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Trade Integration and Economic Growth in Africa: Lessons from SADC and ECOWAS Regional Trading Blocs

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Abstract

The literature on the effects of free trade agreements (FTA) or trade liberalization on economies is vast and tends to focus on the post-liberalization performance of countries, particularly in Europe and North America. However, an analysis of how varying levels of integration within free trade blocs in Sub-Saharan Africa affect economic growth does not appear to be in the international economics literature. This analysis is vital as 54 out of 55 African union member States have begun trading under the African Continental Free Trade Agreement (AFCFTA) which intends to gradually decrease and ultimately do away with customs duties and non-tariff barriers on goods and allow the free provision of services in priority sectors. To be able to find economic support for the trade agreement, I try to understand how growing levels of integration within the already existing blocs have affected growth thus far, and hence evaluate if the AFCFTA is likely to be growth-augmenting. The preliminary results suggest that the growth effects of trade integration vary by free trade bloc. Nonetheless, there is not sufficient evidence to conclude that the growth effects of the free trade in the ECOWAS and SADC trading blocs are economically significant. Overall, I find that the AFCFTA may not augment growth and propose ways to understand what other corroborating analyses might be needed to support my inference.

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Chapter 1

1. Introduction

The Africa Union (AU) in conjunction with the eight (8) Regional Economic Communities[1] in Africa has been implementing policies to get a united Africa, with no barriers to trade among other things. On 15 June 2015, Johannesburg-South Africa, the African Continental free trade Agreement (AFCTA) negotiations were launched and signed into a Treaty on 21 March 2018, in Kigali-Rwanda. The AfCFTA is the African continent's most determined trade integration enterprise, implanted in the Agenda 2063 of the African Union, whose main goal is to create a single continental market for goods and services with free movement of people and investments, thus expanding intra-African trade across the continent, enhancing competitiveness, and supporting economic transformation in Africa. The AfCFTA is projected to increase intra-Africa trade from an existing level of about 13% to 25% or more through better synchronization and coordination of this trade

[1] The Arab Maghreb Union, The Economic Community of West African States, The East African Community, Intergovernmental Authority on Development, Southern African Development Community, Common Market for Eastern and Southern Africa, The Economic Community of Central African States, and The Community of Sahel-African States

liberalization agreement. This will be driven forward by the complementary Single African Air Transport Market and the Protocol on Free Movement of Persons. The African Continental Free Trade Area (AFCFTA) Operationalized phase was launched on 7 July 2019, Niamey-Niger, and trading under the Trade Agreement commenced on 1 July 2020. The leaders of the African Union Member States who are signatories to the Treaty aims for the agreement to run effectively and efficiently.

Moreover, it is believed that this arrangement will boost trade and economic growth within the continent but there does not appear to be a specifically published research (to my knowledge) that has evaluated the extent to which trade has been boosted so far within each of the existing free trade regional blocs in Sub-Saharan Africa, and thus to be able to infer that AFCFTA will indeed boost trade among African countries. Hence, to be able to find economic support for this trade agreement, I try to understand how growing levels of integration within

the already existing blocs have affected growth thus far, and hence evaluate if the AFCFTA is likely to be growth-augmenting.

Many of the African countries continue to trade intensely outside the continent, and my goal is to use the extent to which countries trade within their current free trade zones (as a measure of Regional Trade Integration) and assess its impact on economic growth.

1.1. A Brief Background on the ECOWAS and SADC Zones

The Economic Community of West African States (ECOWAS) and the Southern African Development Community (SADC) are two of the five main regional pillars of the African Economic Community (AEC). All these regional pillars were established to promote economic integration among their members.

