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Analysis Of The Potential Effects And Opportunities Of The Entry Into Force Of The Continental Free Trade Area On The Countries Of The Economic Community Of Central African States

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Abstract
Given the low level of trade integration of the Economic Community of Central African States (ECCAS) zone into the African continental economy and the unfavourable consequences for the socio-economic development of these countries, ways to increase intra- and inter-regional trade must be found. Implementing AfCFTA, which 41 countries have ratified, is an opportunity for ECCAS countries to accelerate their structural transformation process. Therefore, this study assesses the potential effects of AfCFTA on trade integration in ECCAS. The methodological approach is based on analysing ECCAS's trade with RECs and estimating gravity models using OLS with a database of 86 countries to assess the potential effects of AfCFTA on ECCAS's trade integration.
These Stylised facts show low intra-ECCAS trade and trade with other RECs. ECCAS imports products such as medicines, rice, and vehicles from outside Africa, which can be sourced from South Africa, Egypt, and Morocco. Conversely, these countries import products such as crude oil, timber, natural gas, copper, and cocoa from Africa, yet ECCAS exports these products outside the continent. The potential effects of AfCFTA entry into force on ECCAS are positive but relatively slight. ECCAS exports to ECOWAS and UMA are likely to increase significantly, as are imports from ECOWAS, if more ambitious measures are implemented. The results also show that ECCAS's trade potential of the ECCAS could increase by at least 1.9%. The study recommends that ECCAS break down barriers on the corridors linking countries, develop integration projects to facilitate the movement of people and goods and strengthen economic cooperation with ECOWAS, AMU, and South Africa. In addition, the African Union must speed up the process of introducing a common African currency and trade facilities to boost trade between the continent's various RECs.
Keywords: *AfCFTA, trade integration, trade potential, gravity model.*

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I. Introduction

Since the 19th century, economists have identified, based on growth models, the role of production factors such as capital, labour, and technology in increasing the wealth of countries, neglecting the role of policies, particularly trade policies, in their analyses (Solow, 1956; Lucas, 1988). However, since the progress made by emerging countries such as China, Brazil, India, and the countries of East Asia in 1985, following the adoption and implementation of open trade policies, several theoretical and empirical analyses have recognised the role of trade openness in the process of economic growth and development (Frankel & Romer, 1999, Ben David, 1993).

Given its potential benefits for trade between member countries, the impact of regional integration is of particular interest to economists and policymakers. Indeed, regional integration, through the theory of free trade areas and customs unions, has been recognised by all States parties to the World Trade Organization (WTO) agreements as an essential vehicle for expanding world trade (Memorandum of Understanding on the Interpretation of Article XXIV of the General Agreement on Tariffs and Trade 1994). Taking the European Union (EU) as an example, from the 1990s onwards, the trade impact of the single market in Europe was three times greater than the effect of a standard, or 'normal,' regional agreement. Trade between EU members increased by an average of 109% for goods and 58% for services. (Centre d'Etudes Prospectives et d'Informations Internationales, CEPII, 2018).

The progress made by emerging countries such as China, Brazil, India and the countries of East Asia in the 1985s, following the adoption and implementation of open trade policies, several theoretical and empirical analyses have highlighted the role of trade openness in the process of economic growth and development (Frankel & Romer, 1999, Ben David, 1993). Between 1995 and 2005, exports grew by 18% in China, 13% in India, and 10% in Brazil, compared to only 4% in the United States (Alternatives économiques, 2007). Therefore, international trade is at the centre of theoretical and empirical debates as a vector for development.

Intra-regional trade in Africa accounted for only 17.7% of the continent's total trade. In particular, intra-regional trade in Central Africa accounted for only 2% of the region's total trade. This is the lowest percentage of intra-regional trade among the various economic zones of Africa (AfDB,2019). According to authors such as Limao and Venables (1999) and Ngattai-Lam (2014), the main obstacles to trade development in Africa stem from the poor quality of transport, communications, and energy infrastructure, significantly impacting the competitiveness of economies.

The African Continental Free Trade Area (AfCFTA), which came into force on January 1, 2021, represents a potential market of 1.3 billion people, which should enable countries with diversified economies to specialise in products in which they have a comparative advantage, achieve economies of scale, improve their productivity, and foster their structural transformation through new products and regional supply chains (World Bank). The dismantling of tariff and non-tariff barriers to trade increases trade volume between partner countries in the Free Trade Area (AfCFTA). It promotes greater specialisation by countries based on their comparative advantages.

In addition, African economies, particularly those of sub-Saharan Africa, are subject to uncertainty because of their dependence on the outside world, particularly regarding the export prices of basic products (oil, metals, agricultural raw materials, etc.). With the advent of COVID-19, for example, the price of these products has fallen by more than 25% (IMF, 2021), reducing the benefits of exports. Similarly, imports are limited by African countries' dwindling foreign currencies. AfCFTA could help our economies limit this dependence by promoting trade between African countries.

Furthermore, by making the AFCFTA a reality, Africa aims to overcome its economies' fragmentation and historical isolation by building transport and communication links between its countries to foster enormous commercial opportunities. This aggregation and connectivity are forces for accelerated growth and sustainable development of African countries that will help to achieve the vision of the African Union and Agenda 2063: "An integrated, prosperous and peaceful Africa, led by its people and representing a dynamic force on the world stage."

The AfCFTA, which 41 countries have already ratified, aims to: (i) create a single market for goods and services facilitated by the movement of people, (ii) create a liberalised market for goods and services through successive rounds of negotiations, (iii) contribute to the movement of capital and natural persons and facilitate investment by building on initiatives in the State Parties and the RECs; (iv) lay the foundation for the creation of a continental customs union at a later stage; (v) promote and achieve inclusive and sustainable socio-economic development, gender equality, and structural transformation of the State Parties; and (vi) strengthen the competitiveness of the economies of the State parties at the continental and global levels.

According to ECA (2020), AfCFTA should positively impact various sectors of the economy. Simulations carried out by comparing the scenario with the implementation of AfCFTA and the reference scenario (in the absence of AfCFTA) indicate significant sectoral variations in intra-African trade (+41.1% in agri-food, +39.2% in services, +39% in industry, and +16.1% in mining/energy).

However, integration usually creates distortions linked to the customs duties applied at the borders (relatively high duties vis-à-vis external countries compared to members of the free trade area). The analysis of the effects of integration in comparative statistics is based on the results of Viner (1950). According to this author, creating a free trade area can have two effects: a trade creation effect when a trade flow that did not exist appears and a trade diversion effect when an import flow from a third country is replaced by one from a member country. In addition, the economies of the ECCAS region are based mainly on producing and exporting raw materials. As a result, the specialisation induced by the free trade area could also compromise the chances of diversification and industrialisation of the countries in the region.

Regarding ECCAS, intra-regional exports account for only 8% of the zone's exports, whereas intra-regional imports account for only 6.4% of the zone's imports. What's more, only 14% are destined for the whole of Africa; 2.4% of ECCAS exports are destined for COMESA; 2.1% are destined for UMA; 1.4% for ECOWAS; and 0.9% for SADC. As for imports, only 10.3% came from Africa, 3.2% from UMA, 1.8% from COMESA, 0.3% from ECOWAS, and 0.6% from SADC (AfDB,2016). These statistics show that intra-regional trade in the ECCAS zone is low. Therefore, the establishment of the AfCFTA could be a solution to improve intra-regional trade, particularly in the ECCAS zone.

According to AUC (2019), ECCAS's low level of trade integration into the continental African market is due to several factors, including weak infrastructure, small markets, low diversification of production, high transaction costs, backward and forward links between industry and agriculture, and inefficient institutional and legal mechanisms. In addition, there is a lack of willingness on the part of some states to apply community texts, the overlap of ECCAS countries between several RECs, the heavy dependence of some countries on external aid, the proliferation of checkpoints along transit corridors, and temporary export bans introduced by some member states.

