTAs with other countries. To the extent that the aforementioned cost of ROOs can be likened to an extra trade cost specific to FTAs, then one would expect deeper RTAs to have larger trade creating effects. The effect of factor mobility on trade is theoretically ambiguous. It is well known that factor mobility is a perfect substitute for trade in the Heckscher-Ohlin model because an integrated world economy without borders can be replicated by a world with borders and countries engaged in free trade. Factor mobility and trade can be complementary by introducing external returns to scale in production. Factor mobility enlarges comparative advantage and boosts trade as demonstrated by Markusen and Melvin (1981). Because, some factors like land are not mobile, labor and capital mobility may boost trade. Thus, whether a CM creates more trade than a CU or a FTA is an issue that can only be resolved empirically. Having a common currency lowers transaction costs between member countries, but the losses from policy inflexibility can more than offset the gains. Again membership composition is critical and this is at the heart of Mundell (1961)'s conditions supporting the formation of an optimum currency area. The lack of economic autonomy might be a major drawback when MU member countries are impacted asymmetrically by a recession. In such cases, the currency cannot adjust optimally for all member countries and the damage to weaker members are made worse by labor and capital movements in the absence of fiscal transfers between member countries.

The issue of heterogeneity *within* African RTAs has not been thoroughly investigated before and has only been raised as a conjecture to explain the collapse of a RTA. For example, Larue and Mutunga (1993) analyzed the performance of the first East African Community which operated between 1967 and 1977. The 3-country EAC created trade and this led (Larue and Mutunga, 1993, p. 71) to conjecture that the EAC termination had probably been caused by a perceived or real asymmetric distribution of the gains favoring Kenya. These authors did not undertake an econometric investigation about asymmetric trade creation within the EAC. To our knowledge, the issue of heterogeneous RTAs effects within RTAs has only been thoroughly investigated by Baier et al. (2019) which has focused only on FTAs. This paper fills a void by investigating heterogeneous trade creation effects within RTAs for shallow and deep RTAs taking the case of African RTAs.

RTAs are beneficial because they force countries to commit to follow a set of rules and forego opportunistic behavior. RTAs lose their appeal when member countries find ways to circumvent the letter and/or the spirit of trade agreements. In the case of African RTAs, implementation has proven a challenging process under the best

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circumstances. Quarrels between RTA member countries have exacerbated compliance issues. In Africa, trade liberalization "on paper" has been faster than "on the ground". In its trade policy review of the East African Community in 2012, the WTO remarks that "serious impediments to the full and smooth implementation of the EAC CU include 35 non-tariff barriers".

In this note, we investigate empirically whether deeper African RTAs have more heterogeneous effects across members than shallower African RTAs. Our second goal is to determine whether institutional factors can explain why trade creation effects vary across members within African RTAs. The two all-Africa FTAs in our sample are the 16-member Southern African Development Community (SADC) and the 17-member Common Market for Eastern and Southern Africa (COMESA). The African CUs are the 5-member East African Community (EAC), during the years 2005 – 2009, and the 15-country Economic Community of West African States (ECOWAS). In 2010, EAC became a common market (CM). There are two African MUs, the West African Economic and Monetary Union (WAEMU) and the Central African Economic and Monetary Community (CEMAC) with 8 and 6 members respectively. The methodological approach and data are described in the next section.

Methodological approach and Data

Our methodological approach is inspired by the two-stage econometric model of Baier et al. (2019). The first stage entails three distinct estimations. We use in this first stage a gravity model to estimate RTA effects. The results give us the average trade creation effect for each of the 25 RTAs in our sample. A comparison of these average effects provides a first glance of the heterogeneity between RTAs. The second sub-step calls for the estimation of a gravity model that allows heterogeneity accross RTAs and between country pairs within RTAs. The third sub-step involves yet more flexibility by allowing for heterogeneity within trading pairs. In fact, a RTA can affect asymmetrically trade flows from country i to country j and from country j to country i. This directional effect within trading pairs is essentially motivated by the fact that the first priority for policymakers in negotiating a RTA is to know how participation in a given RTA will affect their own country when it is implemented (Baier et al., 2019). This final set of RTA estimates is used as our dependent variable for the second stage of our econometric approach.