SADC was launched in 1992 even though most of the members previously belonged to the Southern African Development Co-ordination Conference (SADCC) that had been established in 1980. The

members of the SADC are Angola, Botswana, Democratic Republic of Congo, Lesotho, Madagascar, Malawi, Mauritius, Mozambique, Namibia, Seychelles, South Africa, Swaziland, Tanzania, Zambia, and Zimbabwe. The SADC zone is dominated by the Services sector, contributing about 51% of GDP between the years 2000 to 2010 as reported in World Development Indicators. The industry sector contributes 32% whereas the Agricultural sector contributes 17% over the same period.

ECOWAS was started in 1975 with the countries Benin, Burkina Faso, Cote d'Ivoire, Gambia, Ghana, Guinea-Bissau, Liberia, Mali, Nigeria, Senegal, Sierra Leone, Guinea, and Niger. Cape Verde joined the union two years afterward in 1977.

Even though it is hard to find an estimate of the sectoral contributions of ECOWAS members, there used to be a huge agricultural sector before the early 2000s, but there seems to be more heterogeneity of products and services in the recent past and it is quite unclear which

sectors drive growth in the region without proper research investigation.

1.2. Literature Review

Trade integration in theory is an important mechanism through which countries could grow. Trade promotes more efficiency in resource allocation; enables firms to expand to realize economies of scale; fosters technological progress and knowledge diffusion (See Grossman and Helpman, 1991; Obstfeld and Taylor, 2003); and encourages competition that could result in optimization of the production processes and lead to lower prices than would prevail in

autarky, and hence be welfare-enhancing (See Krugman, 1979; Young, 1991; Rodriguez and Rodrik, 2001).

However, there is no empirical consensus on the effect of trade liberalization on welfare or economic growth. In one sense, trade liberalization leads to the lowering of transaction costs and promotes technology absorption by emerging economies through adapting to diverse traded products and advanced methods of their production. Conversely, trade may wipe out infant industries in emerging markets making an argument for some protectionism a laudable one (See Krugman, 1979).

Much of recent trade liberalization has happened within various regional blocs, with a substantial increase in regional free trade agreements (RTAs). As of 1 February 2021, 339 RTAs were in force as reported by the World Trade Organization (WTO).

Research findings are also divided on the effect of regional free trade blocs. Leading economists such as Frankel et al (1995), Bhagwati

and Panagariya (1996), and others have found regional trade arrangements as hurting the world trade system. Their argument is one of trade diversion, where free trade arrangement could result in switching to less productive and less efficient producers to the detriment of more efficient producers which would have been better for the world welfare (e.g., see Ornelas, 2005). However, Wonnocott (1996) indicates that free trade agreements encourage scale economies to the extent that there are substantial gains amidst trade diversion.

Much of the literature on the subject tend to focus on using several measures of trade openness that are intended to gauge the extent of trade integration (essentially increase in trade) resulting from the event of an RTA. Since Tinbergen (1962) failed to find economically significant "average treatment effects" of trade agreements, there are mixed results from other researchers. While Aitken (1973) finds that the European Economic Community (EEC) experienced economically and statistically significant effects of RTA

on trade flows, Bergstrand (1985) and Frankel et al. (1995) failed to find significant effects. Overall, as Cipollina and Salvatici (2010) indicate, there seems to be a positive effect, but most results show disconcerting variance, with the measure of RTA effect not being stable, and hence varying across studies.

As discussed above, the direction of the literature has been more about doing some type of event study and constructing an index to measure the resulting trade openness (integration). Not much work has been done on the ex-post performance of countries that already belong to a trade bloc or the cases where there is not enough data for such purposes (thus such that an event study is not possible). Such is the case of most African countries that I study. For instance, the ECOWAS bloc was founded in 1975 whereas data is publicly available from 1995 (even not for all countries).

One recent paper that relates to my research question is that of Busse and Königer (2012), who examine the effect of trade on

economic growth. However, they do not directly assess the effect of trade integration within a regional trade bloc on growth.

My research contributes to the literature in a unique way. It provides a way to evaluate the effect of free trade arrangements in cases without adequate data to do an event study. The measure I propose to represent the extent of trade integration with a trading bloc is the share of a country's world exports that it exports to (and the share of world imports that it imports from) the regional bloc its under.

