

# Facilitating Regional Trade: Lessons from WAEMU and EAC on How to Increase Trade in CEMAC

By

Nguenkwe Ronie Bertrand

Research Paper 524

AFRICAN ECONOMIC RESEARCH CONSORTIUM  
CONSORTIUM POUR LA RECHERCHE ÉCONOMIQUE EN AFRIQUE

# Facilitating Regional Trade: Lessons from WAEMU and EAC on how to Increase Trade in CEMAC

By

Nguenkwe Ronie Bertrand  
*Université de Yaoundé II-Soa*

AERC Research Paper 524  
African Economic Research Consortium  
April, 2023

THIS RESEARCH STUDY was supported by a grant from the African Economic Research Consortium. The findings, opinions and recommendations are those of the author, however, and do not necessarily reflect the views of the Consortium, its individual members or the AERC Secretariat.

Published by: The African Economic Research Consortium  
P.O. Box 62882 - City Square  
Nairobi 00200, Kenya

ISBN                978-9966-61-227-4

© 2023, African Economic Research Consortium.

# Contents

List of tables

List of figures

Abstract

1. Introduction .....	1
2. Literature review .....	5
3. Stylized facts on trade and trade facilitation in three communities .....	9
4. Methodology and data .....	22
5. Conclusion and policy implication .....	33
Reference .....	36
Annexes .....	42

## List of tables

Table 1: Export costs per community (in US\$ per container). . . . .	24
Table 2: Time taken to export per community (in days) . . . . .	25
Table 3: The number of documents necessary for exports per community . . .	26
Table 4: Determinants of intra-WAEMU trade (aggregate exports) . . . . .	28
Table 5: Determinants of intra-EAC trade (aggregate exports) . . . . .	29
Table 6: Determinants of intra-CEMAC trade ( aggregate exports). . . . .	30
Table A1: Descriptive statistics (WAEMU) . . . . .	42
Table A2: Descriptive Statistics (CEMAC) . . . . .	42
Table A3: Descriptive statistics (EAC) . . . . .	42

# List of figures

Figure 1: Trends in exports from CEMAC, WAEMU and EAC. . . . .	11
Figure 2: Trends in imports from CEMAC, WAEMU and EAC. . . . .	12
Figure 3: Main trading partners for the export of agricultural products . . . . .	12
Figure 4: Main trading partners for the export of manufactured goods . . . . .	13
Figure 5: Main trading partners for the export of fuel products . . . . .	13
Figure 6: Main trading partners for the importation of manufactured goods . . . .	14
Figure 7: Main trading partners for the importation of fuel products . . . . .	15
Figure 8: Main trading partners for the importation of agricultural products . . . .	15
Figure 9: Trends in intra-zone exports within CEMAC, WAEMU and EAC. . . . .	16
Figure 10: Structure of major goods exported intra-community . . . . .	17

Figure 11: Structure of major goods imported intra community . . . . .	17
Figure 12: Structure of exports towards the world per community . . . . .	18
Figure 13: Structures of importation from the world per community . . . . .	19
Figure 14: Number of Internet users per 100 of the population (in 2019). . . . .	19
Figure 15: Quality of port infrastructure per community (in 2015) . . . . .	20
Figure 16: Logistic performance index per community in 2018). . . . .	21

# Abstract

This study explores the ways of facilitation and enhancing intra-CEMAC (Central African Economic and Monetary Community) trade, which has remained structurally weak over more than 20 years, by focusing on the East African Community and the West African Economic and Monetary Union (WAEMU). The study uses a descriptive analysis of trade and the indicators of facilitation of trade in those three communities. An econometric analysis of factors underlying the level of trade in those three communities is conducted using an augmented gravity model. The econometric results demonstrate that the number of documents and the number of days required to export has a negative and significant impact on trade in EAC and WAEMU, but a positive impact in CEMAC. Infrastructure services, notably the use of the Internet have a negative impact on intra-zone trade in EAC.

**Keywords:** Trade facilitation, augmented gravity model, EAC, WAEMU, CEMAC

**Classification JEL:** C23, H54, O24, R58



# 1. Introduction

Regional integration<sup>1</sup> is a process through which countries that are in close geographical proximity decide to set up an economic area where trade is conducted without any barriers. Regional integration has in recent years been presented as the path to Africa's development and especially to alleviate the increasing poverty levels on the continent (UNDP; 2011; ECA, 2012). However, Africa is characterized by a background of regional organizations that either dissolved, became outdated, or were replaced (Abdoulahi, 2005). The agenda of the African Union had to shift from 2050 to 2063 due to delay in the integration of Regional Economic Communities (RECs), as was directed by the Abuja Treaty of 1991.

The African Union Agenda 2063, in other words 50 years of the development of Africa from 2013 to 2063, is based on a structural transformation of economies. African economies have registered remarkable growth since the end of the 1990s, but structural transformation has been difficult to attain, with de-industrialization observed in 38 African countries between 1995 and 2012 (IAM, 2015).<sup>2</sup> According to the latest reports from the United Nations Economic Commission for Africa,<sup>3</sup> on average only 10% to 12% of intra-continental trade was carried out in countries of the continent, which is one of the weakest in the world.<sup>4</sup> Intra-continental trade in Africa will also experience a substantial decrease in the short-term over the current decade due to the COVID-19 pandemic, which affected countries all over the world with a reduction in growth rate, and some sectors such as trade bearing the brunt. One could also consider the Russian invasion of Ukraine as an additional crisis that is slowing exports towards those countries and works to illustrate the fragility of African countries, which largely depend on imports from those countries. According to Kudzaï and Faizel (2021), the COVID-19 created a trade crisis in Southern Africa and revealed the weaknesses and the gaps in trade regime facilitation. The export structure of several African countries remains dominated by unprocessed primary commodities, and the business environment regarding cross-border trade is not friendly.<sup>5</sup> Indeed, Africa remains the region where importers and exporters meet more significant trade barriers than anywhere else in the world. According to Seck (2017), it takes an average of 31 days to send a container from Africa to the rest of the world and 38 days from the rest of the world towards Africa, more time taken than in any other region of the world. Furthermore, while crossing African borders, a higher number of documents is required, hence the average cost of cross-border movement of merchandise is

much higher in Africa, notably 2.5 times and 3.2 times higher than the cost of doing business in East Asia and the Pacific, respectively. All these costs lead not only to higher costs of doing business in Africa, but also to higher prices of goods, all which tend to discourage imports and exports, which further compromises the international competitiveness of African economies (Arvis et al, 2013).

For Clarke (2005), the reasons why African countries do not export are more to do with trade and customs regulations, and poor administration. Indeed, the reduction in costs for trade transactions by only 1% due to trade facilitation would generate welfare gains of US\$ 40 billion, of which two-thirds would come from developing countries (NEPAD/OECD, 2009).

The World Trade Organization (WTO) defines trade facilitation as “simplifying and harmonising procedures of international trade.” These are “activities, practices and formalities related to the collection, presentation, communication and treatment of information required for international exchange of goods.” The facilitation of exchanges is beneficial to firms, governments and consumers (ECA, 2012)<sup>6</sup>, essential to maintaining international supply chains (Eliason, 2015). Measures of facilitation have been defined in two major ways: the hard dimension related to tangible infrastructure such as ports, roads and telecommunications; and the soft dimension related to institutional aspects such as regulations and the business environment (Portugal-Perez and Wilson, 2010).

The low-levels of intra-continental trade could be explained by factors such as the productive structure of countries, and geographical realities of some countries (say, land-locked), to say nothing of poor infrastructure. For example, it takes 116 days for a container to be cleared from a factory in the Central African Republic - CAR (including all the customs, administrative and port requirements), whereas it only takes five days to arrive from Denmark. The fact that CAR is landlocked is not the only factor that explains the difference in time required (Eliason, 2015). According to Guillaumont et al (2012), intra-African continental trade is faced with numerous challenges related to high transaction costs, notably lack of communication and transport infrastructure, insecurity, and conflicts that lead to diversion of goods from their original route. There is also the institutional environment, notably dealing with bureaucracy, administrative burden, and the difficulties in capturing various cross-border trade flows either because of fraudulent procedures that could develop at the borders or internal conflicts in some countries. Furthermore, there are roadblocks on transit corridors, which slow the development of trade relations. Recent statistics show that internal conflicts in some countries influence their exports within the Central African Economic and Monetary Community (CEMAC). In 2012, exports from CAR towards CEMAC were US\$ 57,375,300 but they dropped by 52% to US\$ 27,343,240 in 2013, the year of the last coup d'état. In 2014, these exports decreased to US\$ 895,600, or a drop of 84%, as compared to 2012. The instability in CAR spread to other CEMAC countries, notably in the east of Cameroon, and to the north of Chad, thus reducing trade within the region.

Informal trade flows between countries also explain the low level of intra-continental trade in Africa. Nkendah (2012, 2013)<sup>7</sup> confirms that there are informal trade flows between Cameroon and her neighbours, and that this represents close to 38 billion FCFA francs and 0.4% of Cameroon's GDP. It also demonstrates that informal and unrecorded trade represents 96% of the official statistics and are mostly agricultural and horticultural goods,<sup>8</sup> and 49% of the total trade. Intra-zone institutional failures are the main explanatory factors of informal trade in CEMAC.

However, economic theory is unanimous that international trade, notably intra-continental trade, is a crucial factor in integration, and in the development of a country (Grossman and Helpman, 1994; Dollar and Kraay, 2002; Baldwin, 2003; Krugman and Obstfeld, 2006). Viner (1950) states that free trade has benefits in a regional context, with the possibility of trade creation or trade divergence within the zone (Meade, 1955), and especially in the case of customs unions (Gbetnkom, 2004).

Central Africa, through the Economic Community of Central African States (ECCAS), and the Central African Economic and Monetary Community (CEMAC), is the weakest link in the integration process in Africa. ECCAS is considered the least integrated Regional Economic Community (REC) in the world (ECA, 2012).<sup>9</sup> Intra-CEMAC trade was 2.3% in 2015, and is slightly higher than that of ECCAS (2%) but remains much lower than that of the West African Economic and Monetary Union - WAEMU (12.4%), which however has several similarities with CEMAC. CEMAC and WAEMU are customs unions and members of the CFA franc zone, and use the same currency, the franc CFA.<sup>10</sup> CEMAC and WAEMU were created in 1994 and replaced the Central African Customs and Economic Union (UDEAC) and the West African Monetary Union (WAMU), respectively. Similar measures were put in place in the two communities to allow for the development of internal trade. These two groupings have over the years pursued the fulfilment of various objectives such as the elimination of tariffs between member countries, customs duties, entry and exit quotas or levies having an equivalent effect and are likely to affect trade.

The East African Community (EAC), comprising five countries, has over several years recorded the highest level of internal trade in Africa; 20.7% in 2012, 18.0% in 2015 and rising to 20.5% in 2018 (UNCTAD, 2020). It is becoming an example to follow in Africa. The Arusha protocol, which created the EAC, allowed for the creation of a common market with vast potential from 2009, with free movement of goods, people, services, and capital (Nyombayire, 2011). Exports within the zone mostly comprise agricultural products and some medium-technology products with an average level of competence (WITS, 2020)<sup>11</sup>.

Two reasons justify the choice of comparing CEMAC with WAEMU and EAC. First, visible progress has been noted over several years in EAC, which involves free movement of people, goods, and capital, and putting in place measures that facilitate trade. Secondly, CEMAC and WAEMU have several things in common. One country each in both WAEMU and CEMAC, Cameroon and the Republic of Côte d'Ivoire, respectively, have signed interim agreements within the framework of Economic Partnership Agreements (EPAs) with the European Union. Indeed, in the doing business ranking

that demonstrates the ease of conducting business in 2017, the most highly ranked country from Africa is Rwanda at 56<sup>th</sup>, Kenya is categorized as the 92<sup>nd</sup> and 6<sup>th</sup> in Africa, followed by Uganda at 115<sup>th</sup>, and Tanzania at 132<sup>nd</sup>. Mali at 141<sup>st</sup> is the most highly ranked WAEMU country, followed by Ivory Coast at 142<sup>nd</sup>. Burkina Faso and Senegal are at 146<sup>th</sup> and 147<sup>th</sup>, respectively, Niger at 150<sup>th</sup>, and Togo and Benin at 154<sup>th</sup> and 155<sup>th</sup>, respectively. The most highly ranked CEMAC countries are Gabon at 164<sup>th</sup> and Cameroon at 166<sup>th</sup>. The CAR at 185<sup>th</sup> is the last country in our sample.<sup>12</sup> The fact that EAC countries are not in a monetary union such as is the case in CEMAC and WAEMU countries will allow us to underscore the key factors in regional integration.

The objective of this study is to examine intra-CEMAC trade in comparison with intra-WAEMU and intra-EAC trade, to draw lessons that allow for boosting intra-CEMAC trade. More specifically, it is a comparative analysis which first of all examines the internal and external trade structures (exports and imports) of the three groupings (CEMAC, EAC, WAEMU), then examines the development of indicators of the facilitation of trade in the three groupings to finally determine the impact of these indicators on the level of intra-regional trade in the three groupings, in an aggregated and disaggregated manner (agricultural, manufactured and fuel products).

The rest of this study is structured as follows: section 2 presents a literature review on the subject, section 3 presents the stylized facts on external and internal trade in these three groupings (CEMAC, WAEMU, and EAC), section 4 deals with the methodology, the discussion of the data used and the results, and section 5 will be the conclusion.