This study highlights the potential effects of the ZLECAf's entry into force on ECCAS trade integration. In other words, it aims to analyse whether the process of African economic integration through this Free Trade Agreement will likely strengthen trade between the ECCAS countries and promote an increase in trade in goods and services between ECCAS countries and other African countries.

The remainder of this paper is organised into five sections. The first deals with the trade analysis between the ECCAS zone and the African regional economic communities; the third presents a literature review; the fourth sets out the study methodology and the data used; the fifth presents the model results; and the final section presents the conclusions and recommendations.

II. Analysis Of Trade Between The Eccas Zone And African Regional Economic Communities

The Economic and Monetary Community of Central African States (ECCAS) is an international organisation comprising six countries: Cameroon, Congo, Gabon, Equatorial Guinea, Central African Republic, and Chad. It was created by a treaty signed on March 16, 1994, in N'Djamena (Chad), which came into force in June 1999. Its headquarters are in Bangui, Central African Republic. It was taken over by the Customs and Economic Union of Central Africa (UDEAC), which was established in 1964. The treaty (TRT/ECCAS/001) establishing ECCAS stipulates that it is made up of two unions: (i) the Central African Economic Union (UEAC), whose mission is to harmonise the regulations in force within the member states to boost trade and facilitate the convergence of economic policies within the sub-region, and (ii) the Central African Monetary Union (UMAC), which is responsible for the monetary convergence of the member states. Geographically, these member countries cover an area of 3.02 million km² and will have a population of approximately 60 million in 2021 (Africa Brigth Security, 2023).

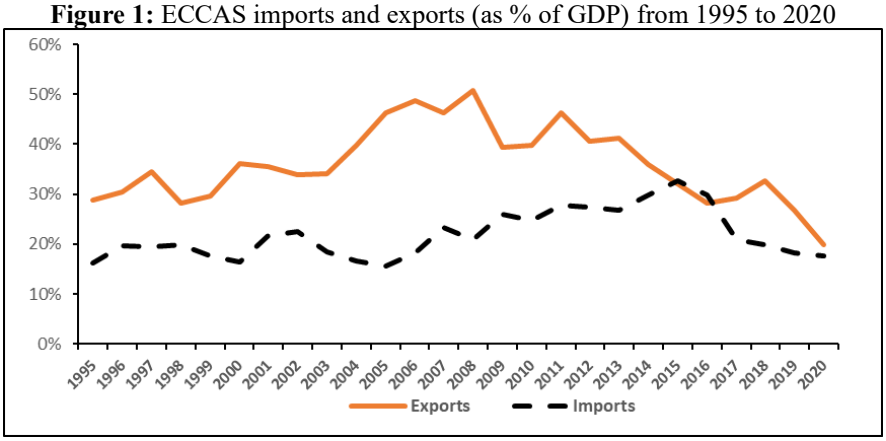
Analysis of import and export trends

Since the creation of the new ECCAS institution (in 1994), which came into force in 1999, trade in the ECCAS zone has experienced a new dynamic. This rise in trade coincided with the creation of the WTO in 1995 and the implementation of policies to facilitate trade. Between 1995 and 2013, imports and exports increased overall in the region, reflecting a significant consolidation of the ECCAS trade surplus, with countries having a greater propensity to export than import. However, since 2013, factors such as the security crisis in the Central African Republic, atrocities caused by the Boko-haram sect in the northern part of Cameroon, and fluctuations in commodity prices, particularly the fall in world oil prices in 2016, have considerably affected the zone's external balance.

According to data from the United Nations Conference on Trade and Development (UNCTAD), the value of exported goods, estimated at 29% of GDP in 1994, reached almost 50% of GDP in 2009. Since then, the general trend has decreased. Looking at individual countries, it can be seen that until 2007, Equatorial Guinea's share of exports as a percentage of GDP was higher than that of other ECCAS countries. Since 2016, it has been in first place in the Congo. It should also be noted that since 2003, Cameroon has been the second country with the lowest share of exports as a percentage of GDP, while the Central African Republic has been in last place.

With regard to imports as a percentage of GDP, figure 1 shows an increase during the period 1995-2011. During the UDEAC period, imports as a percentage of GDP remained virtually constant. Looking at the countries of the zone individually, the data show that from 2006 to 2018, Congo was the leader in terms of imports as a percentage of the GDP. It reached a peak of 110% of GDP in 2016. Since 2015, Cameroon has been the country in the zone with the lowest share of imports to GDP. This can be explained by the fact that Cameroon has the most diversified economy in the ECCAS.

Figure 1: ECCAS imports and exports (as % of GDP) from 1995 to 2020

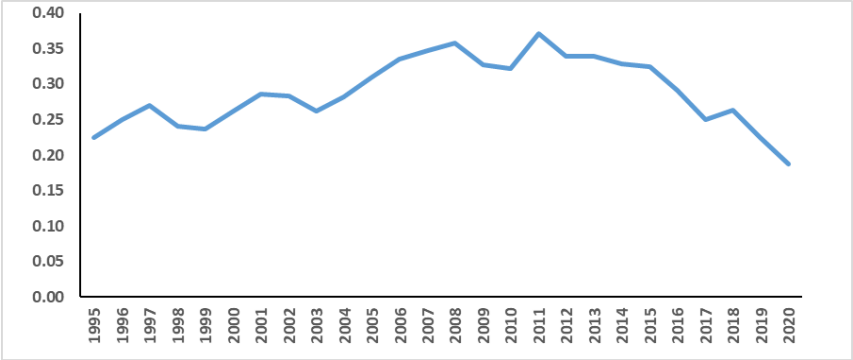


Source: Authors' calculations with UNCTAD database

Analysis of the openness to trade

The figure below shows that between 1995 and 2011, the indicator attached to the openness to trade of the ECCAS zone had an increasing trend. This ratio of imports plus exports over GDP peaked in 2011 before starting to fall. This peak was due to the signing of numerous agreements with developed countries and a growing number of economic partners. However, since 2012, the zone's openness rate has been falling steadily, which can be explained by the security problems and political crises that several countries in the zone have experienced since that time (Central African Republic, Chad, Cameroon, etc.).

Figure 2 : Evolution of the openness to trade index



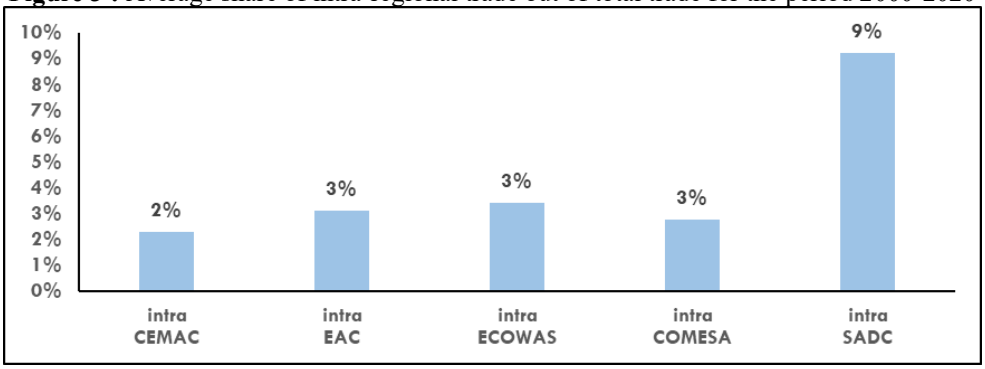
Source: Authors' calculations with UNCTAD database

Comparative analysis of trade levels: ECCAS and other RECs

Comparison of intra-regional trade between the RECs

Intra-regional economic community trade statistics show that the ECCAS is the least integrated region in Africa. Trade between the ECCAS countries accounts for only 2% of the region's GDP. In the East African Community (EAC), this figure was 3%. Intra-community trade between the Southern African Development Community (SADC) countries is the most developed, accounting for 9% of the region's GDP.