Chapter 2

The Theoretical Model

I follow the theoretical model outlined by Busse and Königer (2012), which starts from the augmented Solow model used by Mankiw et al. (1992), based on the standard textbook Solow (1956) model. In the augmented version, economic growth, measured as the difference between the logarithm of output per worker in period t and that of its initial value ($lny_t - lny_0$), is determined by the level of technology (A_t), the rate of technological progress (g), the initial output per worker (y_0), the saving rate (s_k), the share of capital/ human capital in output (α)/ (β), the rate of convergence to the steady-state (λ), the depreciation rate (δ), the growth rate of the labor force (n), and investment in human capital (s_h). Put together, one gets:

$$lny_t - lny_0 = -\left(1 - e^{-\lambda t}\right)lny_0 + \left(1 - e^{-\lambda t}\right)lnA_t + \left(1 - e^{-\lambda t}\right)\frac{\alpha}{1-\alpha-\beta}lns_k + \left(1 - e^{-\lambda t}\right)\frac{\beta}{1-\alpha-\beta}lns_h - \left(1 - e^{-\lambda t}\right)\frac{\alpha+\beta}{1-\alpha-\beta}\ln(n + g + \delta) \quad (1)$$

In the typical Solow model above, the next step has been to make further assumptions about the mechanism for the evolution of technology. In Mankiw et al. (1992) and subsequent work, the level of technology at any point in time depends on the initial stock/or level of technology (A_0), with constant technological growth across all countries. Stated formally,

$$A_t = A_0 e^{gt} \quad (2)$$

There is however no reason to hold the evolution of technology expressed above as always, the standard. In part, the assumption of a constant rate of diffusion of technology may not be appropriate for developing countries (Busse and Königer, 2012). Solow mentions that:

"Nearly everyone takes it for granted that the rate of growth of TFP is the same everywhere. The only thing that justifies this remarkable presumption is the mechanical thought that knowledge of new technology diffuses rapidly around the world. Maybe so, but productivity performance depends on many other influences besides the content of the latest engineering textbook" (Solow 2007, p.10).

Due to the quote above Busse and Königer (2012) argues that the diffusion of available world technology could depend on country-specific factors. Particularly trade in goods and services is an important channel through which ideas are diffused and provides for country-specific technology diffusion or assimilation of technology. This leads them to re-formulate equation (2) into the following, which reflects the country-specificity:

$$A_{it} = A_0 e^{gt} e^{\phi_j X_{ij}} \quad (3)$$

Gundlach (2005) identifies the term X_{ij} as capturing the determinants of technological development such as trade (as argued above). For my purposes, X_{ij} has a dual interpretation. It represents the share of exports from ECOWAS countries to other ECOWAS countries, as well as the share of exports from ECOWAS countries to Sub-Saharan African countries. It has a similar usage for the SADC zone, thus capturing the share of exports of SADC countries to other SADC countries, and Sub-Saharan countries overall. Thus, each country *i* exports to both its free-trade region and the Sub-Saharan region overall, with *j* capturing both types of regions. Replacing (3) in (1), one gets:

$$lny_t - lny_0 = -\left(1 - e^{-\lambda t}\right)lny_0 + \left(1 - e^{-\lambda t}\right)(lnA_0 + gt) + \left(1 - e^{-\lambda t}\right)\frac{\alpha}{1-\alpha-\beta}lns_k + \left(1 - e^{-\lambda t}\right)\frac{\beta}{1-\alpha-\beta}lns_h - \left(1 - e^{-\lambda t}\right)\frac{\alpha+\beta}{1-\alpha-\beta}\ln(n + g + \delta) + \left(1 - e^{-\lambda t}\right)\emptyset_j X_{ij} \quad (4)$$

For my purposes (measuring trade integration instead of trade flows), I think of X_{ij}, as the share of the volume of world trade that countries

export and import among themselves as the channel through which technological development diffuses within each free-trade bloc.