## 2. Literature review

Intra-African continental trade is faced with numerous challenges related to high transaction costs, inadequate communication and transport infrastructure, insecurity, and conflicts which lead to diversion of goods from their original route (Guillaumontet al, 2012). The institutional environment, notably dealing with bureaucracy, administrative burden, and the difficulties in capturing various cross-border trade flows either because of fraudulent procedures that could develop at the borders or also due to internal conflicts in some countries that could prevent the declaration of some trade flows. Roadblocks exist all along transit corridors, slowing the development of trade relations. Recent statistics show that internal conflicts in some countries influence their exports within CEMAC. In 2012, exports from CAR towards CEMAC were US\$ 5,737,530, but considerably dropped and were at US\$ 2,734,324 in 2013, the year of the last coup d'état, or a drop by 52%. In 2014, these exports were US\$ 895,600, or a drop of 84% compared to 2012. The instability in CAR spread to other CEMAC countries, notably in the east of Cameroon, and to the north of Chad, thus reducing trade within the region.

Overall, three groups of factors could allow the facilitation of trade among countries in the same region, or even in different regions. These are the efficiency of ports; the customs environment, regulations and services; and infrastructure.<sup>13</sup>

### a.) Effectiveness of ports, the customs environment, and regulations

The results of studies conducted on this subject suggest that the expected trade intensification due to these factors is quite significant. Wilson et al (2005) measure and estimate the relationship between trade facilitation and the flow of manufactured products in world trade between 2000 and 2001 by considering four categories of indicators: port efficiency, customs environment, regulations environment, and infrastructure services. They conclude that gains from reforms are more significant in South Asia. Djankov et al (2006) demonstrate that each extra day that a product is delayed before being sent reduces trade by at least 1%, and the delays have a more significant impact on the growth of imports and exports of sensitive products such as perishable agricultural goods. Sadikov (2007) uses data derived from the World Bank Doing Business to measure the border barriers related to trade facilitation through the number of signatures the exporter must collect from authorities to export the product. Bilateral exports are then regressed by allowing for different effects between homogenous and differentiated goods. He concludes that the volume of exports of

differentiated goods is more sensitive to variations in signatures for exports than the volume of exports of homogenous goods. Martínez-Zarzoso and Márquez-Ramos (2008) examine the impact of trade facilitation using variables that measure the costs and time related to exports and imports and conclude that exports of homogenous goods and the reference price are less sensitive to the time factor than the export volumes of differentiated goods. Portugal-Perez and Wilson (2010), using a global infrastructure Index, examine the impact of infrastructure on export performance in 101 developing countries over the period 2004-2007. They observe that trade reforms increase export performance and attract investments, in particular infrastructure and reforms targeted towards improving the business environment. An improvement in the quality of Egypt's infrastructure almost to the level of that of Tunisia allowed an increase in exports by almost 10.8%. Avom and Frankem (2014) find that the low quality of the legal framework and corruption were major obstacles to the development of trade in CEMAC. According to Alaba (2006), institutional and trade reforms are an obvious prerequisite to the achievement and strengthening of integration, trade facilitation and the development of trade in West Africa. The administrative and procedural processes associated with customs operations should take place within an efficient regulatory framework to reduce the number of customs documents and eliminate human barriers created in the process. Safaeimanesh and Jenkins (2021) estimate the potential annual gains from trade facilitation in ECOWAS countries. Based on an economic framework of well-being in partial equilibrium that uses elasticities in the supply and demand of exports for each country, they find that the annual economic welfare gains result from a reduction in the excessive costs of trade conformity for the region and are estimated to be between US\$ 1.6 billion to US\$ 2.7 billion (2019 price), and this represents between 0.24% and 0.42% of the combined GDP of these countries. The welfare gains are between 6% and 10% of the combined budget of the governments allocated towards education and between 33% and 58% of the budget allocated to health.

#### b.) Service infrastructure (individual or aggregated)

Limao and Venables (2001) conclude that one of the main obstacles to trade between sub-Saharan African countries are geographic barriers. Longo and Sekkat (2004) demonstrate that both the physical and intangible infrastructure, particularly in transport and telecommunications, allow for trade facilitation. Indeed, Fink et al (2002) observed that a reduction of communication costs is related to an increase of 8% in bilateral trade. Musila (2005), focusing on the three regional economic communities (RECs) of COMESA, ECCAS and ECOWAS observed that the intensity in trade creation is higher in ECOWAS countries followed by COMESA. Coulibaly and Fontagné (2005), in their simulations, have estimated that intra-WAEMU trade could triple if routes linking member countries were tarmacked. Agbodji (2007) evaluates the impact of fraud on cross-border trade within WAEMU. The author constructs an infrastructure index using two indicators (transport and communication) and three variables (the number of kilometres covered by roads, railways, and the number of telephone lines).

Njinkeu et al (2008) have examined the impact of infrastructure services on exports from Africa and demonstrate the major factors that stimulate intra-continental trade in Africa. They conclude that when African countries trade among themselves, world trade increases.

Pavel et al (2012), using the European Union as an illustration, verify the theoretical argument according to which information communications and technology (ICT) allows for the stimulation of trade between countries when they are well developed and use similar technologies. The researchers construct an ICT indicator and demonstrate that development of ICT has a positive and significant impact on trade in the European Union. Indeed, two countries with a good ICT network trade 33% more than two countries that do not have the same level of ICT capacity. Bhattacharyay (2009) examines the role and the necessity of infrastructure in quality and in quantity (transport, energy, and ICT) for the integration of the Association of Southeast Asian Nations (ASEAN). Bhattacharyay (2009) demonstrates that trade integration in ASEAN was largely influenced by markets. Bhattacharyay (2009) specifies that more than 50% of exports from Asia are intra-regional and concludes that infrastructure is crucial in the support and strengthening of intra-ASEAN trade, and on trade with other partners.

Regarding specific CEMAC case, Foster and Briceño-Garmendia (2009) confirm that the condition of roads in Sub-Saharan Africa is relatively good. According to them, transporting a container from the port of Douala in Cameroon to Bangui in Central African Republic and to N'Djamena in Chad takes an average of 2-5 weeks. Avom and Mignamissi (2013) identify several factors such as the low development of an infrastructural environment, with a resulting low integration of markets, as a factor that explains the low level of intra-CEMAC trade.

Billon and Rodriguez-Crespo (2020) study the impact of Internet use, mobile telephone use and high-speed Internet on the bilateral trade flows of 33 sub-Saharan African countries over the period 2004-2014. They find a positive and significant impact of telephone subscriptions to the exporting country, a positive impact for high-speed Internet for the two trading partners, and a positive impact in the use of Internet for the importing country. Molefe and Makatjane (2020) examine the indirect impact of road transport infrastructure on the implementation of the policy of facilitation of trade in South Africa. Using a threshold vector-error-correction model, they demonstrate that road transport infrastructure has an extreme impact on trade facilitation, because the margins of the correlation of variables are extremely narrow. Without an appropriate road transport infrastructure, the policy of trade facilitation will remain a challenge in South Africa. Sayyed Attia (2021) examines the importance of trade facilitation in the successful implementation of the African Continental Free Trade Area (AfCFTA). She concludes that trade facilitation plays a significant role in the maximization of benefits in AfCFTA.

There exist some controversies, however. Kumari and Bharti (2022) give a summary of the available literature on trade facilitation in the context of South Asia and observe that there is still lack of evidence associating trade facilitation with other economic results, namely FDI, public revenue, connectivity to the value chain, inequalities, and poverty, as is demonstrated in the context of other regions in the world.

This study, which compares African communities in terms of trade facilitation, is an extension of that done by Musila (2005), which focuses on the intensity of trade creation in three African Regional Economic Communities (RECs): COMESA, ECCAS, and ECOWAS.



### 3. Stylized facts on trade and trade facilitation

#### Trends in regulations

In WAEMU, the products listed in the tariff and statistical nomenclature are divided into four categories: Category 0, Category 1, Category 2 and Category 3. The common customs tariff rate recorded by the Common External Tariff (CET) for these categories are<sup>14</sup> 0%, 5%, 10% and 25%, respectively (since 2000). The rate of the statistical charge is fixed at 1%, applicable on all goods, whether exonerated or not. The Community Solidarity Levy (CSL) rate is 1% for products not originating in the union. Goods imported from member countries and from countries outside the community have to be declared according to the current regulations.

The CET in CEMAC since 2012 includes the customs duties and the temporary surcharge. The common customs tariff rate applicable to products of developing countries imported into the zone are placed in four categories. Category I involves basic commodities at 5%, category II involves raw materials and capital goods at 10%, category III involves intermediate and diverse goods at 20%, and category IV involves daily consumer goods at 30%. For imports, the custom duties are levied without regard to origin of the merchandise in conformity to TEC, except in the application of special provisions provided for by international agreements in place for the award of preferential tariffs. Natural products originate from the countries in which they were extracted from or harvested. Manufactured goods from a single country with no additional material from any other country are seen to originate in the country in which they were manufactured. Products obtained from two or more CEMAC member states are products that originate from that member state, whereby the last working or processing took place. At export, goods that leave a customs territory are, according to their origin, subjected to a tariff that is fixed by the exporting member state.<sup>15</sup> The re-exportation procedures following the customs procedures with economic impact, or suspensive customs regimes bring to bear the definitive exoneration from customs duties and other taxes for imported goods, re-exported outside the customs territory. Products that fit categorically into any one of the eight categories mentioned are considered to originate from a country.<sup>16</sup> Whenever a justification of origin is insisted upon, a document that certifies the origin of the goods must be produced.

EAC's Common External Tariff (CET) were promulgated in 2005. The passing of the CET national tariffs reduced the average tariff protection in Kenya and Tanzania but increased it in Uganda. The global average of the applied rates of CET are at 12.9%.

EAC members applied an export tax of 20% to leather and raw hide to encourage local manufacturing. The manufacturing sector essentially produces for external markets, and some of the products are exported to regional markets. It is primarily based on the transformation of agricultural products. The elimination of customs duties among EAC member states has been in full application since 2010. The trade regime for duty free imports with no quota is based on the principles of WTO. Non-tariff barriers were eliminated using a system of online notification. This mechanism of notification and follow-up on non-tariff barriers was conceived to allow for public and private operators to give their complaints, which could then be solved on a bilateral level. In EAC, a product is considered originating from a country if it is entirely produced in that country or if it has undergone substantial transformation. The substantial transformation criteria are fulfilled if the imported content of the product is not more than 60% of the CIF value of materials used to produce it, and the value add resulting from the production process (which must lead to changes in the tariff heading), represents at least 35% of the ex-factory price. To be considered as coming from the region, a product must be sent directly by a member state.

Overall, the rules of origin are less restrictive in CEMAC and WAEMU than in EAC regarding value added tax resulting from production. However, there is a certain willingness to protect young industries in the first two communities through the exclusion of some sensitive goods. However, CEMAC is less restrictive than WAEMU on certain points. Indeed, it is required that there be a minimum of 60% of local raw materials in the manufacturing of a product, whereas in CEMAC, just a minimum of 40% is required.

It is important to note that there are transport corridors<sup>17</sup> with secretariats all over Africa, except for ECCAS and CEMAC. In West Africa (Abidjan, Tema, Lomé, Cotonou, Dakar), there are significant regulations with freight offices, shipping councils and several small ports. In East Africa (Mombasa, Dar es Salaam, Djibouti), there is a competitive and well-developed market; large trucking companies serve close to 20% of the market. In Central Africa (Douala is the largest port in CEMAC), there are expansive trucking cartels, the service is of inferior quality and highly priced. It is the region with the least developed transport infrastructure in Africa. Almost 80% of people and goods use the road network, whereas less than 20% of the regional roads are tarmacked (EAC, 2012).

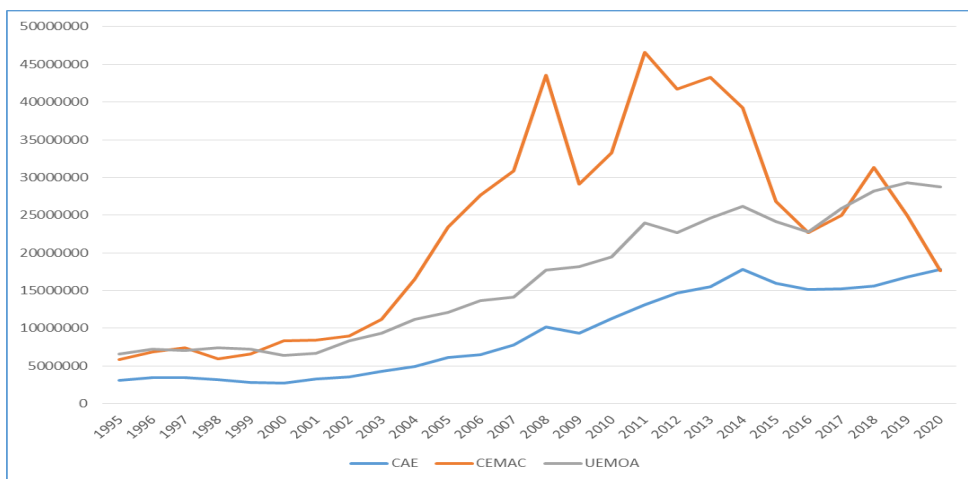
## Trends in trade and the measures for trade facilitation

This study is based on external trade in three communities<sup>18</sup> (CEMAC, EAC and WAEMU) and focuses on internal trade so as to understand the reasons underlying the internal weakness of intra-CEMAC trade, since the nature of partners outside Africa such as the European Union, the United States of America and China could explain the weakness of intra-zone trade in Africa. We start by presenting the main export

and import partners of each of the three groupings, then the comparative trends of internal exports and imports to each of these communities to see those that have or are experiencing a commercial surplus or trade deficit at the international level. We then undertake an intra-zone comparison by giving the contribution of each country to internal trade, then a comparison of the structure of the major exports and imports (raw and manufactured, per category) in each of those groupings. Finally, we present a state-of-the-art-survey of indicators of trade facilitation in the three groupings, notably environment and regulations (the number of days necessary to export/import, the number of documents necessary to import/export, the costs of importing/exporting a container) and the service infrastructure (transport, energy, ICT).