We expect on the one hand to have much heterogeneity between African RTAs members due to the difference in terms of infrastructure (roads, railway, ports), geographical factors such as being or not landlocked and the level of development. On the other hand one would think that members in deeper RTAs are less heterogeneous because of (Mundell, 1961) selection criteria and that the trade creation effects would be more similar for members of deeper RTAs.

Various authors like Dollar and Kraay (2003) and Rodrik et al. (2004) have documented the importance of strong institutions as determinants of trade and growth. The second stage of our methodological approach aims to explain the heterogeneity of African RTAs effects in terms of institutional variables. Various indicators about institutional quality exist. Musila and Sigué (2010) and Dutt and Traca (2010) show that corruption, political stability and rule law indicators can influence bilateral trade between countries.

It is well known that many African countries are plagued with weak institutions, even though recent evidence suggests that they are improving (Rodrik, 2016). So, it is most pertinent to investigate empirically the link between RTA effects allowing for asymmetries within a country pairs and the strength of institutions in order to gauge how trade remains constrained by the quality of African institutions. To achieve this goal we regress the estimates of directional RTA effects on a set of explanatory variables that include institutional quality, corruption, GDP per capita and GDP in the exporting and importing countries. All of the explanatory variables are measured the year before implementation of each RTA to address potential endogeneity biases.

The dataset is made up of annual bilateral trade flows of manufactured goods between 84 trading partners including 45 African countries that belong to at least one RTA. The period covered runs from 1988 to 2016. Data on bilateral trade flows (value of importation in 1000000 US dollars) come from the United Nations Commodity Trade Statistics Database (COMTRADE). Gravity variables such as distance, common language, contiguity and colonial ties are from the Centre d'Etude Prospectives et d'Informations Internationales (CEPII). In addition, we use Larch's (2014) dataset, the World Trade Organisation's (WTO) website and the website of specific RTAs to get data about RTAs. The WTO website provides information about RTAs officially notified by members and the date at which implementation of RTAs began. Our study cover 25 RTAs including six African RTAs. Some RTAs have seen their membership evolve overtime while other RTAs have evolved into a deeper form of integration. Our dataset accounts for that.

Gravity models have a general equilibrium foundation when intra-national sales are included. This way, purchases from all sources add up to national expenditures and sales to all destinations, including the national market, add up to national income. Intra-national sales are obtained by subtracting total export sales from GDP. The GDP and GDP per capita data come from the International monetary Fund World Economic Outlook Database. Institutional variables such as control of corruption, government effectiveness, political stability and absence of violence/terrorism, rule of law and regulatory quality are downloaded from the World

Bank's Economic indicators website. In the next section, we present and discuss our main findings.

Results and discussions

We begin our discussion with results about the RTAs average effects. Table 1 below shows the average elasticity of trade creation for shallow and deep RTAs after controlling for different factors, like distance between countries, which can influence bilateral trade. It appears that African FTAs (COMESA and SADC) promoted trade between members. COMESA has been more potent at increasing trade than SADC. COMESA has an average elasticity of 3.59 ($exp(1.523) - 1$). Still, SADC increased trade by a multiple of 1.44 between members. MERCOSUR promotes trade between members with an average elasticity of 2.77. Our findings confirm that RTAs between African countries and the EU are trade creating. The trade creation elasticities for FTAs involving the EU and Cote d'Ivoire, Morocco and Tunisia are respectively 2.71, 2.51 and 4.45. As expected, African CUS (EAC and ECOWAS) promote trade more strongly between members than FTAs. However, our study sets itself apart by showing EAC creates four times more trade between members than ECOWAS. In fact, EAC is considered as the most trade integrated region in Africa according to the rankings of the African Regional Integration Index (2016) [1]. MERCOSUR creates less trade than African CUs. EAC evolved over time from a CU to a CM and its performance as a trade-promoting institution got stronger as member countries became more integrated. This suggests that factor mobility is a complement to free trade. Deeper seems to be better, at least for EAC. As a CM, EAC increased trade between members about 25 times more than the EU. This reflects in large part the weak integration between EAC countries prior to the EAC. Regarding countries involved in MUs, we can notice that WAEMU promoted trade around five times more than CEMAC. As in Baier et al. (2019), our results show that there is heterogeneity between and within types of RTAs. However, our study sets itself apart by showing that deeper RTAs tend to create more trade than shallow RTAs.