Figure 3 : Average share of intra-regional trade out of total trade for the period 2000-2020

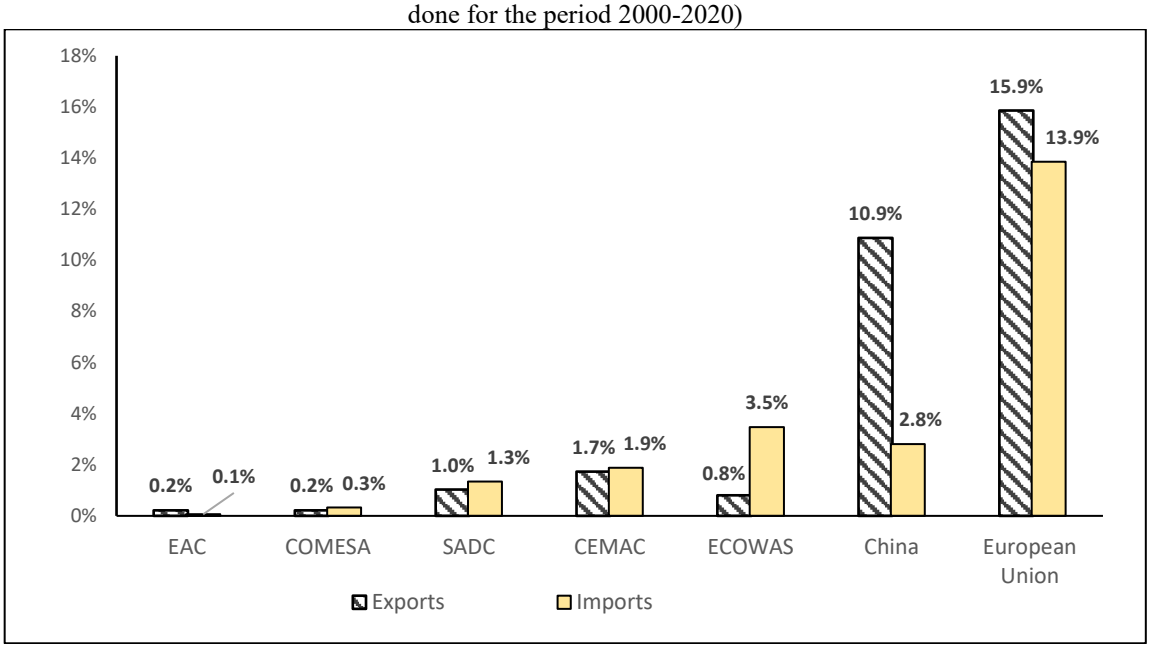


Source: Authors' calculations with UNCTAD database

Analysis of ECCAS trade by geographical orientation of flows

The graph below shows that between 2000 and 2020, the main trading partners of ECCAS in terms of imports are the EU (13.9% of ECCAS GDP), followed by the Economic Community of West African States (ECOWAS), China, and finally the ECCAS. ECCAS's latter position is essentially due to the limited diversification of the zone's export products and the similarity of national production structures. Regarding export destinations, the EU is still in the first position, followed by China and then the ECCAS. These statistics reveal the slowness of the subregion's trade integration process in the ECCAS Economy Community.

Figure 4: ECCAS's main trading partners (average share of Exports and Imports on ECCAS GDP (calculations done for the period 2000-2020)



Source: Authors' calculations with UNCTAD database

Trade structure of ECCAS countries

An important aspect of the ECCAS trade is the type of product traded. In this section, we present the main products and product groups imported and exported from the zone. They were classified according to the SITC nomenclature (Standard International Trade Classification).

ECCAS's main export products. According to the UNCTAD database, the main groups of products were exported from ECCAS to the rest of the world between 2016 and 2020. Mineral fuels, lubricants, and related materials (oil, natural gas, etc.) account for more than 60% of the ECCAS exports. Indeed, the oil export rate is very high in the ECCAS zone. The Bank of Central African States (BEAC) puts the ECCAS oil export rate at approximately 60% of total exports. Non-friable raw materials other than fuels (timber, cotton, etc.) represent the second largest group of exports from the region (approximately 13% of total exports). This is followed by machinery and transport equipment (agricultural machinery, tractors, vehicles, etc.), which account for nearly 8% of total exports from the ECCAS zone; manufactured products (leather, textiles, paper, etc.), which account for 7% of total exports; and food products and live animals (meat, fish, rice, etc.), which account for nearly 5% of total exports from the ECCAS zone.

The main products imported by ECCAS. In the UNCTAD database, the main groups of products imported by ECCAS between 2016 and 2020 are machinery and transport equipment. This product group accounted for more than 40% of the total imports in the region. Manufactured products accounted for approximately 17% of the total. Next are food products and live animals, which account for almost 15%; chemical products (hydrocarbons, alcohol, etc.), which account for 8% of the zone's total imports, followed by miscellaneous products.

These statistics reveal that ECCAS countries are characterised by their heavy dependence on machinery, transport equipment, and basic manufactured products such as foodstuffs (beverages, hydrocarbons, base metals, etc.). As a result, this subregion has many technological and industrial shortcomings. Most products are exported in their raw state (minerals, oil, gas, timber, etc.) to industrialised countries (EU, USA, China) and then imported in the form of manufactured goods (oil, food products, furniture, etc.). Equatorial Guinea is the main importer of machinery, transport equipment (cars and motorbikes), iron, and steel. Cameroon imports more food and Congo chemical products (medicines).

Trade opportunities between ECCAS countries and other regions

Before assessing the potential effects of AfCFTA, it is worth analysing the trade opportunities between ECCAS countries and other countries that could arise with implementing AfCFTA.

The analysis of trade opportunities in terms of exports focused on five main export products from the ECCAS zone: crude oil, timber, ships and boats, natural gas, and cocoa. The table below shows that ECCAS exported an average of approximately $14 billion worth of crude oil outside Africa between 2016 and 2020. Yet, some African countries such as South Africa, Egypt, Côte d'Ivoire and Senegal imported it elsewhere during the same period. We can even see that the quantity needed by these countries is less than that exported by ECCAS countries; these African countries that import oil could, therefore, do so directly from ECCAS instead of directing their demand outside the continent. An average of $1.5 billion worth of timber was exported from ECCAS to countries outside Africa between 2016 and 2020, yet countries such as Egypt, Namibia, Angola, Morocco, and Ghana needed it. A small proportion of the timber exported from ECCAS could be imported by these countries instead of having to look outside Africa.

Similarly, ECCAS countries export cocoa worth an average of $587 million outside Africa, yet countries such as Algeria, Egypt, South Africa, Tunisia, and Morocco need it and import it from outside Africa. A geographical reorientation of trade could, therefore, increase intra-African trade by using the cocoa supply of ECCAS countries to satisfy the demand for cocoa in those countries.

Table 1: Analysis of opportunities for exports of goods and services produced in the ECCAS zone to African countries

Main export products from ECCAS	Average exports of ECCAS between 2016-2020 outside Africa (in thousands of USD dollars)	Main African countries importers (excluding ECCAS) importers	
		Country	Average imports between 2016-2020 (in thousands of USD dollars)
Crude oil and bituminous materials	13,999,266.6	South Africa	7,593,695.3
		Egypt	1,936,959.2
		Ivory Coast	1,250,314
		Senegal	4,04,019.6
		Zambia	392154,4
		Total	1,1577,142.47
timber	1,514,352,609	Egypt	34,431.1
		Namibia	115,91.2
		Angola	10,158
		Morocco	9,906
		South Africa	9,218
		Total	75,305.8
Natural gas, Liquefied gas	1,020,057,783	Egypt	892,332
		South Africa	266,249.5
		Morocco	224,442
		Lesotho	4905
		Rwanda	4442
		Total	1,392,371.1
Copper	796,045.8	Egypt	627,295.6
		Namibia	533,922.2
		Morocco	507,927
		South Africa	456,809,4
		Tunisia	344,263.8
		Total	2,470,218.1
Cocoa	586,993.1	Algeria	163260.1
		Egypt	71979,9
		South Africa	53291.1
		Tunisia	20806.4
		Morocco	20,575.3
		Total	329,912.7

Source: Authors' calculations with UNCTAD database

The data reveal that the ECCAS zone's import opportunities from Africa include refined oil, civil engineering installations and equipment, medicines, rice, and vehicles for transporting people. According to the table below, ECCAS imported an average of $703 million worth of refined oil from outside Africa between 2016 and 2020, yet during the same period, Algeria, South Africa, Egypt, Côte d'Ivoire, and Libya exported an average of $11.1 billion worth of refined oil. This refined oil supply could meet the ECCAS countries' demand, thereby increasing trade between African countries.