Figure 1 shows that total exports from WAEMU were like those from CEMAC between 1996 and 1999. Between 2000 and 2016, exports from CEMAC were higher than those from the two other communities, even though the trends are upwards and downwards. We observe that the evolution of exports was only marginally affected by the crisis of 2008 in WAEMU, and EAC, whereas CEMAC was considerably affected by the crisis, with exports having decreased by close to US\$ 15 billion between 2008 and 2009 before a recovery in 2010. Since 2002, exports from WAEMU and EAC have increased in a regular manner.

Figure 1: Trends in exports<sup>19</sup> from CEMAC, WAEMU and EAC

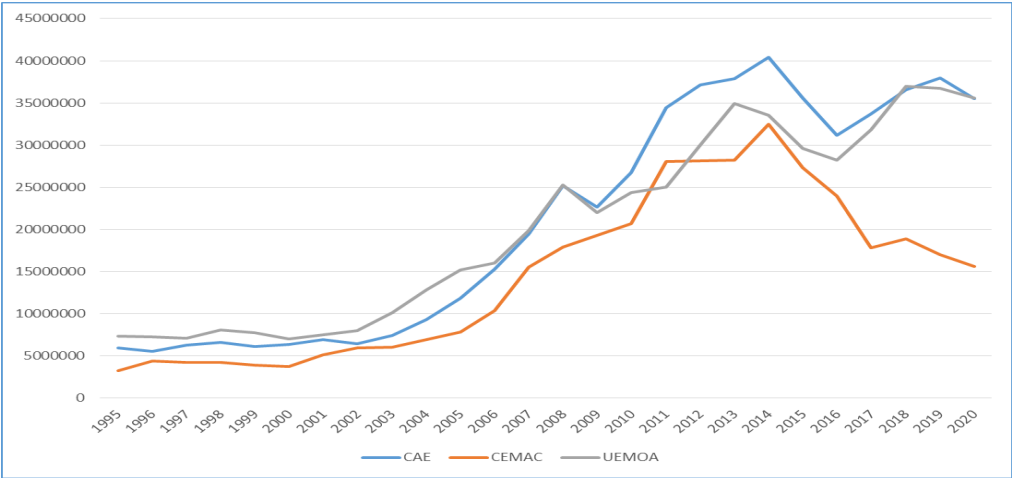


Key: CAE (EAC), UEMOA (WAEMU)

Source: The author using data derived from WITS

Figure 2 illustrates the rapid growth of imports in the three communities between 2000 and 2014, then a drop until 2020 for CEMAC, whereas we observe a slight recovery for imports between 2015 and 2020 for WAEMU and EAC. In 2020, WAEMU and EAC recorded a trade deficit.

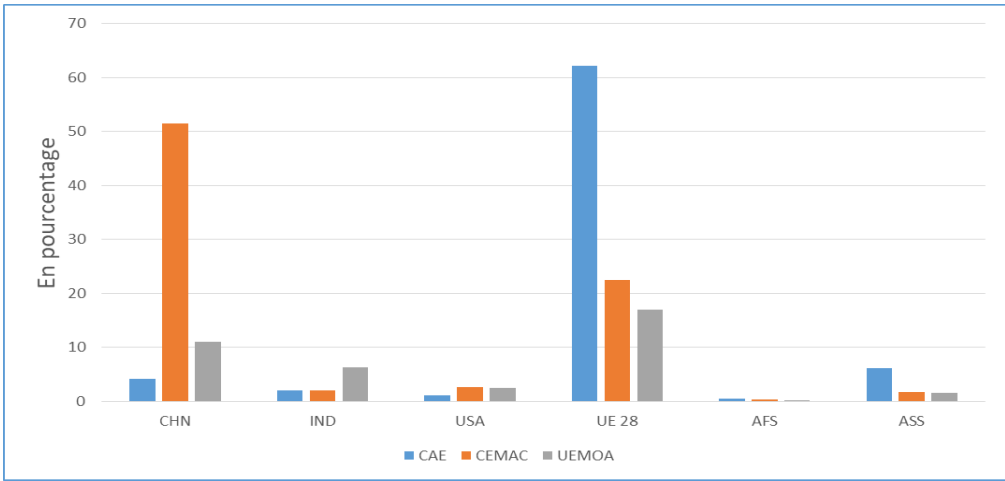
Figure 2: Trends in imports from CEMAC, WAEMU and EAC



Key: CAE (EAC), UEMOA (WAEMU)  
Source: The author using data derived from WITS

Figure 3 illustrates that the main export partners for agricultural products from CEMAC are China (51%), followed by the EU (22%), whereas for WAEMU and EAC it is EU leading with 62% for WAEMU and 18% for EAC, and as the second export partner, we have China at 10% for WAEMU and Sub-Saharan African countries at 7% for EAC.

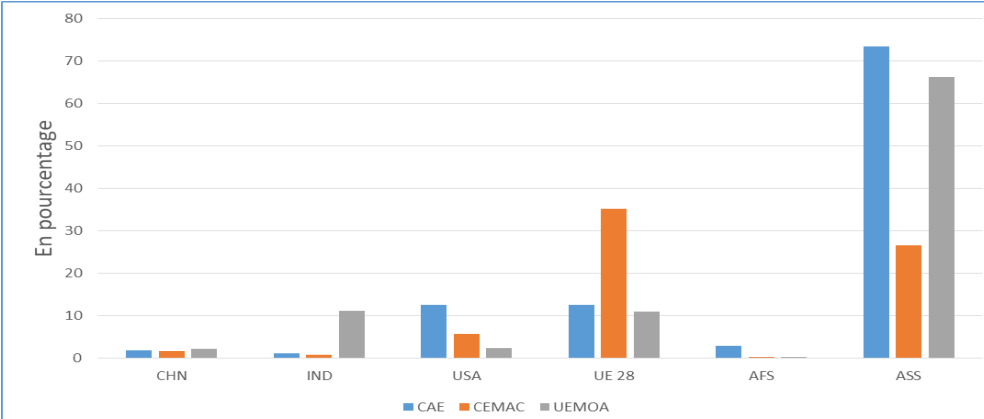
Figure 3: Main trading partners for the export of agricultural products per community (in 2020)



Key: En pourcentage (as a percentage), CHN (China), IND (India), UE (EU), AFS (SA), ASS (Sub-Saharan Africa), CAE (EAC), UEMOA (WAEMU)  
Source: The author using data derived from WITS

Figure 4 shows that the main trading partner for the export of manufactured goods is SSA for EAC and WAEMU, with 72% and 67%, respectively, whereas for CEMAC, it is almost an equal split between EU (36%) and Sub-Saharan African (28%). It is important to note that manufactured products in CEMAC are dominated by products manufactured using low skills and technology.

Figure 4: Main trading partners for the export of manufactured goods per community (in 2020)

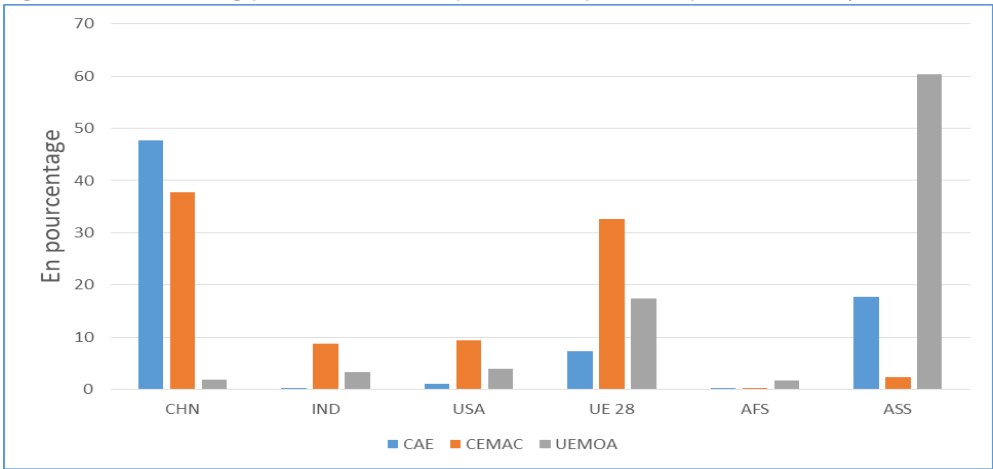


Key: En pourcentage (as a percentage), CHN (China), IND (India), UE (EU), AFS (SA), ASS (Sub Saharan Africa), CAE (EAC), UEMOA (WAEMU)

Source: The author using data derived from WITS

Figure 5 shows that the main destination for the export of fuel products, notably petroleum, gas and butane is Sub-Saharan African countries (60%) for WAEMU, whereas for EAC and CEMAC, the main partner is China with 48% and 38%, respectively. The second destination for the export of fuel products from CEMAC and WAEMU is the European Union (EU). It should be specified that exports from WAEMU and EAC towards SSA are mostly internal to those two communities.

Figure 5: Main trading partners for the export of fuel products per community (in 2020)

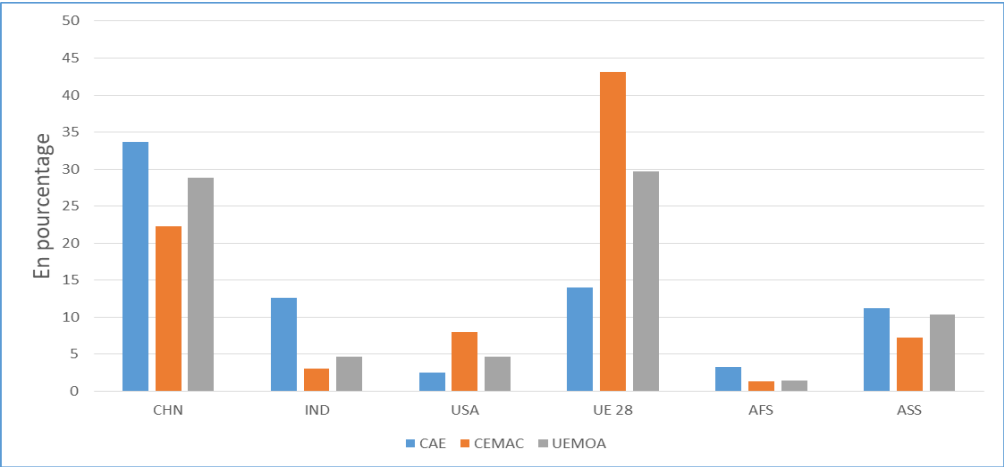


Key: En pourcentage (as a percentage), CHN (China), IND (India), UE (EU), AFS (SA), ASS (Sub-Saharan Africa), CAE (EAC), UEMOA (WAEMU)

Source: The author using data derived from WITS

Regarding import partners, Figure 6 shows that in relation to manufactured goods, CEMAC and WAEMU’s main partner is the EU with 43% and 30%, respectively, whereas that of EAC is China with 33%, followed by EU (14%). The second source of imports of manufactured goods for CEMAC and WAEMU is China, with 22% and 28%, respectively.

Figure 6: Main trading partners for the importation of manufactured goods per community (in 2020)

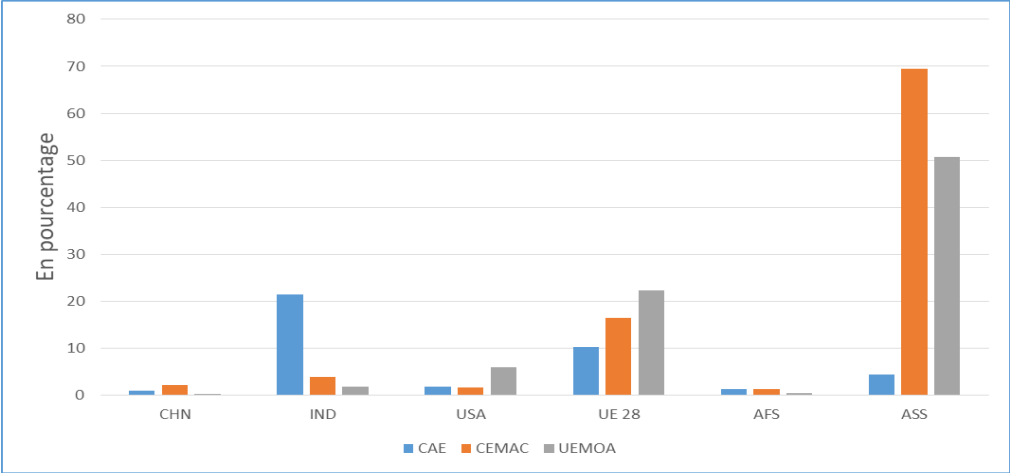


Key: En pourcentage (as a percentage), CHN (China), IND (India), UE (EU), AFS (SA), ASS (Sub-Saharan Africa), CAE (EAC), UEMOA (WAEMU)

Source: The author using data derived from WITS

Figure 7 shows that in relation to the importation of fuel products, CEMAC and WAEMU’s main partner is Sub-Saharan African countries with 69% and 50%, respectively, whereas that of EAC is India with 20%. The second source for the importation of fuel products from the three communities is the EU.