Table 1: **Average elasticity of trade creation effects**

Types of RTAs	RTAs	Average elasticity
FTA	COMESA	3.59
	SADC	1.44
	MERCOSUR	2.77
	EU-Cote d'Ivoire	2.71
	EU-Morocco	2.51
	EU-Tunisia	4.45
CU	EAC	28.37
	ECOWAS	7.14
	MERCOSUR	2.78
CM	EAC	40.06
	EU	1.53
MU	CEMAC	2.43
	EURO	1.36
	WAEMU	11.74

Figure 1 shows the distributions of African RTA-pair-specific effects for each RTA type. There is obviously much heterogeneity in the ability of country-pairs belonging to African RTAs to create trade. More importantly, we can see by glancing at figure 1 that some pairs secure above-average trade gains while other pairs gain little or even lose. This applies generally applies to shallow and deep RTA pairs, but the heterogeneity between African country-pairs is larger across pairs belonging to FTAs. Baier et al. (2019) considered country-pairs for 65 FTAs and they too reported much heterogeneity. For example the COMESA Kenya-Madagascar country-pair experienced a large elasticity of 10.70 while other COMESA country-pairs like Eritrea-Mauritius and Burundi-Djibouti have a trade-creation elasticity of -0.99. In addition, African CU-pair effects vary more than African MU-pair effects. In fact, ECOWAS country-pair Nigeria-Niger enjoys strong trade creation effect with an elasticity of 15.61 which is more than twice the ECOWAS average (7.14) while ECOWAS Guinea-Burkina Faso and Mali-Cape Verde country-pairs have negative trade creation elasticities. African CM-pair effects have a distribution with little dispersion, but there are just 10 African CM-pair-specific trade creation effects because EAC has only 5 members.