Chapter 3

The Empirical Model and Estimation Technique

Empirical model

Equation (4) allows for an empirically testable effect of trade integration on economic growth as follows:

$$lny_{it} = \alpha + (\beta_1 + 1)lny_{it-1} + \beta_2 lns_{k,it} + \beta_3 lns_{h,it}$$

$$+ \quad \beta_4 ln(n_{it} + g + \delta) + \emptyset_j X_{ijt} + \tau_t + \eta_i + v_i \qquad (5)$$

where y is real GDP per capita, s_k is the saving rate, s_h is human capital investment, n is the population growth rate, g is the growth rate of technology, δ the depreciation, X captures the share of world trade in all goods of country i to region j, while η and τ capture country-specific and period-specific fixed effects respectively with v as i.i.d. error term. Following the literature, I set $g + \delta = 0.05$.

Main Hypotheses

1. The increase in trade (integration) due to free trade within regional blocs has a significant effect on the growth of countries.
2. If trade outside a regional bloc has significant impact on the growth of countries (in the absence of free trade), then trade

could be further boosted with a Continental Free Trade Area (CFTA) arrangement.

In each case, I essentially test the null that $\emptyset_j = 0$ and the alternative that $\emptyset_j \neq 0$.

Estimation Technique

There are however several econometric challenges with estimating the growth equation (5). The explanatory variables are all proxies; this suggests that we will have measurement error problems. Another worrying issue is the endogeneity of all the explanatory variables. Factors such as the initial level of technology and country-specific characteristics like changes in tastes that could affect the explanatory variables are unobserved and hence excluded from the estimation. Together, the issues raised imply the need for instruments for all explanatory variables; variables that are correlated with the endogenous variables but are uncorrelated with the dependent variable. In this context where it is difficult to think of instruments outside the model, the System GMM estimation suggested by Bond et al. (2001) becomes a useful approach to adopt. The System GMM estimator does not rely on external instruments. Instead, it uses lagged

levels and differences between periods as instruments for the current values of the endogenous explanatory variables.

Chapter 4

Data Sources

I use detailed data for the volume of trade by collecting data on trade flows of Sub-Saharan African countries to only other countries within their regional bloc (for instance between Ghana and only countries in ECOWAS[2]). The trade data is from the World Integrated Trade Solution (WITS) spanning 1998 to 2013, a period where data is available for all countries in my sample. The WITS data is very detailed because it identifies the exports from each country to all destinations in the world, and records imports from all destinations to a particular country (alongside the percentage of world exports/imports of each country that they represent).

[2] The two zones I focus on in this paper are the Economic Community of West African States (ECOWAS) and Southern African Development Community (SADC).

I also compute the share of imports/exports to and from Sub-Saharan Africa to verify if integration in Africa as a whole result in GDP growth. This is beneficial in two ways: (1) It provides a robustness check for my primary results; (2) if trade integration in Sub-Saharan Africa leads to more growth, then that could suggest that a CFTA could be beneficial for African countries[3]. The rest of the macroeconomic data have been obtained from the World Bank's World Development Indicators (WDI).

Economic growth is measured as the change in the logarithm of GDP per capita while the *Log of Population Growth* is the logarithm of the population growth rate (plus the constant depreciation rate). Investment in physical capital is proxied by gross capital formation, *Log of Physical Capital formation* whereas investment in human capital is proxied by expenditure on education as a percentage of GDP, *Log of Human Capital formation*.

[3] Due to limited data, I only present results for trade integration using the share of exports to a free-trade bloc, and to Sub-Saharan Africa, *Trade (percent of Exports)*. A more complete picture is an analysis that includes the share of imports from the bloc (and Sub-Saharan Africa) to each country.