Figure 7: Main trading partners for the importation of fuel products per community (in 2020)



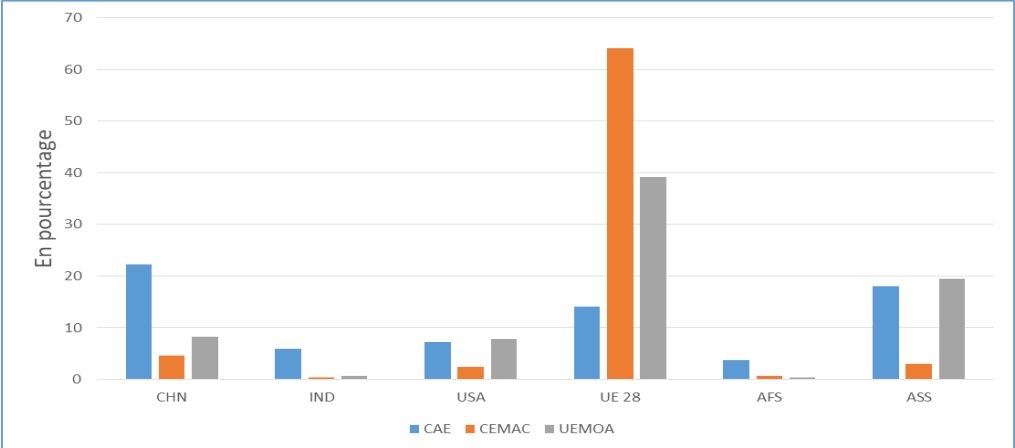
Key: En pourcentage (as a percentage), CHN (China), IND (India), UE (EU), AFS (SA), ASS (sub-Saharan Africa), CAE (EAC), UEMOA (WAEMU)

Source: The author using data derived from WITS

Figure 8 gives a snapshot of the importation zones for agricultural products. CEMAC and WAEMU’s main partner is the European Union, with 63% and 39%, respectively, whereas that of EAC is China with 21%. The second largest importation zone for WAEMU and EAC, at 19% and 18%, respectively, is Sub-Saharan African countries.

We can nevertheless observe that the partners of the three communities change according to whether they are dealing with exports or imports and also according to products. Indeed, traditional partners, notably, France, USA, and the United Kingdom are facing increased competition from Asian countries and some African countries such as South Africa.

Figure 8: Main trading partners for the importation of agricultural products per community (in 2020)

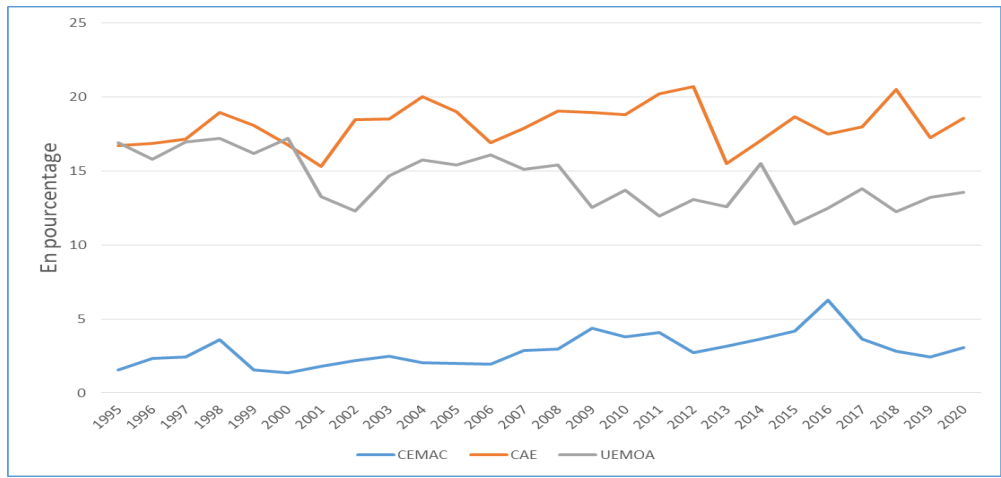


Key: En pourcentage (as a percentage), CHN (China), IND (India), UE (EU), AFS (SA), ASS (Sub-Saharan Africa), CAE (EAC), UEMOA (WAEMU)

Source: The author using data derived from WITS

Figure 9 shows some intra-zone exports in the three communities. We can see an upwards and downwards trend, intra-EAC exports being more significant than those of the other two monetary unions, namely CEMAC and WAEMU. Intra-EAC trade evolves in a corridor whose terminals are 16% and 21% between 1995 and 2020. Intra-WAEMU exports have decreased from 16% in 1995 to reach close to 13% in 2020. Intra-CEMAC trade, on its part, is the lowest, oscillating around 3% over the period, aside from the highest level attained in 2016 (6%). This situation could be explained through the structure of exported goods per country not only at the regional level, but also internationally.

Figure 9: Trends in intra-zone exports within CEMAC, WAEMU and EAC

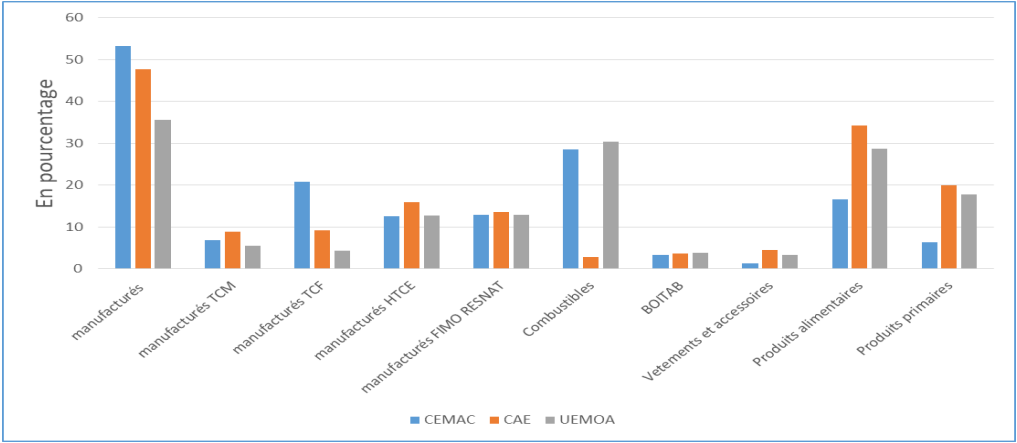


Key: En pourcentage (as a percentage), CAE (EAC), UEMOA (WAEMU)  
Source: The author using data derived from WITS

Figure 10 gives an overview of the main internal export products for each of the communities. One can see that various manufactured goods are the most exported in each community, notably 53% in CEMAC, 48% in EAC, and 36% in WAEMU. When one disaggregates products by their degree of manufacturing, one observes that the manufactured goods exported from CEMAC are to a great extent products manufactured using high skills and technology (HTCE). The share of goods manufactured using medium skills and technology (TCM) is less than 10% in the three communities. Exports of manufactured goods derived from natural resources (FIMO RESNAT) are almost similar in the three communities. Overall, WAEMU and EAC are more industrialized than CEMAC. Exports from fuel products are close to 30% in CEMAC and WAEMU and remain of exceptionally low significance (3%) in EAC. One also notes that exports of clothes and accessories, and those of drinks and tobacco (BOITAB) remain low in the three communities.



Figure 10: Structure of major goods exported intra-community (in 2020)



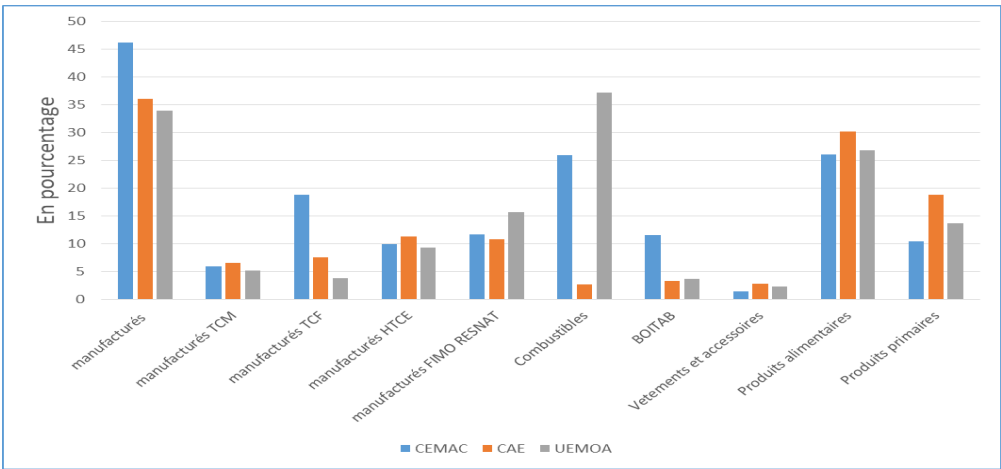
Key: En pourcentage (As a percentage), manufacturés (manufactured), Combustibles (Fuel products), Vetements et accessoires (Clothing and accessories), Produits alimentaires (food products), produits primaires (primary goods)

CAE (EAC), UEMOA (WAEMU)

Source: The author using data derived from WITS

Figure 11 shows that the structure of internal imports to communities is quite disparate. Indeed, various manufactured goods are the most highly imported into CEMAC and EAC, whereas in WAEMU it is fuel products.

Figure 11: Structure of major goods imported intra-community (in 2020)



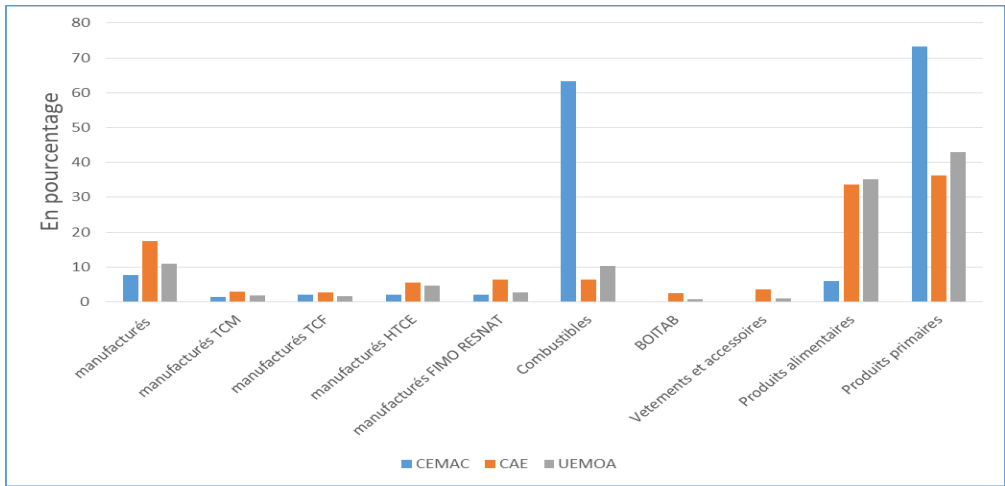
Key: En pourcentage (As a percentage), manufacturés (manufactured), Combustibles (fuel products), Vetements et accessoires (clothing and accessories), Produits alimentaires (food products), produits primaires (primary goods)

CAE (EAC), UEMOA (WAEMU)

Source: The author using data derived from WITS

Figure 12 shows the structure of goods exported at the international level. Contrary to the regional level, we can see that the primary products are the most exported by the three communities in 2020, notably 72% for CEMAC, which is also in the first position regarding the export of fuel products (62%) for WAEMU, and 36% for EAC. Exports of fuel products remain lower than 10% in WAEMU and EAC.

Figure 12: Structure of exports towards the world per community (in 2020)



Key: En pourcentage (as a percentage), manufacturés (manufactured), Combustibles (fuel products), Vetements et accessoires (clothing and accessories), Produits alimentaires (food products), produits primaires (primary goods)

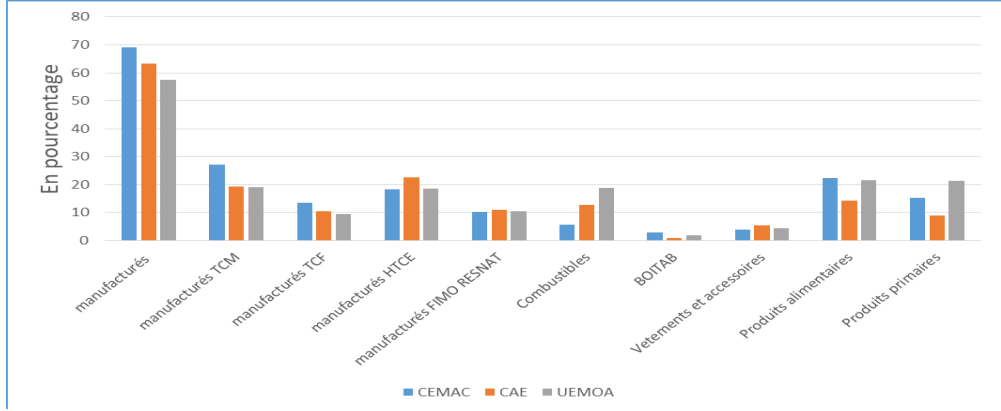
CAE (EAC), UEMOA (WAEMU)

Source: The author using data derived from WITS

Figure 13 shows that imports from the three communities coming from the world are dominated by various manufactured goods. On a disaggregated basis, products manufactured using medium skills and technology are the most significantly imported by CEMAC and WAEMU, while it is products manufactured at high skill and technology for the EAC. CEMAC imports less fuel products than the other communities, since all the countries are oil producers with the exception of CAR.

After having presented the level of internal and external trade of the communities and their trade structure, we now present the environment in terms of trade facilitation in the countries of the three communities. This is notably environment and regulations (the number of days necessary to export/import, the number of documents necessary to import/export, the costs of importing/exporting a container) and the service infrastructure (transport, energy, ICT).