[1] see https://www.integrate-africa.org/

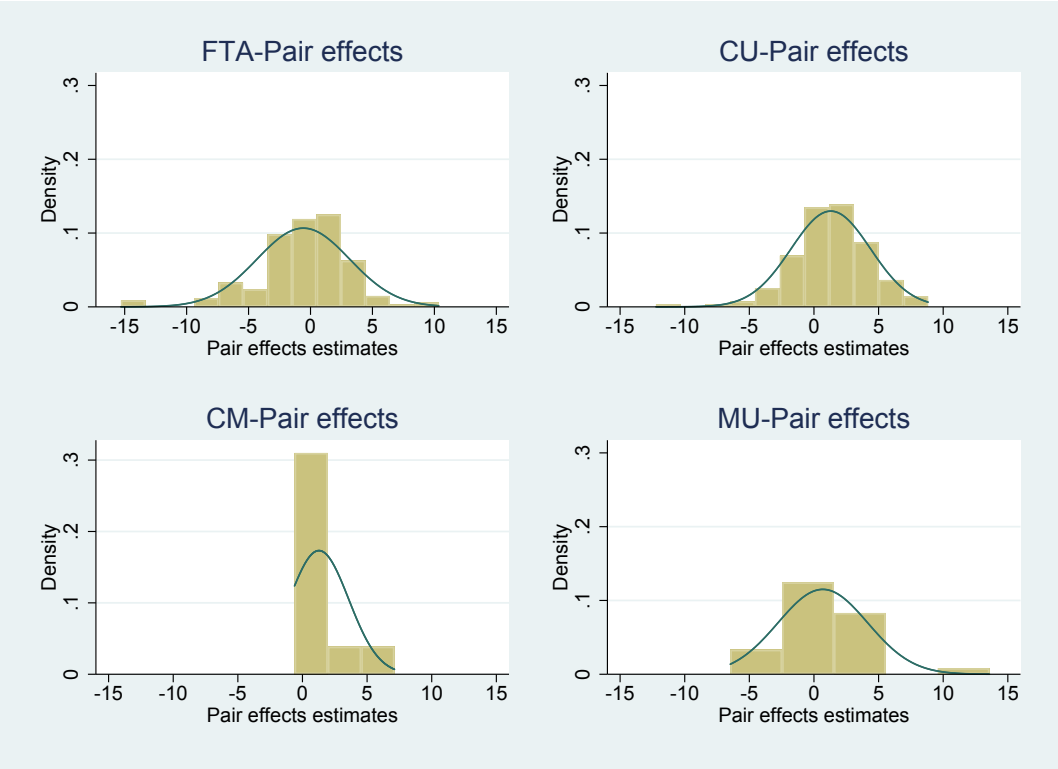

Figure 1: **Distribution of RTA-Pair-specific effects**

Figure 2 below depicts the distribution of directional effects within pairs belonging to an African RTA. This implies that a RTA's promotion of country A's exports to country B may not be equal to the RTA's promotion of country B's exports to country A. There is much heterogeneity in trade creation within country-pairs belonging to a given RTAs. FTA directional pair-specific effects are more heterogeneous than the CU directional pair-specific effects which in turn are less heterogeneous than their counterparts for CMs and MUs. As expected, heterogeneity seems to fall with the depth of integration. Specifically, for a COMESA country-pair like Kenya-Madagascar, the elasticity of trade creation is 11.82 when Kenya is exporter and Madagascar is the importer, but when the trade flow is reversed, the elasticity drops to -0.84. Kenyan exports probably displaced other COMESA countries' exports in Madagascar while Madagascar exports to Kenya were most likely displaced by other COMESA countries. ECOWAS country-pair Nigeria-Niger has an elasticity of 15.63 when Nigeria exports to Niger and an elasticity of 8.26 when Niger exports to Nigeria. In the case of EAC as a CM,the trade flow Rwanda-Uganda benefits from a trade promoting effect with an elasticity of 7.93, but the elasticity is negative (-0.43) when we reverse the direction of trade. As for MUs, trade flowing from Cameroon to Gabon, two CEMAC members has a trade elasticity of 5.32. The trade creation elasticity is negative, (-0.88) when the direction of trade is reversed.

The last set of results focusses on institutional variables conditioning trade creation effects. These variables are coded from 0 to 5, with higher scores signalling institutional degradation. Accordingly, countries with a corruption score of 5 are the most corrupt countries. To deal with a potentially severe problem of multicollinearity, we created a variable of institutional degradation by adding up scores for rule of law, regulatory quality, government effectiveness and political stability and absence of terrorism. We regressed directional pair-specific effects on our more compact set of determinants for each type of RTA except CMs for which there were too few observations. The results are presented in table 2. Corruption in the exporting country in a FTA or CU pair tends to make FTAs and CUs more efficient at creating trade. The rationale is that corrupt exporters might have a greater tendency to replace legal exports by black market ones when there are tariffs levied on their exports. Institutional degradation in the exporting country reduces trade-creating effects of FTAs and CUs. For MUs, the coefficient for institutional degradation has the expected negative sign, but the coefficient is not significant. Institutional degradation in the importing country matters too, but only for CUs. Exporter GDP just prior to RTA implementation is the only significant variable impact-