A similar analysis is possible with civil engineering equipment, which ECCAS countries import on average for $598 million, while countries such as South Africa, Tunisia, and Djibouti export. Instead of turning to Europe or China, ECCAS countries could satisfy their demand for civil engineering equipment by exclusively importing from African exporting countries. If medicines are imported into the region, this demand can also be met by supplying medicines from countries such as South Africa, Egypt, Kenya, Morocco, and Tunisia.

Some of the rice imported by the ECCAS countries may also come from countries such as Niger, South Africa, Senegal or Uganda. Similarly, imports of passenger vehicles, estimated at an average of nearly $385 million for the ECCAS countries, may come from South Africa or Morocco, which exports them. The trade opportunities created by implementing AfCFTA affect not only ECCAS exports but also other countries on the African continent.

Table 2 : Analysis of opportunities for ECCAS countries to import goods and services produced in Africa

Main import products from ECCAS	Average imports of ECCAS out of Africa between 2016-2020 (in thousands of USD dollars)	main African countries (excluding ECCAS) exporting	
		Country	Average exports between 2016-2020 (in thousands of USD dollars)
Petroleum and minerals bituminous	703 453.8	Algeria	5,159,652.7
		South Africa	2,344,771.1
		Egypt	2,231,882.8
		Ivory Coast	738,755.8
		Libya	661,148.7
		Total	11,136,210.9
Installations and equipment for civil engineering	597,971,059	South Africa	564,134.5
		Tunisia	101,263
		Angola	48,753.2
		Djibouti	45,738.1
		Ivory Coast	26,475
		Total	786 363,9
Drugs	433 150.5	South Africa	347,826.1
		Egypt	221,104.9
		Kenya	107,241.5
		Morocco	81,191.
		Tunisia	59,797.2
		Total	817,161.4
Rice	405,320	Niger	109,971.3
		South Africa	70,235,3
		Senegal	32,605
		Djibouti	28,417
		Uganda	18,919.6
		Total	260,148.2
Motor vehicles for transporting people	384,830,417	South Africa	5,677,172,5
		Morocco	2,815,705,8
		Total	8,492,878.3

Source: Authors' calculations with UNCTAD database

III. Literature Review

This section first presents the theoretical framework of impact assessment and theories relating to the effects of free trade on trade, particularly traffic creation and diversion. Finally, it presents an empirical assessment of these effects.

Theoretical framework of impact assessment

This study aims to determine the potential effects of AfCFTA on trade integration in the ECCAS region. In other words, it aims to assess the impact of AfCFTA implementation on trade integration in the ECCAS zone. The impact assessment thus aims to determine which changes can be attributed directly and exclusively to the program and whether the effects observed on beneficiaries can be attributed to the program.

The evaluation here is ex-ante since the policy to be evaluated is in the early stages of implementation. The aim is to assess the program's potential effects before it is implemented. The treatment variable in this study was the implementation of AfCFTA. The impact is the difference between the outcomes of interest with and without the program. In most cases, it is not possible to observe both states simultaneously. In general, we only observe the situation after the program has been implemented, in the absence of intervention, that is, the counterfactual, which is not usually observed (Rogers, 2012). In this study, we followed the situation before the program was implemented, and the counterfactual, the situation after the program was implemented, was not observed. The impact is assessed simply by comparing the problem before the implementation of the AfCFTA with the situation after its implementation, that is, with the abolition of customs duties.

Theories on the effects of free trade on trade relations

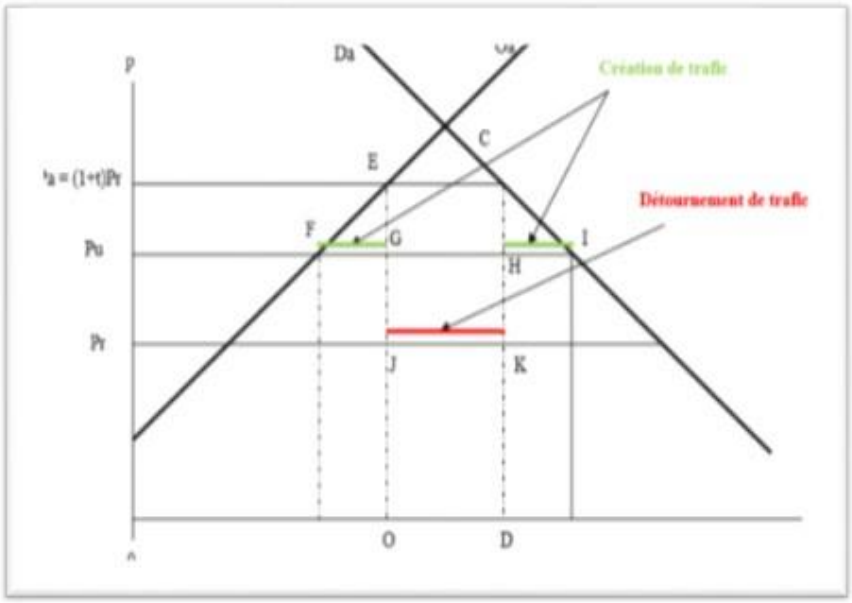
The main theories of the impact of free trade are those of Viner's (1950) creation and diversion of trade. These were set out by Viner (1950), but there are also other theories, such as those of Krugman (1991).

Theories of trade creation and trade diversion effects

In 1950, Viner examined the welfare effects of a free trade association on its member countries. He noted that this type of association was not always desirable insofar as it was a form of "combination" of free trade and protectionism. This type of association is seen as an example of a second-tier policy since it is not necessarily optimal to eliminate one distortion while safeguarding the others. This distinguishes between two effects resulting from a free trade association: the creation and diversion of trade.

The traffic or trade creation effect reflects that consumers in each member country increase their demand for products from other member countries. This leads to efficiency gains, provided that producers in these countries are more efficient than suppliers worldwide. On the other hand, the diversion effect corresponds to the fact that consumers now consider importing from other member countries because of the difference in the costs created by free trade. In this case, the diversion effect is simply the change in the supplier that would result from modifying the price structure following the establishment of the free trade zone. The following figure illustrates the effects of trade creation and diversion using a simplified model with two countries: the importing country (A), the exporting country and the rest of the world, and a single traded good.

Figure 5: Illustration of traffic creation and diversion effects in Viner's analytical framework



Source : Viner (1950)

Before the free trade agreement, the autarky price Pa of the importing country (A) is Pa = (1 + t)Pr (where Pr is the price of the rest of the world and t is the import tax). It then imports EC from the rest of the

world. After the free trade agreement, A's internal price becomes Pu (without taxes); thus, he imports the quantity FI from his partner. Consequently, FG and HI represent the creation of trade (owing to a fall in relative transaction costs). Trade diversion is represented by the JK segment. In the absence of tariffs with the rest of the world, Country A would be able to import JK (this diversion is a loss because JK would be cheaper).

This simplified model shows that liberalisation creates more trade and more elastic supply and demand curves. Moreover, according to this theory, the effect of traffic creation is ambiguous in terms of variations in welfare. To judge the desirability of a preferential free-trade agreement, we need to determine which effect is predominant.