Figure 13: Structures of importation from the world per community (in 2020)



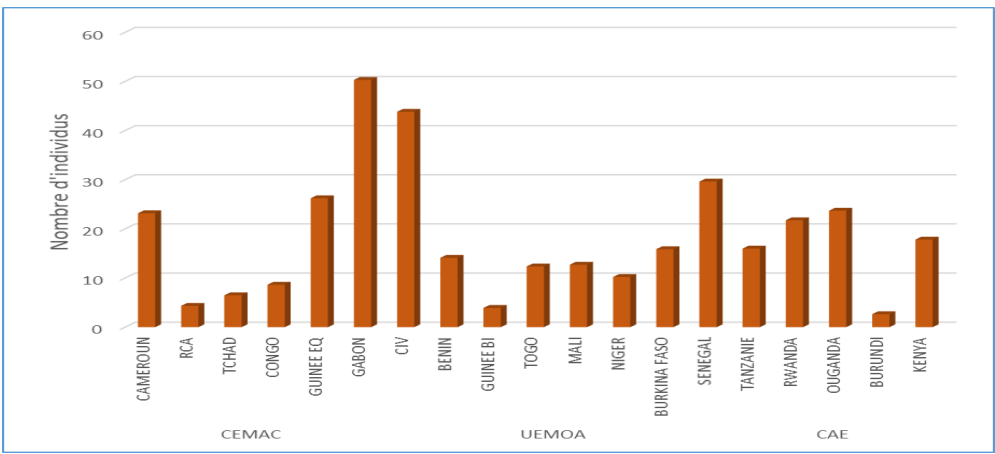
Key: En pourcentage (as a percentage), manufacturés (manufactured), Combustibles (fuel products), Vetements et accessoires (clothing and accessories), Produits alimentaires (food products), produits primaires (primary goods)  
CAE (EAC), UEMOA (WAEMU)

Source: The author using data derived from WITS

Figure 14 shows that the number of Internet users per 100 of the population is relatively low in the three communities. The most advanced country is Gabon with 50 users of Internet per 100 of the population, followed by the Republic of Côte d’Ivoire (42 users). All other countries are found at a level lower than 30 users of Internet per 100 of the population.

However, the Internet is today a factor that cannot be ignored in terms of economic growth, thus its importance in facilitating transaction and the reduction of delays.

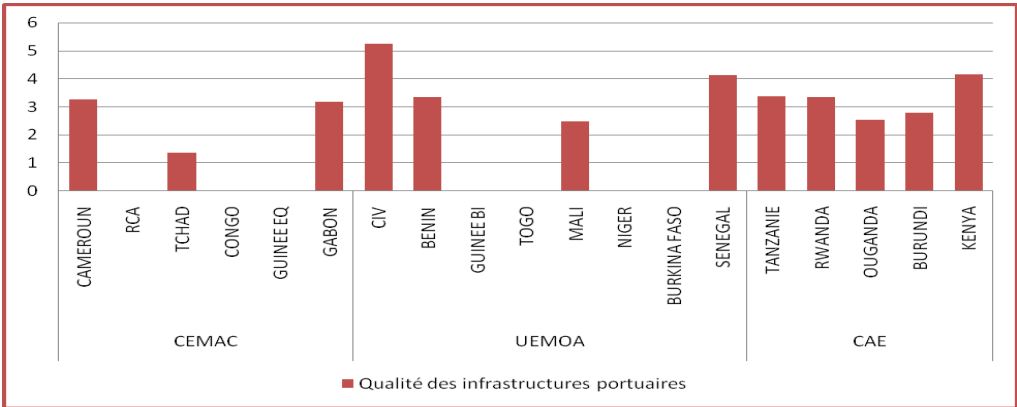
Figure 14: Number of Internet users per 100 of the population (in 2019)



Source: The author using data from World Development Indicators of the World Bank

The quality of port infrastructure is an indicator that varies from 1 to 7 with 1 signifying a port infrastructure that is extremely under-developed and 7 for the port infrastructure is extremely developed according to international standards. It is evident from Figure 15 that the most advanced country is the Republic of Côte d’Ivoire (index 5.1), followed by Senegal (4) and Kenya (4). Some countries are situated at an average level, which is the case for Cameroon (3.1), Gabon (3.1), Tanzania (3.2) and Rwanda (3.2). The rest of the countries are located at a level of poorly developed infrastructure.

Figure 15: Quality of port infrastructure per community (in 2015)

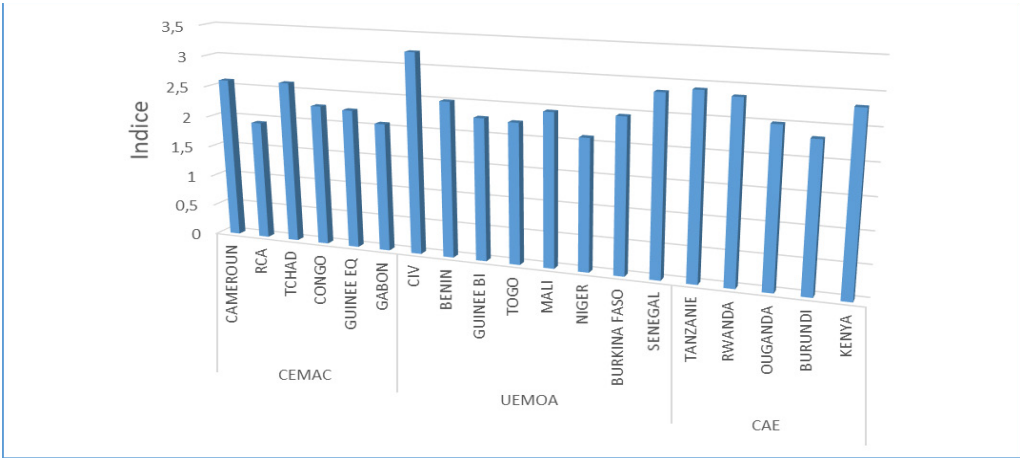


Key: Cameroon, CAR, Chad, Guinea Bissau, Gabon, Côte d’Ivoire, Benin, Togo, Mali, Niger, Burkina Faso, Senegal, Tanzania, Rwanda, Uganda, Burundi, Kenya

Source: The author using data from World Development Indicators of the World Bank

The Logistic Performance Index, which varies from 1 (low) to 5 (high) is a composite index that integrates six indicators namely the capacity to follow and trace expeditions, the competencies and the quality of logistical services, the use of competitive prices, loading, the efficiency of the maintenance process, the frequency with which the expedition arrives at its destination according to the calendar, or the time estimate and the quality of trade related infrastructure. One can see (Figure 16) that in EAC, apart from Burundi (2.3) and Uganda (2.5), all countries have an index close to 3. In WAEMU, the most developed country is the Republic of Côte d’Ivoire (3.2), followed by Senegal (2.8). Other countries of WAEMU have an index lower than 2.5. In CEMAC, the most advanced countries are Congo and Cameroon with an index of 2.6.

Figure 16: Logistic performance index per community in 2018)



Key: Indice (Index), Cameroon, CAR, Chad, Congo, Equatorial Guinea, Côte d'Ivoire, Benin, Togo, Mali, Niger, Burkina Faso, Senegal, Tanzania, Rwanda, Uganda, Burundi, Kenya.  
Source: The author using data from World Development Indicators of the World Bank

Table 1 shows that the cost of exporting a container in dollars is decreasing in the three communities, the most significant decrease being in EAC where, apart from Uganda, which recorded an increase, all the other countries are experiencing a reduction, followed by CEMAC where Cameroon and CAR are also experiencing an increase in export costs. On average, the export costs are almost two times higher in CEMAC than in WAEMU, which recorded better results than the two other communities. Individually, Equatorial Guinea is the country that recorded the most significant reduction, notably more than half the cost of the transaction in 2015.

## 4. Methodology and data

To determine the impact of indicators of trade facilitation on intra-zone trade in the three communities, we rely on the augmented gravity model. The gravity model is the most used when explaining trade intensity between countries. In its first form, the model shows that trade between two countries depends on their economic mass (GDP) and is negatively correlated to the trade costs between them, notably the distance. We use the gravity model in this study because the indicators of trade facilitation presented in the trade costs in the same way as does geographical distance.

We will add to this, in a general manner, the factors that can influence trade (Santos, Silva and Tenreyro, 2005). The pioneer works of Tinbergen (1962) gave birth to a vast panorama of theoretical and empirical studies on the gravity model of trade. Theoretically, Anderson (1979) proposes a gravity model based on the constant elasticity of substitution demand function based on the Armington model. Like other studies that have as their basis in Armington's structure of consumer preferences, one could cite Krugman (1980) monopolistic competition model, Deardorff (1998) Heckscher-Ohlin or Easton and Kortum (2002), which are inspired by the Ricardian model of comparative advantage. More recently, Anderson and Van Wincoop (2004) take into account the difference in size between countries, whereas Bernard et al (2007) and Metlitz (2003) introduce heterogeneity of firms in their modelling of international trade.

The gravity model was also used by Musila (2005) in her comparison between the intensity of trade creation in COMESA, ECCAS and ECOWAS. The model used in this study draws from those of Portugal-Perez and Wilson (2010) and Martínez-Zarzoso and Márquez-Ramos (2008) and is complemented by various variables that could create or divert intra-zone trade. Seck (2017) also uses a gravity model to examine the impact off indicators of trade facilitation on the level of trade in Sub-Saharan African countries.

### Econometric model

The linear model is specified as follows:

$$LEXP_{ijt} = \alpha_i + \lambda_t + \eta_{ij} + \alpha_1 LPIB_{it} + \alpha_2 LPIB_{jt} + \alpha_3 LDIST_{ij} + \alpha_4 LPOP_{it} + \alpha_5 LPOP_{jt} + \alpha_6 DTRA + \alpha_7 TRAF + \varepsilon_{ijt} \quad (1)$$

$EXP_{ij}$  are the bilateral exports between partners in the zone in cost price. In empirical literature on the various aspects that could allow the stimulation of trade,

notably regional trade agreements, preferential agreements, taxes or also trade facilitation, two variables are often considered as dependent: imports and exports (Bergstrand, 1985 and 1989; Feenstra et al, 2001; Anderson and van Wincoop, 2004; Agbodji, 2007; Sadikov, 2007). It is the latter variable that we use as our dependent variable because the aim of this study is to research on means to increase the level of intra-CEMAC exports.  $PIB_{i,j}$  is the GDP of two proxy partners proxy of the market size;  $POPI_{i,j}$ , population of two partners; and  $DIST_{ij}$  is the distance between the capitals of two partners. The capitals are considered as trade centres. All things remaining equal, remotely located countries trade less than those near large markets.  $DTRA$  is the vector of five traditional variables. The first four variables take the value of 1 when two partners have the same colonial history ( $COL_{ij}$ ), speak the same official language ( $LANG_{ij}$ ), share a border ( $FRONT_{ij}$ ), or still use a common currency ( $CUR_{ij}$ ), and 0 if not. Equally, the fifth variable ( $ENCLI$ ) takes a value of 1 when the exporting country is landlocked, and 0 if not.  $TRAFA$  is a vector of three variables of trade facilitation.  $NDOEXP$  is the number of documents for exporting to two partners;  $NDOIMP$  is the number of documents to import from two partners;  $NDAEXP$  is the number of days to export to two partners;  $ICT_{i,j}$  is the infrastructure of two partners (we will emphasize upon ICT notably the use of the Internet, because the data related to land transportation is not available for the period under study). ICT could help in diverse ways to lift trade obstacles along transport corridors. For example, advance notification on convoys (and their follow-up) eliminates the multiplication of inspections (Yonazi et al, 2012),  $\alpha_i$  is the specific individual effect;  $\lambda_t$  is the temporal effect, similar for all the countries within a zone.  $\eta_{ij}$  is the time-invariant bilateral pair fixed effect, which allows for the capture of all the invariant factors that could influence trade or simulate it through regional integration (Bergstrand et al, 2015);  $\varepsilon_{ijt}$  is the error term;  $L$  indicates that the variable is in logarithm form, which allows for the interpretation in terms of coefficients of elasticity.

## Estimation methods

The estimation of our models using OLS could be a source of bias. The OLS estimator assumes that the model is identical for each pair of countries. The multidimensional nature of our data leads us to estimate our model using a method that considers specific effects for a set of unobserved characteristics to eliminate the sources of bias present in OLS, particularly having an impact on dummy variables of regional trade agreements. The simplest way to resolve the correlation between specific effects and the explanatory variables is to eliminate the specific effect by using a first difference estimator, for example. However, these calculations do not allow us to estimate the impact of a time-invariant explanatory variable, including those of regional trade agreements (Kpodar, 2007). To resolve this ambiguity, it is necessary to use the Hausman-Taylor (1981) estimator. We thus use the Hausman-Taylor (1981) estimator to evaluate the hypothesis of the exogeneity of individual specific effects (Serlenga and Shin, 2007; Brun et al, 2002; Egger, 2002; and Gardner, 1998).

Table 1: Export costs per community (in US\$ per container)

CEMAC	2005	2015	Percentage variation	WAMU	2006	2015	Percentage variation	EAC	2006	2015	Percentage variation
Cameroon	1,316	1,379	5	Benin	1,330	1,052	-23	Burundi	6,742	2,905	-57
Congo	4,047	3,795	-6	Burkina Faso	2,899	2,305	-20	Kenya	3,883	2,255	-42
Gabon	2,760	2,145	-22	The Republic of Côte d'Ivoire	2,187	1,390	-36	Rwanda	5,154	3,245	-37
Equatorial Guinea	3,509	1,390	-60	Guinea Bissau	1,778	1,448	-19	Uganda	2,066	2,800	36
CAR	5,321	5,490	3	Mali	2,525	2,440	-3	Tanzania	1,716	1,090	-36
Chad	8,236	6,615	-20	Niger	3,902	4,475	15				
				Senegal	1,223	1,225	0.16				
				Togo	701	1,015	45				
Average	4,198	3,469	-17		2,068	1,919	-7		3,912	2,459	-37

Source: Author using data derived from World Bank Doing Business



Table 2: Time taken to export per community (in days)

CEMAC	2005	2015	Percentage variation	WAEMU	2006	2015	Percentage variation	EAC	2006	2015	Percentage variation
Cameroon	27	23	-15	Benin	34	25	-26	Burundi	47	32	-32
Congo	50	50	0	Burkina Faso	45	41	-9	Kenya	45	26	-42
Gabon	19	20	5	The Republic of Côte d'Ivoire	23	25	9	Rwanda	60	26	-57
Equatorial Guinea	29	29	0	Guinea Bissau	27	25	-7	Uganda	38	28	-26
CAR	57	46	-19	Mali	44	26	-41	Tanzania	30	18	-40
Chad	78	70	-10	Niger	59	56	-5				
				Senegal	21	12	-43				
				Togo	34	24	-29				
Average	43	40	-7		36	29	-19		44	26	-41

Source: Author using data derived from the World Bank Doing Business

Table 2 shows that the time required to export was on average 44 days in EAC, 43 days in CEMAC and 36 days in WAEMU in 2005. These communities have all experienced an improvement over the years, notably 40 days for CEMAC, 29 days for WAEMU, and 26 days for EAC, which incidentally experienced the most significant reduction in 2015. When one compares the countries and these communities, the minimum number is 12 days in Senegal, whereas the maximum is 70 days in Chad, a landlocked CEMAC country. The most significant reduction is in Rwanda, one of the high performing African countries since the end of the first decade of this century.