Chapter 5

Descriptive Statistics, Empirical Results, and Discussion

Descriptive Statistics

The summary statistics shown in Tables 1 & 2 reveal some differences between the ECOWAS and SADC zones. The ECOWAS countries are relatively more "similar", with GDP per capita between $405 and $2462 and an average value of $858. Countries in the SADC free trade zone are more "dissimilar", with GDP per capita between $244 and $13153 and an average value of $3724. With this observation, it is quite possible that the results presented might be driven by a few countries

on the extreme ends of the SADC zone. The ECOWAS countries tend to trade more both within the ECOWAS bloc (25% of their world exports) and within Sub-Saharan Africa (35%), whereas SADC countries trade 18% within SADC and 20% within Sub-Saharan Africa.

Table 1: Summary Statistics for ECOWAS

	Mean	Sd	min	max
TradeReg	25.01325	21.10074	0.48	88.87
TradeSub	34.95686	23.95507	1.62	97.68
GDPpercapita	857.7758	460.1478	404.6484	2461.804
Grosscapform	18.46335	6.422915	4.562497	31.8301
Pop	2.47e+07	4.03e+07	1159001	1.73e+08
Popgrowth	2.712953	0.3845276	1.740553	3.32829
HumanToGDP	0.5135814	1.765888	0.0011088	11.38114
Observations	160			

Table 2: Summary Statistics for SADC

	Mean	Sd	min	max
TradeReg	17.96838	12.43609	0.37	57.48
TradeSub	20.28881	12.92892	0.46	61.43
GDPpercapita	3724.415	3501.611	244.1373	13153.04
Grosscapform	23.91366	7.678796	10.30976	54.46886
Pop	1.59e+07	1.61e+07	78846	5.32e+07
Popgrowth	2.100315	0.9975272	-2.628656	3.180244
HumanToGDP	0.118613	0.1597386	0.001461	0.8424279
Observation	160			

Empirical Results and Discussion

The preliminary results for the System GMM estimation shown in this paper are based on 10 countries in the ECOWAS region and 10 other countries in the SADC region[4].

In ECOWAS the results in columns (1) and (2) of Table 3 shows that, there is not sufficient evidence that trade integration has statistically significant growth effects. This might be because of the cumbersome paperwork that manufacturers must satisfy before exporting to the ECOWAS Region which increases their cost (time and monetary) and wipe off their margins. Therefore, undermining the benefits of access to a bigger market which would have enabled them to expand to create the needed jobs and income to promote economic growth.

[4] In ECOWAS I have Ghana, Nigeria, Senegal, Cote d'Ivoire, Benin, Togo, Burkina Faso, Mali, Guinea, and The Gambia. In the SADC I have South Africa, Zambia, Mozambique, Tanzania, Mauritius, Namibia, Madagascar, Malawi, Botswana, and Seychelles. The excluded countries in these zones had a significant amount of missing data.

In the SADC free trade zone, trade integration leads to a statistically significant negative effect on economic growth, but their economic magnitudes are small. Specifically, in Table 4 (columns (1) and (2)), a one percent increase in trade integration in the SADC zone leads to a 0.001 decrease in real GDP growth. The negative growth effects of trade integration in the SADC free trade zone comes on the back of insecurity and extortion at the borders. Therefore, manufactures must bear extra cost in exporting to the SADC zone wiping off their margins and making them less efficient. Also, it makes them reduce the level of investment in their business and hence translates into reduction in economic growth.

To understand the advantage of using the System GMM for analyses in growth models like the one I consider, I include corresponding OLS estimates in columns (3) and (4) of both Tables (3) and (4). In Table 3, the OLS results show that there is not sufficient

evidence that indicates the growth effects of trade is significant, both economically and statistically both within ECOWAS and Sub-Saharan Africa. Table 4 tells a similar story of the non-significance of trade integration in SADC.