Krugman's theory of the new geographical economy (1991)

The expression "New Economy of Geography' is used in the literature by most researchers who refer to Krugman. It is thanks to Krugman that the New Economy of Geography has been taken into account in economics. The overall aim is to explain regional economic disparities based on spatial criteria and spatial agglomeration effects. According to this theory, economic interactions are affected by the formation of agglomerations whose activities and traditional economic mechanisms obey the logic of spatial organisation. In fact, when agglomerations are formed, particular attention is paid on the one hand to geographical parameters such as transport costs, the degree of mobility of individuals, the transportability of raw materials or the level of diffusion of agglomeration economies; and on the other hand, to economic parameters such as preferences for variety or complementary relationships between activities. Therefore, industrial production tends to be concentrated in places where large markets exist, but the market will also be large in places where production is concentrated.

This theory is based on three hypotheses: the first emphasises increasing returns and economies of scale; the second summarises the factors of production, that is, labour and capital, which are considered mobile in a conurbation; and the last concerns all transport costs and their inclusion in the models.

Krugman (1991), therefore, states that all other things being equal, it would be desirable to live and produce close to a concentration of industrial production because of the lower price of goods produced there. Free trade zones should encourage an increase in the size of the market and a reduction in costs, which would encourage the countries in the zone not only to live together but, above all, to exchange more products.

The theory of institutional economics

According to some authors, such as Groot et al. (2004), international trade transaction costs depend on institutions' quality. The better the quality of the institutions, the lower the transaction costs (limited corruption, etc.) and the better the international trade. Economic agents adopt specific behaviours to carry out their activities. The agent notified of the situation knows that in addition to the official costs, he will have to pay additional costs to speed up the completion of his commercial transactions. In this respect, De Jong and Bogmans (2011) argued that bribes paid at customs increase the volume of imports. As a result, the creation of a free trade area that would help reduce tariff and non-tariff barriers would increase trade between the countries in the area.

Empirical evaluation of the effects of creating a free trade area on trade

Countries generally establish free trade agreements with the aim of increasing trade between themselves and improving the well-being of their inhabitants. However, the results of some studies do not support this. Tinbergen (1962) was one of the first researchers to publish an econometric study based on an estimation of the gravity equation for international trade flows. He used dummy variables to establish the effects of free trade agreements (FTAs) and showed that the effects of FTAs on trade flows are economically insignificant.

Gould (1988) analyses how the North American Free Trade Agreement (NAFTA) affected trade between Canada, Mexico, and the United States from 1980 to 1996. He includes other factors that are likely to have an impact on bilateral trade, such as changes in income, exchange rate, prices, and trade with other countries. The author uses quarterly data to estimate a gravity equation with imports as the dependent variable. He then estimates a second equation with exports as the dependent variable and includes real GDP, bilateral exchange rates, and GDP deflators as independent variables, and finally, a NAFTA Dummy variable that takes the value of 1 when the agreement takes place. He finds that trade between NAFTA countries has somewhat increased, so even if there were trade diversion, it would be negligible. The author argues that "intra-agreement" trade has grown faster than trade with the rest of the world and that since these countries have very different comparative advantages, it would be unlikely that there would be any trade diversion. He confirms that NAFTA is a profitable agreement.

Rose (2000) analyses the effects of the common market on trade using panel data from 186 countries for 1970, 1975, 1980, 1985, and 1990. He uses Ordinary Least Squares (OLS) and exports as variables that

capture international trade. He concluded that the effects of GDP per capita, the distance between countries, language, common nation, common colony, and common currency on exports were significant and that the free trade agreement also favoured an increase in exports.

Tianshu (2004) focuses on the desirability of the free trade agreement between China and Australia by studying its impact on trade between member countries using a gravity equation. To do this, he uses the GDPs of each country, the respective populations, distance, the exchange rates of the pairs of countries, binary variables (to control whether or not these countries have a common border, to determine whether or not the country is an island, and to highlight whether or not they have a common language, etc.), and a series of other dichotomous variables indicating whether or not the country has signed a free trade agreement with another partner country. We attempt to determine the impact of these variables on bilateral imports. His data were collected for the period 1980-2000 and includes 26 countries. He found that GDP and population are positively and significantly correlated to bilateral imports. Distance, as expected, is negative and significant, as is the exchange rate. The language coefficient has the appropriate sign and is substantial. Finally, the China-Australia agreement binary variable indicates that bilateral imports increased due to the agreement, demonstrating that both countries benefit from the agreement.

Other studies have also focused on Africa. Musila (2005) analysed trade agreements in African countries (COMESA, ECCAS, and ECOWAS). The author used data from 20 African countries between 1991 and 1998. Using Ordinary Least Squares estimation and taking total trade as the dependent variable, he found no significant impact on trade diversion and trade creation.

Dkhissi (2014) analysed the impact of trade agreements on export propensity and export intensity in Morocco. The Heckman model was used in two steps: First, she estimated the determinants of the probability that Moroccan firms export using a probit equation. The results show that trade agreements are a determining factor in the probability of exporting new companies created after 2000, the year in which most of the agreements entered into force. Second, using Tobit's analysis, the author shows that the business environment of Moroccan companies influences their export performance.

As a weakness, we note that theoretical studies on the effects of the implementation of free trade are inconclusive, as we cannot determine the ex-ante impact of a free trade agreement. Therefore, it is imperative to observe empirically the relative importance of creation and diversion in each association. However, with regard to modelling, one of the most "widespread" criticisms of the use of the gravity equation is that it is an empirically effective method that lacks theoretical foundations.

IV. Methodology And Data

This study is founded on the principle that international trade obeys the laws of variation. Thus, the analysis of the effects of regional integration on the trade of ECCAS member countries consists of comparing the counterfactual perspectives of international flows that reflect entry into AfCFTA with the real values of trade.

Description of the model

We used an augmented gravity model with trade barriers (customs duties) to estimate the law of variation in trade (imports and exports).

Justification for the choice of model

The empirical literature has implemented several techniques and methods for estimating trade. Among these methods for estimating foreign trade are those that use descriptive statistics (Bassilekin *et al*., 2018), which are limited to characterising or describing the phenomena under study; the computable general equilibrium model, which is a multi-sector model inspired by the work of Johansen (1960), which aims to provide a representation of all the transactions in an economy; econometric gravity models, which aim to isolate the effects of different variables motivated by economic theory on bilateral flows (Rose, 2007). Gravity models measure the contribution of different variables to the trade value between several pairs of countries. The gravity model was used in this study. Over the last two decades, it has become a standard tool for modelling international trade.

The fundamentals of the gravity model

Gravity models are inspired by Newton's law of gravity, according to which the attraction between two bodies is a function of their respective masses and the distance between them. Its application to international trade was first developed by Tinbergen (1962), Pöyhönen (1963), Linnemann (1966), and Bergstrand (1985) to explain trade between two countries in terms of their economic size and the distance between them.

In its simplest form, the volume of trade (exports and imports) between countries i and j, denoted by X(i,j), can be explained by the following equation:

$$X_{i,j} = \frac{Y_i^{\alpha} Y_j^{\beta}}{d_{i,j}^{\theta}} \Longleftrightarrow \ln X_{i,j} = \alpha \ln(Y_i) + \beta \ln(Y_j) - \theta \ln(d_{i,j})$$

Where: Yi and Yj represent the economic weights of countries i and j, respectively, and di,j is the distance separating the two countries. The parameters α, β, and θ represent the elasticities (when the equation is logarithmic).

The main contribution to the research on the theoretical foundations of the gravity model comes from Anderson and van Wincoop (2003). These authors provided the first theoretical justification for the model by incorporating trade resistance factors. The theoretical formulation of Anderson and van Wincoop's (2003) model is as follows:

$$X_{ij} = \frac{Y_i Y_j}{Y} \left(\frac{t_{ij}}{p_i \pi_j} \right)^{1-\sigma}$$ With $i \neq j$

Where X_{ij} is the volume of trade between countries i and j; Yi and Yj are the respective GDPs of countries i and j; t_{ij} is the cost of importing a good from country j to country i; the parameter σ represents the elasticity of substitution between goods (with $\sigma > 1$); pi and πj represent market access for importers in country i (or internal multilateral resistance) and exporters in country j (or external multilateral resistance). The term tij is approximated by the distance between the two countries and socio-cultural variables, such as the common border, common official language, common colony, and common coloniser.