Table 3: The number of documents necessary for exports per community

CEMAC	2005	2015	Percentage variation	WAEMU	2006	2015	Percentage variation	EAC	2006	2015	Percentage variation
Cameroon	9	11	22	Benin	8	7	12.5	Burundi	9	9	0
Congo	11	11	0	Burkina Faso	11	10	-9	Kenya	7	8	14
Gabon	5	6	20	The Republic of Côte d'Ivoire	9	9	0	Rwanda	13	7	-46
Equatorial Guinea	7	7	0	Guinea Bissau	6	6	0	Uganda	12	7	-42
CAR	6	9	50	Mali	7	6	-14	Tanzania	9	7	-22
Chad	7	8	14	Niger	8	8	0				
				Senegal	11	6	-45				
				Togo	8	6	-25				
Average	8	9	13		8	7	-12		10	8	-20

Source: Author using data derived from doing business

Table 3 shows that legislation in terms of documents required for export is improving in WAEMU and EAC, unlike in CEMAC. One required at least 10 documents to export in EAC in 2005 and eight documents in 2015, or a reduction of 20%; eight documents and then seven documents in WAEMU over the same period or a reduction by 12%, whereas in CEMAC, there instead has been an increase, notably eight documents in 2005 and nine documents in 2015. Only one country (Benin) has recorded an increase in the number of documents for WAEMU, the others either have experienced a decrease or a stagnation. The situation is similar in East Africa, where only Kenya recorded an increase, with the other countries experiencing a reduction in the numbers of their documents. In CEMAC, the situation is inverse; apart from Congo and Equatorial Guinea, which have experienced a stagnation, all the other countries have experienced an increase in the number of their documents between 2005 and 2015.

Overall, CEMAC appears to be the community where regulations are still a major problem in trade facilitation.

It should be specified that another problem that comes about when one examines trade flows between developing countries is the presence of zero values in the dependent variable ( $EXP_{ij}$ ), which would lead to a loss in the number of observations. To solve the problem, some researchers have proposed the addition of a small positive quantity of the zero value to add value in logarithm. Another solution would be to use the Poisson Pseudo-Maximum Likelihood Estimator (PPML), which allows us to automatically estimate the model with its zero values (Silva and Tenreyro, 2011b). Indeed, Gourieroux et al (1984) have already confirmed that the PPML estimator is easy to apply and is robust to specification problems.

## Data sources

As we stated earlier, the five countries of EAC<sup>20</sup>, the six CEMAC countries, and the eight WAEMU countries are sampled in this study. Data relating to their GDP, population and economic infrastructure (ICT) is derived from the World Bank (WDI) data base, data in relation to distances, colonial history, borders, language and whether or not a country is landlocked is derived from The GeoDist database of “Le Centre d’études prospectives et d’informations internationales (CEPII), and finally those dealing with trade facilitation, notably the number of days required to export/import, the number of documents necessary to import/export are taken from the database on business climate (cross-border trade) Doing Business, of the World Bank and those addressing bilateral and multilateral imports from the database of World Integrated Trade Solutions (WITS). Ng and Yeats (2000) and Nkendar (2013) affirm that trade data on Sub-Saharan African countries is not dependable. Indeed, Nkendar (2013) estimates that informal trade flows are significant for CEMAC countries. However, data from WITS and the World Bank on formal trade and from UNCTAD are most used. The study covers the period 2005-2015.

Annex Tables A1, A2 and A3 give the descriptive statistics of the variables. Table A1 shows that the average level of exports in WAEMU is US\$ 45,670.7, and that one could see that there are WAEMU countries that did not export anything to the other countries over a certain number of years. It requires, on average, 32 days and eight documents to export. Finally, the average number of Internet users is four. Table A2 shows that in CEMAC, the average level of exportation is US\$ 31,833.98. There was, just like in WAEMU, zero trade flows between some countries over some years. It requires, on average, 42 days and eight documents to export. Finally, the average number of Internet users is five. Finally, Table A3 shows that the average level of exports in EAC is US\$ 104,508.2 and one observes that contrary to CEMAC and WAEMU, there are no zero trade flows between these countries. It requires, on average, 33 days and eight documents to export. Overall, the number of documents necessary to export is same in the three communities, but the number of days required to export is higher in CEMAC. Also, the five EAC countries trade more than the two other communities.

## Results

We present the results of the estimations of the different models per grouping in this section. The basic model is first estimated based on aggregated exports (CEMAC, WAEMU, EAC). It is then estimated for disaggregated exports (manufactured goods and fuel products) per community.

### WAEMU results

Table 4: Determinants of intra-WAEMU trade (dependent variable; aggregate exports)

	(1) FEUEMOA	(2) REUEMOA	(3) PPMLUEMOA	(4) HTUEMOA
VARIABLES	lexpij	lexpij	lexpij	lexpij
ljourj	0.433 (0.991)	0.433 (0.991)	0.0481 (0.124)	0.316 (0.884)
ljourj	-1.419*** (0.503)	-1.419*** (0.503)	-0.190*** (0.0659)	-1.629*** (0.477)
ldocumenti	-0.375 (1.032)	-0.375 (1.032)	-0.0480 (0.130)	-0.215 (0.980)
ldocumentj	-0.793 (0.645)	-0.793 (0.645)	-0.103 (0.0965)	-0.474 (0.597)
linterneti	0.203 (0.213)	0.203 (0.213)	0.0112 (0.0258)	0.0583 (0.189)
linternetj	-0.120 (0.225)	-0.120 (0.225)	0.00562 (0.0320)	-0.265 (0.189)
lpibi	-0.376 (2.440)	-0.376 (2.440)	-0.0187 (0.275)	1.125 (1.777)
lpibj	1.735*** (0.429)	1.735*** (0.429)	0.160*** (0.0522)	1.684*** (0.426)
lpopulationi	-1.293 (3.729)	-1.293 (3.729)	-0.277 (0.456)	-1.684 (2.515)
lpopulationj	-0.875 (0.606)	-0.875 (0.606)	-0.0292 (0.0781)	-0.898 (0.599)
ldistanceij	-0.791*** (0.165)	-0.791*** (0.165)	-0.144*** (0.0241)	-0.801 (0.164)
colonisationij	2.623*** (0.556)	2.623*** (0.556)	0.527*** (0.0998)	2.813*** (0.528)
langueij	1.382*** (0.279)	1.382*** (0.279)	0.163*** (0.0378)	1.307*** (0.274)
frontièreij	1.315*** (0.224)	1.315*** (0.224)	0.129*** (0.0256)	1.299*** (0.223)
enclavementi		0.362 (2.787)	0.451*** (0.168)	1.182 (1.941)
Constante	20.45 (26.95)	19.78 (26.87)	4.909 (4.169)	-5.595 (14.23)
Observations	616	616	616	616
R-carré	0.723		0.732	
Number of countries	8	8		8
Bilateral effects	Yes	Yes	Yes	

Standard error in parentheses

\*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

Table 4 gives the results of the estimation of the model with aggregated exports in WAEMU. Models 1 and 2 refer to the estimator of the fixed effects model (FE) and the estimator of the random effects model (RE), respectively, whereas models 3 and 4 refer to the Hausman-Taylor and the Poisson Pseudo-Maximum Likelihood Estimator (PPML).

### Indicators of trade facilitation

We can observe that variables relative to regulations, notably the number of days necessary to export, is negatively correlated to intra-WAEMU trade, an increase in this indicator discourages trade in the region. Indeed, an increase by 1% in the number of

days taken to export leads to a reduction of intra-WAEMU trade by 0.19%, according to the PPML estimator. This shows that the high waiting time in the zone is a factor that would reduce intra-regional trade. This result agrees with that arrived at by Djankov et al (2006).

Regarding infrastructure services, the use of the Internet does not have an impact on intra-WAEMU trade, regardless of the estimator used. The fact that Internet remains a luxury in WAEMU countries, its low speeds, and the prohibitive costs increases transaction costs in the region. However, a decrease in the cost of communication would lead to an increase in bilateral trade (Agbodji, 2007).

## Conventional variables

Regarding conventional variables of the gravity model, the colonial past, a common border, and a common language, and the GDP of the importing country have a positive role on regional trade, whereas distance has a negative impact. Regarding language, the result agrees with the meta-analysis carried out by Egger and Lassman (2011), which shows a considerable impact of a common language on international trade.

## EAC results

Table 5: Determinants of intra-EAC trade (dependent variable; aggregate exports)

VARIABLES	(1) FECAE lexpij	(2) RECAE lexpij	(3) PPMLCAE lexpij	(4) HTCAE lexpij
ljouri	-1.323*** (0.470)	-1.323*** (0.470)	-0.166*** (0.0501)	-1.156*** (0.407)
ljourj	0.125 (0.386)	0.125 (0.386)	0.0300 (0.0411)	0.328 (0.328)
ldocumenti	-1.323*** (0.431)	-1.323*** (0.431)	-0.156*** (0.0420)	-1.310*** (0.399)
ldocumentj	-0.219 (0.361)	-0.219 (0.361)	-0.0227 (0.0389)	-0.251 (0.358)
linterneti	-0.299* (0.171)	-0.299* (0.171)	-0.0334* (0.0173)	-0.325** (0.160)
linternetj	0.125 (0.129***)	0.125 (0.129***)	0.00945 (0.0112)	0.0589 (0.114***)
lpibi	2.127* (1.266)	2.127* (1.266)	0.163 (0.135)	2.191** (0.890)
lpibj	0.422 (0.283)	0.422 (0.283)	0.0522 (0.0355)	0.479* (0.277)
lpopulationi	0.137 (1.407)	0.137 (1.407)	0.0515 (0.174)	1.335* (0.784)
lpopulationj	0.302 (0.186)	0.302 (0.186)	0.0232 (0.0156)	0.326* (0.184)
ldistanceij	-0.706* (0.423)	-0.706* (0.423)	-0.0791* (0.0478)	-0.634 (0.415)
colonisationij	-0.0874 (0.200)	-0.0874 (0.200)	0.000590 (0.0172)	-0.0526 (0.196***)
langueij	0.914*** (0.272)	0.914*** (0.272)	0.0761 (0.0396)	0.960*** (0.267)
frontièreij	0.551*** (0.188)	0.551*** (0.188)	0.0657*** (0.0194)	0.559*** (0.186)
enclavementi		-0.944 (2.398)		0.553 (1.094)
Constante	-1.218 (26.74)	-1.082 (27.70)	0.951 (2.876)	-24.58* (14.28)
Observations	220	220	220	220
R-carré	0.670		0.891	
Number of countries	5	5		5
Bilateral effects	Yes	Yes	Yes	

Standard error in parentheses

\* p < 0.05, \*\* p < 0.01, \*\*\* p < 0.001

## Indicators of trade facilitation

We can observe that variables relative to regulations, notably the number of days necessary to export is negatively correlated to intra-EAC trade. An increase in this indicator discourages trade in the region. The number of documents for the exporting country has a negative impact regardless of the estimator used. The waiting time in number of days for the exporting country is also negatively correlated to trade in the zone regardless of the estimator used.

Regarding infrastructure services, the use of Internet in the exporting country has a negative and significant impact on trade in the zone. This shows that access to Internet remains difficult and that the quality of the network delays transactions.

## Conventional variables

The GDP of exporting countries has a positive and significant impact on trade in the zone, as well as a common language and a common border, whereas distance has a negative impact on trade in the region.