Together these results suggest that the studied countries have not experienced growth by trading more both within their zones and within most of Africa (Sub-Saharan Africa) for the sample period under consideration. Overall exporting more to Sub-Saharan African countries by ECOWAS and SADC countries does not seem to have a substantially positive impact on growth; a signal that a CFTA might not improve trade after all (unless the lack of any growth effects has been due to high trade barriers (like tariffs) faced by countries who export to other blocs; the role of trade barriers will be important follow-up research).

Additionally, identification in my analysis needs to be revisited, since as it looks currently, the results are essentially correlations. I could use actual trade agreements among countries and specific policy changes during the sample period as identifying shocks to attempt to understand what changes occurred ex-post.

Table 3: The effects of West African Trade Integration on GDP Growth

	(1) GMMeco	(2) GMMsub	(3) OLSeco	(4) OLSsub
GDPpc_1	-0.822*** (0.029)	-0.827*** (0.028)	-0.230 (0.145)	-0.225 (0.145)
SavingRate	0.013** (0.006)	0.012** (0.006)	-0.018 (0.012)	-0.018 (0.012)
PopulationGrowth	-0.059** (0.025)	-0.056** (0.025)	-0.029 (0.048)	-0.023 (0.046)
InvHumCap	0.046*** (0.010)	0.042*** (0.010)	-0.037 (0.021)	-0.037 (0.021)
TradeReg	0.000 (0.000)		-0.000 (0.000)	

TradeSub		0.000 (0.000)		-0.000 (0.000)
Constant			0.509 (0.372)	0.482 (0.376)
Observation	146	146	158	158
R^2			0.297	0.295
Country Fixed	Yes	Yes	Yes	Yes
Effects	Yes	Yes	Yes	Yes
True Fixed Effects				

Standard error in parentheses
$* p < 0.10, \quad ** p < 0.05, \quad *** p < 0.01$

Table 3: The effects of Southern African Trade Integration on GDP Growth

	(1) GMMsadc	(2) GMMsub	(3) OLSsadc	(4) OLSsub
GDPpc_1	-0.980*** (0.007)	-0.980*** (0.007)	-0.463** (0.171)	-0.479** (0.161)
SavingRate	0.003 (0.008)	-0.003 (0.008)	0.135 (0.089)	0.122 (0.084)
PopulationGrowth	-0.002 (0.004)	-0.002 (0.004)	-0.105 (0.064)	-0.102 (0.064)
InvHumCap	0.002 (0.010)	0.003 (0.010)	-0.090* (0.043)	0.090* (0.043)
TradeReg	-0.001*** (0.000)		-0.001 (0.003)	
TradeSub		-0.001*** (0.000)		-0.002 (0.003)

Constant			1.548* (0.718)	1.665** (0.653)
Observation	134	134	146	146
R^2			0.488	0.500
Country Fixed	Yes	Yes	Yes	Yes
Effects	Yes	Yes	Yes	Yes
True Fixed Effects				

Standard error in parentheses
$* p < 0.10, \quad ** p < 0.05, \quad *** p < 0.01$

Chapter 6

Conclusion

▶ In this paper, I have shown preliminary results that indicate trade integration in Africa has varying impacts on the economic growth of African countries (even though magnitudes are overall not meaningful). I failed to find out sufficient evidence that, trading more within Africa (over the sample period) does seem to augment the growth of the African countries that I

analyze. Identification with my estimation is surely a concern, with such a small sample and not specifically using a shock to trade within Africa or in the rest of the world that could potentially affect the analyses in this paper.

The results open interesting areas for follow-up research work. An investigation of the nature of tariffs that African countries face when they trade outside their free trade zones could provide insights as to why trading on the continent overall does not lead to economic growth across countries. Also, can we identify other major policies that lead to increased trade (and more importantly economic growth), except regional free trade arrangements?

It will also be of interest to investigate which sectors, industries, or products contribute more to export growth (or trade growth at large). This way additional policies to target those sectors might be needed.

Thus, on its own, the AFCFTA may not be adequate, but together with other policies that may be identified through further investigation, there could be merits overall.

Chapter 7

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