Depending on the objectives of the authors and the theoretical sensitivities, certain variables are often introduced into the model. These may be quantitative (arable land, GDP per capita, etc.) and/or qualitative (sociological and historical links, geographical position, integration variables, etc.).

Specification of the model

The specification of the gravity model for estimating the law of variation of trade in this study is mainly based on the works of Linnemann (1966), Rose (2000), and Fontagne et al. (2001). However, we add dummy variables to the basic model, highlighting the historical, geographical, and economic links between countries. In addition, the main objective of this study is to assess the potential effects of AfCFTA on intra-regional ECCAS trade, which is why we introduce variables related to the transaction costs between countries (distance, tariff, and non-tariff barriers).

The panel data gravity model used to simulate trade between ECCAS countries is specified as follows:

$\ln X_{ijt} = \beta_0 + \beta_1 \ln PIB_{it} + \beta_2 \ln PIB_{jt} + \beta_3 \ln POP_{it} + \beta_4 \ln POP_{jt} + \beta_5 \ln Tarif_{it} + \beta_6 \ln Tarif_{jt} + \beta_7 \ln Infla_{it} + \beta_8 \ln Infla_{jt} + \beta_9 \ln GOV_{it} + \beta_{10} \ln GOV_{jt} + \beta 11 LCij + \beta 12 CCij + \beta 13 FCij + \beta 14 MCij + \beta 15 ECCASj + \beta 16 CEDEAO + \beta 17 BRICj + \beta 18 UEj + \beta 19 SADCj + \beta 20 UEj + \beta 21 UMAj + \varepsilon ijt$

Xijt is a quantitative variable that captures the bilateral imports (or exports) of an ECCAS country *i* from (to) a country *j* in the database. These are exports and imports obtained from the United Nations Comtrade database using the Harmonized System (HS) 2004 classification.

lnGDPi(j)t is a quantitative variable that measures the effect of the gross domestic products of countries i and j. The data were extracted from the CEPII database.

lnDij is a quantitative variable that captures the effect of distance between countries i and j. It is measured by the logarithm of the orthodromic distance between the capitals of countries i and j. Intuitively, it can be seen as an estimate of transport costs. The higher the distance, the higher the transport costs, and the less countries trade with each other. Distance generally includes the transaction and information costs. Data were obtained from the CEPII database.

lnGOVi(j)t is a quantitative variable that captures the effect of the business environment on countries i and j. This is measured using the logarithm of the economic freedom indicator. The data were obtained from the Heritage Foundation database. It should be noted that, generally, the greater the degree of economic freedom in a country, the greater the country's per capita income. Consequently, without inadequate control for collinearity between the index of economic freedom and per capita income, anyone can predict that the positive relationship between the index and international trade is due to the positive relationship between per capita income and international trade.

lnPOPi(j)t is a quantitative variable used to evaluate the effect of the populations of countries i and j. It is measured by the logarithm of the total population, which is the standard variable in the gravity model (Linnemann, 1966). The larger the population of a country, the greater the demand. The data were extracted from the CEPII database.

LCij designates a binary sociocultural variable for the effect of the official language. It takes the value of 1 if countries i and j share the same official language and 0 otherwise. Sharing a common language reduces trade barriers. This ease of communication is reflected in trade flows (Rose, 2007);

CCij designates a binary sociocultural variable for the effect of the common colony of countries *i* and *j*. It takes the value of 1 if countries i and j share the same colony and 0 otherwise. Countries with a common history tend to trade more (Rose, 2007);

MCij: Designates a binary socio-cultural variable that makes it possible to assess the effect of the common currency of countries *i* and *j*. It takes the value of 1 if countries i and j share the same currency (in this case, the Central African Financial Cooperation franc), and 0 otherwise. Using different currencies creates a barrier to trade since transactions require currency conversion and, in some cases, risk hedging. Rose (2007) also showed that using a common currency by two countries improves bilateral trade. This is a standard variable in the gravity model and, therefore, comes from the CEPII database.

FCij designates a geographical binary variable that makes it possible to assess the existence of a common border between countries i and j. It takes a value of 1 if countries i and j have the same border. The data were obtained from the CEPII database. Trade is also facilitated when partners share common borders, as the existence of a common border often creates intense border traffic (Rose, 2007);

lnInflai(j)t refers to the inflation rate in country i or j. This is used to capture the price effect on trade. The data were obtained from the World Bank's World Development Indicator (WDI) database.

lnTarifi(j)t represents the logarithm of the rate of customs duties applied; the weighted average of the rates of customs duties applied is the average of the customs rates applied by the nations weighted by the shares of imports of products corresponding to each partner country. The data are classified using the Harmonized System of Trade at the sixth or eighth digit level. Tariff line data were aligned to the Standard International Trade Classification (SITC) Revision 3 codes to define commodity groups and import weights. These data were obtained from the World Bank's World Integrated Trade Solution (WITS) database.

ECCASj is a binary integration variable for ECCAS membership. It takes the value of 1 if country j belongs to the ECCAS and 0 otherwise.

ECOWASj is a binary integration variable for membership in the ECOWAS. It takes the value of 1 if country j belongs to ECOWAS, and 0 otherwise.

UMAj is a binary integration variable for membership in the UMA. It takes the value 1 if country j belongs to the AMU group of countries, and 0 otherwise.

EUj is a binary integration variable for membership in the European Union. It takes a value of 1 if country j belongs to the EU and 0 otherwise.

ZLECAfi(j)t is a quantitative variable calculated to represent the customs tariffs that would be applied between the ECCAS Member States and the other signatory States of the AfCFTA agreements. More precisely, it reflects the cancellation of customs duties on goods between the signatory states of agreements. This variable is zero if country i and country j have signed the AfCFTA and is equal to the logarithm of the average customs duty rate.

Model estimation methods

Various methods for estimating gravity models have been proposed in the literature, including pseudo-maximum likelihood methods, which are widely used to circumvent the problem of zero data and data heteroscedasticity (Santos & Tenreyro (2006)). In addition, these methods are easily adapted to standard datasets such as cross-sectional and panel data. However, most of their applications require data aggregation because they are unsuitable for stacked and disaggregated data, as in this study. OLS estimation avoids this limitation. It should also be added that the OLS method also produces robust coefficients, mainly when the dependent variable contains a low proportion of zeros (Fontagné *et al*., 2002). In addition, the OLS estimation seems to provide a good estimate of the market potential. Therefore, we favor the latter method. Nevertheless, it should be noted that the absence of trade flows between many countries can sometimes pose a problem for OLS estimations. To compensate for this, we use weak constants instead of zero flows, which would represent a minimum level of trade (Rose, 2000).

To estimate the trade potential of economies, following Fontagné *et al*. (2001), we use a method that consists of estimating a bilateral trade equation based on the gravity model for a sample of reference countries, and then using this equation in the simulation, for countries in the sample or for countries outside the sample that trade with countries in the sample. The potential can then be defined as the difference (or ratio) between the simulated trade (based on the gravity equation) and the observed trade.

Presentation of the study sample

Defining the sample of countries and the study period is crucial stage in the study. Since we are interested in analysing the effects of the implementation of the AfCFTA on trade in the ECCAS zone, we selected a panel of 86 countries, including 53 African countries (including those in the ECCAS zone), 27 European Union member countries, four BRIC member countries, the United States, and the United Kingdom,

over the period from 2000 to 2019. This choice was mainly guided by the study's objectives and the data availability.

The presence of unreported and zero trade flows (imports and exports) was not a major problem encountered in the trade statistics of countries in the data sources. This is partly due to internal geopolitical difficulties in various countries and the difficulty in collecting unofficial trade statistics. To remedy this, several solutions have been considered in the literature: (i) deletion of the observation lines corresponding to these unreported flows, which could introduce a selection bias (Helpman *et al*., 2006); (ii) replacement of arbitrarily unreported observations with a very small constant, which modifies the distribution of the series studied and biases the estimates.