## CEMAC results

Table 6: Determinants of intra-CEMAC trade (dependent variable; aggregate exports)

VARIABLES	(1) FECEMAC lexpij	(2) RECEMAC lexpij	(3) PPMLCEMAC lexpij	(4) HTCEMAC lexpij
ljouri	4.147 (3.043)	4.147 (3.043)	0.501 (0.417)	3.051 (2.183)
ljourj	1.308** (0.487)	1.308** (0.487)	0.318*** -0.104***	1.357*** (0.483)
ldocumenti	-1.304 (2.483)	-1.304 (2.483)	-0.329 (0.398)	-1.027 (2.151)
ldocumentj	3.579*** (0.783)	3.579*** (0.783)	0.536** (0.212)	3.576*** (0.780)
linterneti	0.0833 (0.352)	0.0833 (0.352)	-0.000116 (0.0439)	0.219 (0.263)
linternetj	0.286 -0.325**	0.286 -0.325**	0.0310 (0.0534)	0.353 (0.288)
lpibi	1.997 (1.294)	1.997 (1.294)	0.340 (0.226)	1.939** (0.948)
lpibj	0.969*** -0.207***	0.969*** -0.207***	0.147*** (0.0440)	0.965*** (0.204)
lpopulationi	1.653 (4.030)	1.653 (4.030)	0.323 (0.636)	-0.140 (1.123)
lpopulationj	0.929*** (0.230)	0.929*** (0.230)	0.139*** (0.0421)	0.912*** (0.223)
ldistanceij	-3.341*** (0.698)	-3.341*** (0.698)	-0.653*** (0.137)	-3.346*** (0.695)
colonisationij	4.628*** (0.677)	4.628*** (0.677)	0.802*** (0.124)	4.608*** (0.669)
langueij	1.230** (0.569)	1.230** (0.569)	0.212 (0.163)	1.206** (0.566)
frontièreij	2.447*** (0.398)	2.447*** (0.398)	0.383*** (0.0799)	2.430*** (0.396)
enclavementi		-6.426* (3.400)	0.437 (0.789)	-3.597 (3.587)
Constante	-78.59 (50.57)	-79.62 (55.55)	-12.28 (9.292)	-45.95** (23.32)
Observations	330	330	330	330
R-carré	0.568		0.637	
Number of countries	6	6		6
Bilateral effects	Yes	Yes	Yes	

Standard error in parentheses

\* p < 0.05, \*\* p < 0.01, \*\*\* p < 0.001

## Indicators of trade facilitation

Table 6 illustrates that the number of documents for the exporting country and the number of days required to export have a positive impact on intra-CEMAC trade regardless of the estimator used. This positive impact that goes against the theoretical position could be explained through the fact that CEMAC countries are among the most corrupt in the world, and that the high number of days and documents leads to bribing to facilitate trade transactions. The result agrees with that arrived at by Nkendah (2010; 2013<sup>21</sup>) who affirm that there are significant informal trade flows between CEMAC countries and that this is due to the failure of institutions within CEMAC. Indeed, despite the measures put in place in CEMAC countries over the past few years to improve the business environment, these trade facilitation indicators have not significantly reduced. The use of Internet among the two partners has no impact on trade in the zone. Indeed, Internet penetration is low, and the speeds remain slow, which does not allow for an impact of Internet on trade in the region.

## Conventional variables

The GDP and the population of an importing country, a common border, and a common colonial history, have a positive impact on intra-CEMAC trade, whereas the distance and the fact that a country is landlocked have a negative impact on trade in the zone. Language has a positive and significant impact on intra-CEMAC trade. Most of the people living along the borders (Cameroon-Gabon-Equatorial Guinea) speak “Fang”; also along the Cameroon-CAR border, people speak “Gbaya,” and along the Cameroon-Chad border, they all speak “Foulbe.”

Regarding disaggregation, the estimations have been carried out on manufactured products and fuel products.

In WAEMU, and regarding exports of manufactured goods, the variables related to regulations, notably the number of days required for imports, is always negatively correlated to intra-WAEMU trade. The delay in terms of days had a negative impact on intra-WAEMU trade. Internet use has a positive impact on trade in the region. This result is similar to that arrived at by Sadikov (2007), and that arrived at by Martínez-Zarzoso and Márquez-Ramos (2008).

Regarding the export of fuel products, the number of documents is always negatively related to trade.

In EAC, one can observe that regarding the number of manufactured products, the number of documents between two partner countries, and the waiting period in terms of days is always negatively correlated to intra-EAC trade. The use of Internet has, on its part, always had a negative impact. Regarding the export of fuel products, the number of documents is always negatively related to trade in the region. Internet use this time around has a positive impact on trade in the region.

Finally, in CEMAC, it is noted that regarding the export of manufactured goods, the number of documents and the waiting period for goods in days between two partner countries are always positively correlated to intra-CEMAC trade. Regarding the export of fuel products, the number of documents and the waiting period for goods in days between two partner countries are always positively correlated to intra-CEMAC trade.



## 5. Conclusion and policy implication

The objective of this study is to undertake a comparative analysis of the impact of the indicators of trade facilitation on intra-regional trade between EAC, WAEMU, and CEMAC so as to draw lessons on intensifying intra-CEMAC trade, which is structurally weak. We estimated three augmented gravity models of indicators of trade facilitation related to regulations and to infrastructure services. The econometric results show that the number of documents and the number of days required to export have a negative impact in WAEMU and EAC, but a positive impact in CEMAC when exports are aggregated or disaggregated, regardless of the estimator used. Infrastructure services, notably the use of the Internet, have a negative impact on intra-zone trade in EAC.

On the strength of these results, strategies aimed at reducing the waiting period and the number of documents required to export, through the dynamic development of the administrative services using digitization, would allow for the facilitation of border transactions and intensify trade, which remains subject to extra costs in CEMAC. To do so, policies targeting the development of ICT, specifically high-speed Internet, would allow for a reduction in the waiting period, notably regarding the transfer of information using a one-stop shop framework. It is also necessary for CEMAC countries to diversify their economies to have them complementing each other at a regional level, and to strengthen integration through their market. Indeed, the policy defined in the Regional Economic Programme (PER) of 2009, targeted towards creating poles of economic development as a function of the endowment of each country to make them complementary is yet to be implemented and steps towards doing so should be undertaken.

## Notes

- 1 Regional integration is presented in five main ways: the Free Trade Area, the customs union, the common market, the economic union, the economic and monetary union (Balassa, 1962).
- 2 IAM, is the acronym of Institut Afrique Monde.
- 3 The EAC 2012 report is titled “The State of Regional Integration in Africa. Towards an African Continental Free Trade Area” and that of 2013 specifies that it is necessary to strengthen intra-regional trade in Africa.
- 4 Indeed, European countries carry out 70% of their exports in Europe, Asia was in second position with 62% of its exports and America was third with 55% in 2014. Intra-continental trade in Africa (15%) although experiencing an increase since 2008, and intra-continental trade in Oceania (7%), remained quite low in 2015.
- 5 In a discussion on this subject, Ng and Yeats (2000) examine the trade performance of middle-income countries in Sub-Saharan Africa (ASS), demonstrating that the percentage share of Africa in global exports has decreased by a half from 3.1% to 1.2%, or an annual loss of US\$ 65 billion over the period 1955 to 1990.  
Firms gain in productivity and in competitiveness because they can improve their product delivery to clients, and governments due to more efficient procedures at the border, improve their public revenue through the processing of trade flows and the fight against fraud, while consumers are presented with a wider array of products at a better price, because importers would not have to pay charges related to the immobilization of goods at borders.
- 7 The first version of this study was presented at AERC in 2010, then published in 2013.
- 8 Manufactured goods follow a formal system, notably cement, drinks, soap, sugar, electric batteries, and textiles.
- 9 ECCAS is nevertheless the regional economic community (REC) that is most endowed with natural resources in Africa. The region is characterized by difficulties in free movement of people, capital, and goods, such that intra-ECCAS exports were only 2% in 2015 and have not surpassed 3% since 1995 (UNCTAD, 2016).
- 10 CEMAC’s FCA is no longer in use in WAEMU, and the same applies inversely, but the nominal exchange rate in relation to the Euro remains the same.
- 11 Statistics compiled by this author are derived from the online site of the World Integrated Trade Solution (WITS).
- 12 This classification resorts to taking into account 10 indicators that have an impact on the life of a firm, notably the creation of the firm, obtaining a construction permit, connecting to the electricity grid, property transfer, access to loans, protection for minor investors, payment of taxes and duties, cross-border trade, the execution of contracts and the regulation of insolvency. The report also examines certain aspects of the regulation of the labour market, which is not part of the classification in that year.

- 13 The World Bank identifies a certain number of constraints in South Asia in terms of trade facilitation: (i) the low density of road networks and railroads and the per capita telephone density; (ii) customs and the time taken for port clearance; (iii) inadequate transport and communications networks; (iv) the fact that trucks from one country are not authorized to cross the border to deliver goods; (v) regulations introduced at gateways and border crossings; (vi) high costs of transporting goods within a country due to the distance between the production zone and the main ports (Weerahewa, 2009).
- 14 Category 0: Essential social goods; category 1: Basic goods, basic raw materials, equipment, specific inputs; category 2: Inputs and intermediate products; category 3: Final consumption goods.
- 15 The rules of origin are established by determining the source of a product in a situation whereby the added value is constituted progressively along the production chain in diverse countries. The rules of origin may be preferential. The preferential rules determine whether imported goods originate from a member country of the preferential trade area or a Free trade area; non preferential regulations are generally used to apply other restrictive rules, notably the anti-dumping laws and quotas.
- 16 a) Mineral products extracted from their soil; b) products from the plant kingdom that have been harvested from there; c) animal products that were born and raised there; d) products derived from live animals that were raised there; e) products of hunting or fishing that took place there; f) marine products extracted from the sea using their fishing vessels; g) goods obtained exclusively from animals or products covered under paragraphs (a) to (f), or from their derivatives; h) products that have been manufactured there without the input of raw materials from another country.
- 17 North: Burundi, Kenya, Uganda, DRC, Rwanda; Centre: Burundi, Kenya, Uganda, DRC, Rwanda; Lagos–Abidjan: Benin, the Republic of Côte d'Ivoire, Ghana, Nigeria, Togo.
- 18 We use the term communities to allow us to unite the three entities that we compare here, even though WAEMU is a union, unlike CEMAC and EAC which are communities. It will be presented as such for the rest of the study.
- 19 In thousands of US dollars
- 20 The five EAC countries are: Burundi, Kenya, Rwanda, Uganda, and Tanzania. The eight WAEMU countries are: Benin, Burkina Faso, Republic of Côte d'Ivoire, Guinea Bissau, Mali, Niger, Senegal, and Togo. The six CEMAC countries are: Cameroon, Congo, Gabon, Equatorial Guinea, CAR, and Chad.
- 21 The first version of this study was presented at AERC in 2010, then published in 2013.

## Reference

- Abdoulahi, M. 2005. "Évaluation des efforts d'intégration régionale en Afrique en vue de promouvoir le commerce intra africain." Centre africain pour les politiques Commerciales, CAPC.
- Alaba, O.B. 2006. "EU-ECOWAS EPA: Regional Integration, Trade Facilitation and Development in West Africa." GTAP conference, United Nations Economic Commission for Africa (UNECA), Addis Ababa, Ethiopia.
- Agbodji, A.E. 2007. "Intégration et Échanges commerciaux Intra Sous-régionaux: le Cas de l'UEMOA". *Revue Africaine de l'Intégration*, 1(1).
- Amoah, G.O.A. 2014. "Intra-African trade: Issues involved in improving Ghana's trade with the rest of Africa". *Developing Country Studies*, 4(2).
- Anderson, J.E. and E. Van Wincoop. 2004. "Trade costs". *Journal of Economic Literature*, 42(3): 691-751.
- Arvis, J.F., Y. Duval, B. Shepherd and C. Utoktham. 2013. "Trade costs in the developing world: 1995-2010". World Bank Policy Research Working Paper 6309. Washington DC: World Bank.
- Avom, D. 2005. "Les déterminants des échanges dans la CEMAC: Une Évaluation empirique". *Revue d'Économie Appliquée*, LVIII(2): 127-153.
- Avom, D. and D. Mignamissi. 2013. "Évaluation et analyse du potentiel commercial dans la Communauté économique et monétaire de l'Afrique centrale (CEMAC)." *L'Actualité économique*, 89(2): 115-145.
- Avom, D. and G. Fankem. 2014. "Qualité du cadre juridique, corruption et commerce international: le cas de la CEMAC. *Revue d'économie politique*, 124(1): 101-128.
- Avom, D. and D. Gbetnkom. 2005. "Intégration par le marché: Le cas de L'UEMOA." *Revue Région et Développement*, No. 22.
- Balassa, B. 1962. "L'économie du XXIème." *The American Economic Review*, 52(3).
- Baldwin, R. and D. Taglioni. 2006. "Gravity for dummies and dummies for gravity equations". NBER Working Papers, 12516. Cambridge, MA: National Bureau of Economic Research.
- Baldwin, J.R. 2003. "Export-market participation and productivity performance in Canadian manufacturing." *Revue Canadienne d'Economie*, 11: 63-113
- Bergstrand, J.H., M. Larch, and Y.V. Yotov. 2015. "Economic Integration Agreements, Border Effects and Distance Elasticities in the Gravity Equation." *European Economic Review*, 78: 307-327.
- Bergstrand, J.H. 1985. "The gravity equation in international trade: Some microeconomic foundations and empirical evidence". *The Review of Economics and Statistics*, 67(3): 474-81.

- Bergstrand, J.H. 1989. "The generalized gravity equation, monopolistic competition and the factor-proportions theory in international trade". *The Review of Economics and Statistics*, 71(1): 143-53.
- Bernard, A.B., J.B. Jensen, J. Stephen, J.S. Redding and K.P. Schott. 2007. "Firms in International Trade." *Journal of Economic Perspectives*, 21(3) : 105-130.
- Bhattacharyay, B.N. 2009. "Infrastructure development for ASEAN economic integration". ADBI Working Paper 138. Tokyo: Asian Development Bank Institute.
- Billon, M., and E. Rodriguez-Crespo. 2020. "ICT use and trade facilitation: impacts on bilateral trade of sub-saharan countries." *Economic Transformations and Development Challenges*, 38(2).
- Brun, J.F., C. Carrere, P. Guillaumont and J. De Melo. 2002. "Has distance died? Evidence from a panel gravity model." CEPR Discussion Paper 3500.
- ECA. 2012. "État de l'intégration régionale en Afrique V, Vers une zone de libre-échange continentale africaine." Commission économique pour l'Afrique, Addis-Abeba, Éthiopie.
- CEAECA. 2010. "Développer le Commerce Intra-Africain." *Rapport sur l'évaluation de l'intégration en Afrique (ARIA IV)*: Addis Ababa.
- Chaney, T. 2008. "Distorted gravity: The intensive and extensive margins of international trade". *American Economic Review*, 51(1): 1707-21.
- Clarke, G.R.G., and S.J. Wallsten. 2006. "Has the internet increased trade? Developed and developing country evidence." *Economic Inquiry*, 44(3), 465-484. doi. 10.1093/ei/cbj026.
- CNUCED. 2013. "Contribuer au développement des infrastructures pour promouvoir l'intégration économique: Le rôle des secteurs public et privé." Conseil du commerce et du développement Commission du commerce et du développement Réunion d'experts pluriannuelle sur la promotion de l'intégration et de la coopération économiques.
- Coulibaly, S. and L. Fontagné. 2005. "South-South trade: Geography matters". *Journal of African Economies*, 15(2): 313-341.
- Deardorff, A. 1998. "Determinants of bilateral trade: Does gravity work in a neoclassical world?," In J.A. Frankel, ed., *The regionalization of the world economy*. Chicago: University of Chicago Press.
- Djankov, S., C. Freund and C.S. Pham 2006. "Trading on time." *World Bank Policy Research Working Paper No. 3909*. Washington, DC: World Bank.
- Dollar, D. and A. Kraay. 2002. "Growth is good for the poor". *Journal of Economic Growth*, 7(3): 195-225.
- DSIR. 2011. "Afrique centrale." Document de Stratégie d'intégration Régionale. Banque Africaine pour le Développement.
- Easton, J. and S. Kortum 2002. "Technology, geography, and trade." *Econometrica*, 70: 1741-1779
- Egger, P.H. 2002. "An econometric view on the estimation of gravity models and the calculation of trade potentials". *The World Economy*, 25: 297-312.