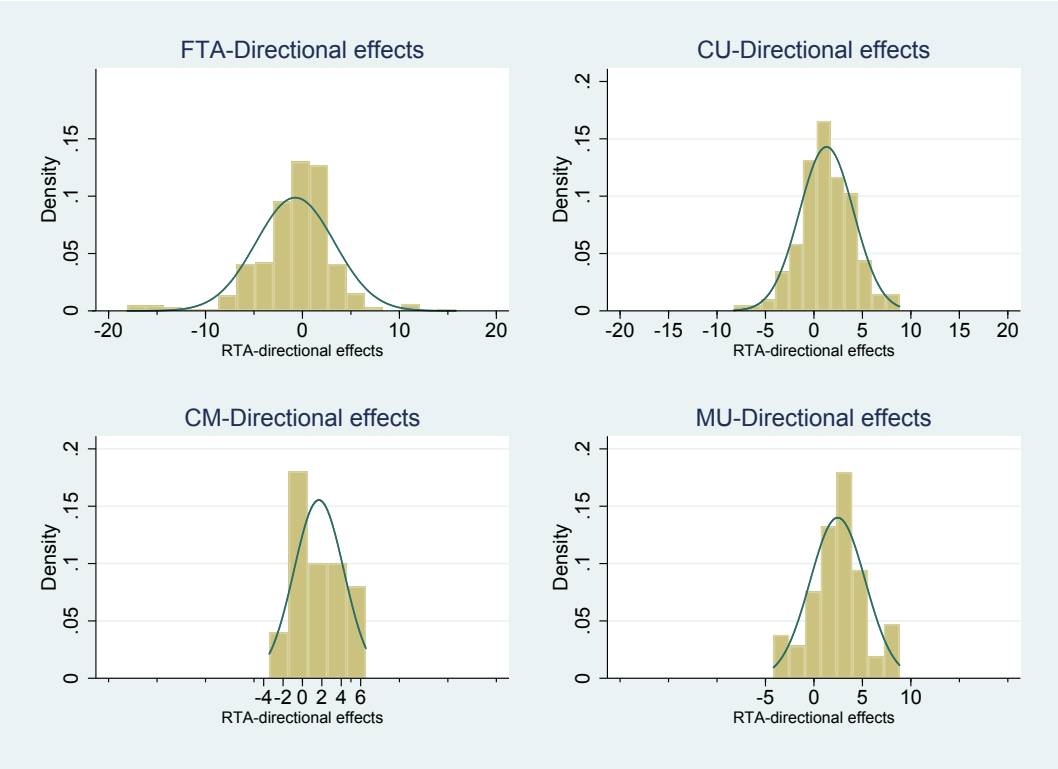

Figure 2: **Distribution of RTA-Directional-specific effects**

ing on MU's directional pair-specific trade creation effects. The importing country's GDP per capita prior to implementation adversely impact CUs' directional pair-specific trade creation effects. When the importing country has consumers with higher incomes prior to implementation, these consumers will have a tendency to buy goods from non-CU partners.

Table 2: **Potential determinants of directional heterogeneity of African RTA**

Dependent variable: First stage directional RTA estimates			
Variables	**FTA**	**CU**	**MU**
Exporter corruption	**2.302****	**3.341****	0.678
	(2.63)	(3.01)	(0.41)
Importer corruption	0.135	2.784*	-1.393
	(0.15)	(2.49)	(-0.84)
Exporter institutional quality	**-1.778***	**-3.445****	-0.831
	(-2.10)	(-2.88)	(-0.58)
Importer institutional quality	0.134	**-2.427***	-0.874
	(0.16)	(-2.02)	(-0.63)
Exporter ln(gdpcapita)	0.447	0.776	-0.895
	(1.62)	(1.30)	(-1.45)
Importer ln(gdpcapita)	-0.238	**-1.733****	-1.203
	(-0.86)	(-2.94)	(-1.79)
Exporter ln(gdp)	0.134	0.206	**1.173***
	(0.73)	(1.01)	(2.60)
Importer ln(gdp)	0.0888	0.0134	-0.850
	(0.46)	(0.06)	(-1.71)
Constant	-4.630	6.243	**22.79*****
	(-1.02)	(0.91)	(4.08)

t statistics in parentheses
* p<0.05, ** p<0.01, *** p<0.001

Concluding Remarks

The main goal of this note was to analyze the asymmetric trade creation effects between and within shallow and deep African RTAs. We focused on manufacturing goods trade and implement the two-stage approach of Baier et al. (2019). We provide the first empirical evidence of asymmetric trade creation effects for African RTAs. Our findings are particularly timely given the upcoming African Continental Free Trade Area which is to integrate 44 of the 55 African States.

Our results show that RTA trade creation effects are heterogeneous accross RTAs, with deeper African RTAs creating more trade than shallow RTAs. Specifically, heterogeneity between African country-pairs is larger accross pairs belonging to FTAs. Furthermore, African CU-pairs create more heterogeneous trade than MU pairs, vary more than those of MU-pair. As for directional pair-specific effects, heterogeneity falls with the depht of RTAs. FTA directional pair-specific effects are more heterogeneous than CU directional pair-specific effects which in turn are less heterogeneous than CMs and MUs.

The last part of our analysis focusses on the decomposition of directional trade creation effects. Corrupt exporters in FTA and CU pairs have a greater tendency to replace legal exports by black market ones when tariffs are applied on their legal. Institutional degradation reduces trade creation effects for exporting countries in FTA pairs. This is also the case for CUs exporting and importing countries. Overall, factors like GDP and GDP per capita also affect the magnitude of directional heterogeneity within African RTAs.

Finally, it is important to mention that we focused on aggregated manufactured goods. Ultimately, further research should consider conducting the analysis at the sector level and consider other factors that can influence the RTA-pair-specific asymmetry.

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