To reduce the percentage of missing data, we limited the study period to 2000-2019 (the availability of the variables of interest conditioned this choice). Where possible, we supplemented the data for the variables of interest with data from the UNCTAD's international trade database.

V. Estimation Of Economic Models And Discussion Of Results

Analysis of correlations between variables

Analysis of the export correlation matrix reveals that exports are positively correlated with imports, the distance between countries, the population of the countries of origin and the partner countries, the GDPs of the countries of origin and the partner countries, the fact that the countries share a common border, the fact that the partners are ECCAS countries, and the fact that the partners are European Union countries. We also note that exports are negatively correlated with customs duties of the countries of origin, customs duties in the partner countries, inflation rates in the countries of origin and the partner countries and that the partner countries are members of ECOWAS and SADC.

According to the import correlation matrix, imports are positively correlated with exports, the population size of the importing and partner countries, the GDPs of the importing and partner countries, the degree of economic freedom of the partner countries, the fact that the countries have common borders, and the fact that the partner countries are part of the ECCAS and the European Union (EU). On the other hand, imports are negatively correlated with customs duties in the importing and partner countries, the level of inflation in the partner countries, the degree of economic freedom in the importing countries, and the fact that the partners belong to the ECOWAS, SADC, and UMA.

Analysis of the gravity model estimation results

The approach consisted of estimating the equations of exports and imports with the customs duties in force and then re-estimating these equations by cancelling the customs duties of African countries.

Estimation with customs duties

The model estimated in this way is globally acceptable, and the Fisher statistic is significant at the 1% level. The fit was just as good for panel modelling, with R2 values greater than 0.4.

Two model variants were estimated, with imports and exports as the dependent variables. The estimation of the models identifies four blocks of variables: the block of traditional variables (lnGDP, lnPOP, lnD), the block of variables characteristic of the countries' level of activity (lnInfla, lnGov, lnTarif), the block of control dummy variables (CC, LC, FC), and the block of integration dummy variables (EU, ECOWAS, ECCAS).

Regarding the block of traditional variables, the results show the signs expected by the theory. Thus, regardless of the dependent variable considered, the GDP of country i contributes positively and significantly to imports, increases the means of production with a multiplier effect on production, and, therefore, the volume of exports. A similar analysis can be performed for country j. When country j's population increases, imports decrease, which can be explained by the fact that when the population in country j is larger, domestic demand is higher; therefore, exports from this country to the reporter countries are lower. Furthermore, we find that the country population has no significant effect on exports. Finally, distance, which is supposed to act as a drag on bilateral trade, tends to favour exports, which can be explained by ECCAS countries exporting to countries that demand their products regardless of the distance between them. Although these results are mixed, some are consistent with previous studies' results (Avom & Mignamissi, 2014).

Regarding country-specific variables, if we look at customs duties, we see that high customs duties in country i reduce imports. This is perfectly understandable insofar as customs duties are import taxes paid by the importer, and this tax therefore increases his costs; the higher the costs, the less likely he is to import. We also observe that country j's customs duties positively influence exports. This can be explained by the fact that ECCAS countries export their products according to demand from their partners without perhaps worrying about the customs duties they might pay.

With regard to inflation rates, there are negative and significant signs of the inflation rate in country i on exports and negative and significant signs of the inflation rate in country j on imports. A fall in prices in country *i* leads to an increase in exports. This is understandable because when prices fall, demand increases, including foreign demand. Moreover, galloping inflation in country i discourages economic operators in partner countries who fear importing this negative shock into their economies. In partner countries, imported goods are replaced with domestic goods. Similarly, reducing the general price level in the partner countries will increase imports, as goods will be cheaper in partner countries, thereby increasing demand in ECCAS countries. An analysis of inflation levels shows that an increase in inflation in country *i* worsens bilateral trade, whereas for country *j* the opposite effect occurs. Additionally, a high degree of economic freedom in country *i* reduces imports. This can be explained by the fact that economic freedom encourages the creation of industries within countries; therefore, these industries are likely to meet domestic demand.

The control dummy variables also give expected and significant coefficients: having a common language, a common border, and a common coloniser increases imports; the same applies to exports. This is perfectly normal as the two countries have the same border, and the exact language facilitates trade between them.

Regarding sub-regional integration, we note that trade between ECCAS countries leads to increased imports, but this increase is higher when imports come from the ECOWAS. On the other hand, having a partner in the European Union reduces imports. Furthermore, when the trading partner is also an ECCAS country, exports increase more than partners from other zones. Nevertheless, trade with ECOWAS, EU, AMU, and SADC also increases exports. Indeed, for any ECCAS member country, the fact that its trading partner also belongs to the ECCAS increases the value of its exports by 4.83% and imports by 0.7%. Imports were higher when countries imported ECOWAS. These values increase by 1.5%, all other things being equal.

Estimation with cancellation of customs duties

The estimated models are generally acceptable, with the Fisher statistic being significant at 1%. The fit was just as good for panel modelling, with R2 values greater than 0.4.

A comparison of the two models, with customs duties" and "without customs duties", shows that with the removal of customs duties, exports of the ECCAS zone fall when its partners are BRIC and EU countries. However, they increase when trading partners are in the ECCAS zone, the ECOWAS, or the AMU. More explicitly, we can see that removing customs duties will encourage increased exports to ECOWAS and AMU countries. Nevertheless, it is unclear whether trade is created or diverted overall. However, in terms of interregional relations, trade increases when trading partners are from ECCAS, ECOWAS, and UMA.

Concerning imports, we note that with the cancellation of customs duties, intra-sub-regional imports from ECCAS countries increase, as do ECCAS imports from ECOWAS countries. This suggests that with the removal of customs duties, there will be an increase in trade between ECOWAS and ECCAS. These results show that customs duties can act as a brake on trade between ECCAS and ECOWAS. On the other hand, the results suggest a decline in imports into ECCAS from SADC and UMA. Nevertheless, we note that the magnitude of the variations between the 'tariff model' and the 'duty-free model' is not large. These results suggest that the entry into force of the FTAA will certainly not have a significant impact on ECCAS's trade integration with the other RECs unless additional measures are implemented to accompany the policy of removing tariff barriers.

Table 3 : Gravity model estimates for exports and imports (with tariffs and without tariffs)

	Export model		**Import model**	
Explanatory variables	Model (1) With customs duties	Model (2) Removal of tariff barriers (ZLECAF variable)	Model (1) with prices	Model (2) Removal of tariff barriers (ZLECAF variable)
LnPIBi	0.821*** (0.0683)	0.877*** (0.0619)	0.709*** (0.0517)	0.707*** (0.0418)
LnPIBj	0.975*** (0.0637)	0.958*** (0.0639)	1.438*** (0.0500)	1.443*** (0.0474)
lnTarif_i	-1.042*** (0.386)		-0.754** (0.301)	
lnTarif_j	0.338*** (0.117)		0.473*** (0.0903)	
lnInfla _i	-0.125*** (0.0443)	-0.127*** (0.0442)	-0.0231 (0.0392)	
lnInfla _j	-0.103* (0.0561)	-0.121** (0.0562)	-0.0504 (0.0443)	-0.0826** (0.0413)
lnGov _i	-2.167*** (0.590)	-2.533*** (0.547)	-4.016*** (0.471)	-3.912*** (0.409)
lnGov_j	-2.353***	-2.239***	0.484	0.700*