- Egger, P.H. and A. Lassmann. 2011. "The language effect in international trade: A meta-analysis". CESifo Working Paper: Trade Policy No. 3682
- Eliason, A. 2015. "The trade facilitation agreement: A new hope for the World Trade Organization". *World Trade Review*, 14(4): 643-670.
- Feenstra, R., J. Markusen and A. Rose. 2001. "Using the gravity equation to differentiate across alternative theories of trade". *Canadian Journal of Economics*, 34: 430-47.
- Fink, C., A. Mttoo and C.N. Illeana. 2002. "Assessing the impact of communication costs on international trade". *Journal of International Economics*. 67(2): 428-445.
- FMI. 2011. *Perspectives économiques régionales: Afrique subsaharienne*. Washington.
- Foster, V. and C. Briceño-Garmendia. 2009. "Africa's infrastructure a time for transformation". The International Bank for Reconstruction and Development. Washington DC: World Bank.
- Gahama, J. 2015. "La Communauté d'Afrique de l'Est: Une jeune organisation régionale promise à un bel avenir?" Les perspectives de l'Afrique au XXI<sup>e</sup> siècle.
- Gahama, J. 2006. "Bref aperçu historique du bassin de la Kagera." Workshop for Kagera Basin Non-Governmental Stakeholders, Bujumbura.
- Gardner, R. 1998. "Unobservable individual effects in unbalanced panel data". *Economic Letters*, 58: 39-42.
- Gbetnkom, D. 2004. "Reformes économiques, échanges intra-régionaux et convergence en Afrique Sub-saharienne." *Thèse d'État en Sciences Économiques*.
- Gourieroux, C., A. Monfort and A. Trognon. 1984. "Pseudo maximum likelihood methods: Applications to Poisson models." *Econometrica*, 52: 701-720.
- Gruszczynski, L. 2020. "The COVID-19 Pandemic and International Trade: Temporary Turbulence or Paradigm Shift?" *European Journal of Risk Regulation*, 11: 337-342
- Guillaumont, P., A.M. Geourjon, and S. Guérineau. 2012. "Evaluation des gains attendus de l'intégration économique dans les pays africains de la zone franc." Paris, France: Fondation pour les Etudes et la Recherche sur le Développement International.
- Grossman, G.M., and E. Helpman. 1994. "Endogenous Innovation in the Theory of Growth." *Journal of Economic Perspectives*, 8 (1): 23-44.
- Hausman, J.A and W.E. Taylor. 1981. "Panel data and unobservable individual effects". *Econometrica*, 49: 1377-1398.
- IAM. 2015. "L'Agenda2063: Cadre global de la transformation positive de l'Afrique?" La note de l'Institut Afrique Monde.
- Kpodar, K. 2007. "Manuel d'initiation à stata (version 8)." Centre d'Etudes et de Recherches sur le Développement International (CERDI), CNRS.
- Krugman, P.R., and M. Obstfeld. 2006. *International economics: Trade and policy*. Boston: Pearson Addison Wesley.
- Krugman, P.R. 1980. "Scale economies, product differentiation, and the pattern of trade". *American Economic Review*, 70: 950-959.
- Kumari, M., and N. Bharti. 2022. "Revisiting Literature on Trade Facilitation in the Context of COVID-19 and South Asia." *Studies in International Economics and Finance*, pp 283-292

- Lima, N. and A.J. Venables. 2001. "Infrastructure, geographical disadvantage, and transport cost". *World Bank Economic Review*, 15(3): 451-479.
- Longo, R. and K. Sekkat. 2004. "Economic obstacles to expanding intra-African trade". *World Development*, 32(8): 1309-1321.
- Martinez-Zarzoso, I. and L. Márquez-Ramos. 2008. "The effect of trade facilitation on sectoral trade". *B.E. Journal of Economic Analysis and Policy*, 8: 1, Article 42.
- Meade J.E. 1955. *The theories of customs unions*. Amsterdam: North-Holland.
- Melitz, M. 2003. "The impact of trade on intra-industry reallocations and aggregate industry productivity". *Econometrica*, 71: 1695-1725.
- Melo (de) J., A. Panagariya and D. Rodrik. 1992. "The new regionalism: A country perspective". In J. de Melo and A. Panagariya, eds., *New dimensions in regional integration*, CEPR, 159-201.
- Molefe, E.K., and D.K. Makatjane. 2020. "Roads transport infrastructure and trade facilitation in south Africa: the monte-carlo simulation approach." *Eurasian Journal of Economics and Finance*, 8(3): 130-139.
- Musila, J.W. 2005. "The intensity of trade creation and trade diversion in COMESA, ECCAS and ECOWAS: A comparative analysis". *Journal of African Economies*, 14 (1): 117-141.
- Mwana, S. 2006. *Kiswahili Grammar*. Dar-es-Salaam.
- Ndayishimiye, R.F. 2009. "L'impact de l'adhésion du Burundi à l'East African Community." Bujumbura.
- NEPAD/OCDE. 2009. *Communauté d'Afrique de l'Est: Panorama des projets régionaux d'infrastructure routière*. Genève.
- Ng, F. and A. Yeats. 2000. "On the recent trade performance of Sub-Saharan African countries: Cause for hope or more of the same?" Africa Region Working Paper Series No. 7. Washington DC: World Bank.
- Njinkeu, D., J. Wilson and B. Powo Fosso B. 2008. "Expanding trade within Africa: The impact of trade facilitation". World Bank Policy Research Working Paper 4790.
- Nkendah, R. 2010. "The informal cross-border trade of agricultural commodities between Cameroon and its CEMAC's neighbours." Paper for the NSF/AERC/IGC Conference, December.
- Nkendah, R. 2013. "Estimating the informal cross-border trade of agricultural and horticultural commodities between Cameroon and its CEMAC neighbours". *Food Policy*, 41: 133-144.
- Nyombayire, C. 2011. "CEA: Les clés d'une intégration qui marche." (<http://africadiligence.com>). 14 Mars 2011. Republic of Rwanda, Ministry of East African Community Affairs, 2010, East African Community Projects and Programmes, Kigali.
- OMC. 2006. "Examen des politiques commerciales, Communauté de L'Afrique de L'Est." WT/TPR/S/171.
- Pavel, F., A. Mattes and P. Meinen. 2012. "Goods follow bytes: The impact of ICT on EU trade." DIW Discussion Papers, No. 1182, Deutsches Institut für Wirtschaftsforschung (DIW), Berlin



- Portugal-Perez, A. and J.S. Wilson. 2010. "Export performance and trade facilitation reform: Hard and soft infrastructure." Washington DC: World Bank Development Research Group Trade and Integration Team.
- Sadikov, A.M. 2007. "Border and Behind-the-Border Trade Barriers and Country Exports." IMF Working Papers 292.
- Safaeimanesh, S. and G.P. Jenkins. 2021. "Trade Facilitation and Its Impacts on the Economic Welfare and Sustainable Development of the ECOWAS Region." *Sustainability*, 13: 164.
- Sayed, A. 2021. "The Role of Trade Facilitation and Other Policy Strategies in the Successful Implementation of AfCFTA." *Global Trade and Customs Journal*, 16(11/12): 595-600.
- Seck, A. 2017. "How facilitating trade would benefit trade in Sub-Saharan Africa". *Journal of African Development*, 19(1): 1-26.
- Seck, A. 2016. "Trade facilitation and trade participation: Are Sub-Saharan African firms different?" *Journal of African Trade*, 3: 23-39.
- Serlenga, L. and Y. Shin. 2007. "Gravity models of intra-EU trade: Application of the CCEP-HT estimation in heterogeneous panels with unobserved common time specific factors". *Journal of Applied Econometrics*, 22: 361-81.
- Sevestre, P. 2002. *Econométrie des données de panel*. Dunod, Paris.
- Silva, J. S. and S. Tenreyro. 2011. "Further simulation evidence on the performance of the Poisson Pseudo-Maximum Likelihood Estimator". *Economics Letters*, 112(2): 220-222.
- Silva, J.S. and S. Tenreyro. 2005. "The log of gravity." Centre for Economic Performance (CEP) Discussion Paper No. 701.
- Smith, A. 1776. "Recherches sur la nature et les causes de la richesse des nations." Traduction française, 1949 réalisée par Jean-Marie Tremblay, professeur de sociologie au Cégep de Chicoutimi à partir de la version 1776.
- Stone, S. and A. Strutt. 2009. "Transport infrastructure and trade facilitation in the Greater Mekong Subregion." ADBI Working Paper Series, No. 130.
- Simpemuka, A. 2010. "Le Burundi dans l'East African Community: Vers un destin incertain." Bujumbura.
- Tinbergen J. 1962. *Shaping the world economy: Suggestions for an International economic Policy*. New York: Twentieth Century Fund.
- UNCTAD. 2020. <https://unctadstat.unctad.org/wds/ReportFolders/reportFolders.aspx>
- UNCTAD. 2016. <https://unctadstat.unctad.org/wds/TableView/tableView.aspx>
- UNDP. 2011. "Évaluation des progrès accomplis en Afrique dans la réalisation des objectifs du Millénaire pour le développement." PNUD, CEA, GBAD.
- Viner, J. 1950. *The Customs Union issue*. New York: Carnegie Endowment for International Peace.
- Weerahewa, J. 2009. "Impact of trade facilitation measures and regional trade agreements on food and agricultural trade in South Asia." Asia-Pacific Research and Training Network on Trade Working Paper Series, No. 69.



- Wilson, J.S., C.L. Mann and T. Otsuki. 2005. "Assessing the benefits of trade facilitation: A global perspective" *World Economy*, 28 (6): 841-71.
- Wilson, J.S., C.L. Mann and T. Otsuki. 2002. "Trade facilitation and economic development measuring the impact." Policy Research Working Paper, Washington DC: World Bank Development Research Group.
- WITS. 2020. <https://wits.worldbank.org/country-indicator.aspx?lang=en>
- Yonazi, E., T. Kelly, N. Halewood and C. Blackman. 2012. *The transformational use of Information and Communications Technologies in Africa*. World Bank.

# Annexes

Table A1: Descriptive statistics (WAEMU)

Variable	Obs	Mean	Std. Dev.	Min	Max
+-----+-----					
expij	616	45670.7	96243.79	0	666627
njri	616	32.20455	13.01333	12	59
ndoci	616	7.75	1.701984	6	11
Interi	616	4.035446	4.184902	221341	21.6903
Pibi	616	9.46e+09	7.40e+09	7.20e+08	3.40e+10
popi	616	1.23e+07	5841403	1500000	2.30e+07
distij	616	1196.03	602.0145 162.837	2389.43	

Table A2: Descriptive Statistics (CEMAC)

Variable	Obs	Mean	Std. Dev.	Min	Max
+-----+-----					
expij	616	45670.7	96243.79	0	666627
njri	616	32.20455	13.01333	12	59
ndoci	616	7.75	1.701984	6	11
Interi	616	4.035446	4.184902	221341	21.6903
Pibi	330	1.33e+10	7.13e+09	1.40e+09	3.00e+10
popi	616	1.23e+07	5841403	1500000	2.30e+07
distij	616	1196.03	602.0145 162.837	2389.43	

Table A3: Descriptive statistics (EAC)

Variable	Obs	Mean	Std. Dev.	Min	Max
+-----+-----					
expij	616	45670.7	96243.79	0	666627
njri	220	33.81818	10.25535	18	60
ndoci	616	7.75	1.701984	6	11
interi	220	8.754011	10.63164	183777	45.6228
pibi	220	618.2185	263.3821	205.072	1133.46
popi	616	1.23e+07	5841403	1500000	2.30e+07
distij	616	1196.03	602.0145	162.837	2389.43



## Mission

To strengthen local capacity for conducting independent, rigorous inquiry into the problems facing the management of economies in sub-Saharan Africa.

The mission rests on two basic premises: that development is more likely to occur where there is sustained sound management of the economy, and that such management is more likely to happen where there is an active, well-informed group of locally based professional economists to conduct policy-relevant research.

[www.aercafrica.org](http://www.aercafrica.org)

## Learn More



[www.facebook.com/aercafrica](https://www.facebook.com/aercafrica)



[www.instagram.com/aercafrica\\_official/](https://www.instagram.com/aercafrica_official/)



[twitter.com/aercafrica](https://twitter.com/aercafrica)



[www.linkedin.com/school/aercafrica/](https://www.linkedin.com/school/aercafrica/)

## Contact Us

African Economic Research Consortium  
Consortium pour la Recherche Economique en Afrique  
Middle East Bank Towers,  
3rd Floor, Jakaya Kikwete Road  
Nairobi 00200, Kenya  
Tel: +254 (0) 20 273 4150  
[communications@ercafrica.org](mailto:communications@ercafrica.org)