	(0.534)	(0.518)	(0.432)	(0.398)
lnPOP_i	0.0344 (0.0518)	0.0419 (0.0510)	0.124*** (0.0412)	0.141*** (0.0387)
lnPOP_j	0.0784 (0.0713)	0.0908 (0.0715)	-0.330*** (0.0554)	-0.332*** (0.0525)
lnD_ij	0.862*** (0.312)	1.020*** (0.312)	0.255 (0.268)	0.409 (0.253)
FC_ij	0.386 (0.341)	0.431 (0.340)	2.724*** (0.263)	2.464*** (0.239)
CC_ij	-0.0521 (0.250)	-0.00167 (0.254)	-0.917*** (0.203)	-0.694*** (0.198)
LC_ij	0.490*** (0.150)	0.476*** (0.149)	0.182 (0.122)	0.172 (0.115)
MC_j	0.0269 (0.327)	-0.155 (0.324)	2.420*** (0.273)	2,112*** (0.260)
BRIC_j	1.084*** (0.303)	1,054*** (0.395)	-0.551** (0.245)	-0.500* (0.296)
UE_j	2,029*** (0.305)	2,005*** (0.414)	-0.303 (0.234)	0.580** (0.294)
ECCAS_j	4,816*** (0.487)	5,056*** (0.482)	0.143 (0.385)	0.788** (0.355)
ECOWAS_j	3,062*** (0.265)	3,074*** (0.264)	1,369*** (0.228)	1,399*** (0.217)
SADC_j	1,706*** (0.235)	1,547*** (0.236)	1,035*** (0.189)	0.865*** (0.174)
UMA_j	1.884*** (0.351)	1,897*** (0.351)	2,554*** (0.292)	2,276*** (0.278)
ZLECAF_i		-0.606*** (0.142)		-0.975*** (0.100)
ZLECAF_j		0.816*** (0.156)		1.266*** (0.114)
Constant	-13.45*** (4.103)	-16.54*** (3,971)	-15.42*** (3,398)	-19.04*** (3.123)
Comments	2,374	2,374	2,946	3,207
R- squared	0.442	0.444	0.534	0.545
Adj R- squared	0.401	0.413	0.516	0.507

Source: Authors' estimates

Note: ***, **, and ** represent significance at the 1%, 5%, and 10% thresholds, respectively.
(the standard deviations of the estimators are in parentheses).

Calculating trade potential with the AfCFTA

The following table shows the trade potential of the ECCAS countries. This indicates that Cameroon's trade potential is higher than that of other ECCAS countries. This can be explained by the fact that Cameroon has the most diversified export structure in the zone. The Central African Republic had the lowest trade potential. Furthermore, we note that the cancellation of customs duties increases this potential for all ECCAS countries taken individually, but also for the ECCAS as a whole. Indeed, removing customs duties through implementing the AfCFTA would increase the ECCAS's trade potential by approximately 1.9%.

Therefore, it can be said that AfCFTA, through the cancellation of customs duties, will affect trade for ECCAS countries, as the latter will see their trade potential increase, which could promote trade integration between ECCAS countries. These results are consistent with those of Gould (1988), Tianshu (2004), and Rose (2000). However, this increase was not significant. Moreover, the gains could be even smaller if we consider the losses incurred by the ECCAS countries due to the cancellation of customs duties.

Table 4 : Results on the average export potential of ECCAS countries

Country	Potential with tariff barriers	Potential simulation with the removal of tariff barriers (ZLECAF)	Effect of the removal tariff barriers (in %)
Cameroon	9522.081	9568.773	0.49
Congo	5488.758	5676.012	3.41
Gabon	3554.971	3706.302	4.26
Equatorial Guinea	1518.134	1562.549	2.93
Central Africa Republic	996.9725	1031.176	3.43

Chad	4398.336	4425.634	0.62
Together	25479.2525	25970.446	1.93

Source: Authors' estimates

VI. Conclusions And Recommendations

The low level of trade integration in the ECCAS zone calls for consideration of ways to increase trade between the countries in the zone. The AfCFTA, which came into force on January 1, 2021, could stimulate trade between African countries, as well as intra-regional trade. However, given that integration can create distortions, the potential effects of AfCFTA must first be analysed before it can be considered as a means of trade integration in the ECCAS zone. Therefore, this study set out to analyse the potential effects of AfCFTA on trade integration in the ECCAS zone. To this end, the study's theoretical framework is first presented, followed by an empirical analysis of the potential effects of AfCFTA in the ECCAS zone.

Drawing on this review and the Rose study (2007), the gravity model was adopted to analyse the potential effects of AfCFTA on trade integration in the ECCAS zone. The data used in this study come from several sources, and the data on trade between ECCAS countries and the rest of the world, which were used in this study, are taken from the latest update of the Base pour analyse du Commerce International (BACI, 2012-2019) from the CEPII. Information on tariff barriers (customs duties) comes from the ECCAS's Common External Tariff (CET 2012 and CET 2017), which is available on the World Bank's World Integrated Trade Solution (WITS). Individual economic data (e.g., income, population) were obtained from the World Bank database. Finally, bilateral information (distance and other) is provided by CEPII's gravity database. The study was carried out on a panel of 86 countries, and the study period was from 2000 to 2019.

The international trade indicators used were imports and exports. Two methods of analysis were used: descriptive and explanatory. Concerning the descriptive approach, it can be seen that, on average, Congo is the ECCAS country whose share of imports in GDP is the highest due to its dependence on external food products, and the share of exports in GDP has been the highest since 2015 owing to its rich subsoil (oil). Furthermore, a comparison of total intra-regional trade between the different RECs in the zone shows that total intra-ECCAS trade is the lowest, and its main trading partners are the European Union, China, and ECOWAS. Furthermore, regarding the trade structure between ECCAS countries, oil is the zone's main export product, followed by non-friable raw materials (timber, cotton, etc.). In contrast, the main products imported into the zone are machinery, transport equipment, and food products. In addition, it was noted that implementing AfCFTA offered trade opportunities between ECCAS countries and countries in other zones, given that demand for certain products could be met by the supply of others.

Regarding the explanatory approach, the gravity model appeared to be the most appropriate for the study. Drawing inspiration from Avom and Migniamissi (2013), we estimated this model using the OLS method. The variables selected for the study are the GDPs of the reporter and receiver countries, their customs duties, their inflation rates, their degree of economic freedom, their population, the dummy variables that capture the use of a common language, a common border, and a common coloniser, and the dummy variables that capture whether the partners belong to ECCAS, the EU, UMA, BRIC, ECOWAS, and SADC. The model shows that traditional variables, such as GDP and population, influence both exports and imports from the ECCAS. The inflation rate in ECCAS countries reduces their imports; the higher the customs duties, the lower are the imports. In addition, when the trading partner is from the ECCAS, the potential for increasing exports is greater than when the partner is outside the ECCAS. Similarly, imports increase when the trading partner is from ECOWAS. With the implementation of AfCFTA (elimination of customs duties), there would be an increase in the flow of exports when the trading partners are from ECCAS, ECOWAS, and UMA. Regarding imports, trade increases when partners are in the ECCAS or ECOWAS economic community.

Calculating the trade potential of the ECCAS countries before and after the removal of customs duties shows that it increases with the removal of customs duties. This implies that implementing AfCFTA due to the cancellation of customs duties could encourage trade creation. This led us to validate our two hypotheses. These results align with those reported by several authors, such as Rose (2000) and Musila (2005). Nevertheless, this increase in the potential is quite small, contrary to what might be expected. Moreover, with the implementation of the AfCFTA, particularly the annulation of customs duties, the budget revenues of the ECCAS countries are being reduced, and it is unclear whether the gains generated by the AfCFTA would fully offset this reduction.

At the end of this study, we make the following recommendations:

- ✓ There is a need for ECCAS countries to facilitate the movement of people and goods within the ECCAS area by continuing to build integration projects and reducing barriers to international corridors following the Steering Committee of the Economic and Financial Reform Program (FRP-ECCAS) recommendations.

- ✓ECCAS countries must reorient their trade geographically towards certain African countries where trade remains weak or sub-optimal despite opportunities. For example, ECCAS countries can import rice from West Africa or vehicles from South Africa. However, ECCAS countries have opportunities to export products such as timber, crude oil, and liquefied petroleum gas to certain African countries. To this end, it will be essential to strengthen economic cooperation, particularly with ECOWAS, AMU, and South Africa.
- ✓The African Union should speed up the mechanisms for introducing a common currency to stimulate trade between the ECCAS countries and regional economic communities. This reform will reduce the need for countries to have access to international currency (euros, dollars, yuan, yen, etc.), which encourages them to prefer exporting their products outside Africa to the detriment of intra-African trade.

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