



## **DETERMINANTS OF TRADE COSTS: AN APPLICATION OF GRAVITY MODEL FOR ECOWAS COUNTRIES**

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### **ABSTRACT**

*The main objective of this research is to analyze and evaluate the main trade facilitation factors that affect total trade cost and manufactured trade cost in ECOWAS countries. To cope with these objectives, we adopt an econometric approach of gravity model. The data cover the ECOWAS with their main trade partners from 2010 to 2014. We use panel data econometrics to estimation our model. For that, random effect (RE), fixed effect (FE) and Poisson Pseudo-Maximum Likelihood (PPML) estimators are mobilized. The main result is that total trade cost and manufactured trade cost are both influenced by traditional gravity model variables and Doing Business (DB) indicators. Most importantly, trade costs in ECOWAS countries are more impacted by customs environment.*

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**Key words :** *trade cost, gravity model, PPML, ECOWAS. JEL: F1, F14, F15.*

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### **INTRODUCTION**

The importance of trade in the development process is proved both by theories then by the facts. The trade volume is increasing over the years. Indeed, over the past 30 years, international trade has experienced vertiginous growth, far exceeding that of world production (WTO, 2013). Among the factors contributing to the increase in trade, we can mention regional trade agreements.

Indeed, despite this remarkable increase in the volume of trade, it is not less important to stress that there are many factors that impede the trade performance of countries especially those in development. Trade statistics show these different levels for Africa including difficulties. In 2011, the share of Africa in world trade although an increase is only barely 3% of the global trade of goods, then is 33.6% for the EU and 16.79 % for NAFTA (UNCTAD, 2012). Furthermore, exchanges within the African continent are very low. Indeed, in 2011, intra-African trade represents only 13% of its total exports. The share of exports of Africa in world trade remains lower than that of other regions, reaching less than 15% of the total trade of the continent against more than 20% for Latin America, and almost 50% for Asia.

However, many African countries are members of the WTO and have therefore signed the bilateral, and multilateral agreements trade liberalization in the early 1990s, and this margin trade reforms with the programs of structural adjustment at the end of the 1980s. These trade reforms are struggling to promote the intra-African trade. Among the factors limiting the intra trade in Africa, trade costs are one of the basic elements that hinder the development of trade.

Trade costs are all costs incurred to achieve a manufactured good to a final user, other than the cost of production of the property itself (ECA, 2010). Because they have effects on trade, trade costs are considered to be equivalent to the ad-valorem rates. Statistics show that trade transactions costs represent between 1 and 15% of the value of these transactions. The trade costs of manufactured products are particularly high in sub-Saharan Africa than in any other developing region. They represent on average 250% in equivalent ad valorem in 2009 in sub-Saharan Africa while they are 150% in North Africa and the Middle East OECD (2005).

Based on the research findings of Njinkeu et al. (2009), Arvis and al. (2013), Nový (2013) and Kouty (2013), the literature distinguishes between two main sources of trade costs. It comes from exogenous sources that do not depend on public policies (the geographical distance, the common border, common history, common language, participation in a regional community, etc.); and endogenous sources that are specific to the originating country or recipient (the Customs environment, the infrastructure environment, the institutional environment, etc.).

Several works of both theoretical research and empirical focused on the topic and tried to analyze and evaluate the effects of the factors of trade facilitation on trade costs in Africa and other regions of the world. This new research proposes to analyze and to understand the effects of trade facilitation on trade costs. The advantage of this approach is double: (i) it helps to understand the specificities of the trade costs in ECOWAS countries, (ii) on the aspect of trade policy, this study will lead to the identification of the factors worsening the trade costs in order to take them into account in the

development and implementation of common policies in the process of integration through customs unions transition to a full integration process.

Clearly, this research proposes to evaluate and analyze the exogenous and endogenous factors of trade facilitation affecting trade costs in ECOWAS countries. To achieve this goal, PPM regression is used on bilateral trade data from 2010 to 2014. The main result is that total trade cost and manufactured trade cost are both influenced by traditional gravity model variables and Doing Business (DB) indicators. Most importantly, trade cost in ECOWAS countries are more impacted by customs environment.

The rest of the paper is as follow. First, it is presented an overview of literature review. The methodology strategy is dressed in section two, section three covers results and interpretation. The last focuses on final remarks.

### **STYLIZED FACT AND ROLE FACILITATION TRADE AGREEMENTS IN ECOWAS TRADE PERFORMANCE**

In general, Africa as a continent is increasingly focusing on integration strategies to achieve sustainable economic growth, as various studies have shown that resources, capacities and costs, countries could effectively development problems (ECA et al., 2010, ECA et al., 2012). In Africa, there are thus four Regional Economic Communities (RECs): the Community for the Development of Africa the Southern African Development Community (SADC), the East African Community (EAC), the Economic Community of West African States (ECOWAS) and the Economic Community of the Central African States (ECCAS).

Since 1975, West African countries created a free trade area with a liberalization scheme adopted in 1979. The objectives of this program are to: (i) open another market for goods and services, (ii) increase investments opportunities, (ii) eliminate tariff in order to reduce product costs to consumers and firms, and (iv) accelerate trade by harmonizing and normalizing customs procedures.

Initially, ECOWAS Trade Liberalization Scheme (ELTS) benefited exclusively from trade in agricultural, artisanal and raw materials. However, in 1990, the scope of the program was expanded to include industrial products. Setting Implementation of the ELTS was designed to take place in three stages: (a) the full and immediate liberalization of trade in unprocessed goods and traditional crafts; (b) the progressive liberalization of trade in industrial products, the phases of which reflect differences in the level of development of the three categories of Member States in the ECOWAS, and (c) the progressive establishment of the CET.

Clearly, therefore, in order to qualify the free movement in the territory of the Member ECOWAS without tariff or non-tariff barriers, the goods must be classified in one of the following categories:

- unprocessed goods: these include livestock, fish, plant products or minerals and raw materials which have not undergone any industrial transformation;
- traditional crafts: these include handmade goods with or without use instruments or devices activated directly by the craftsman. These include, for example, for example, wooden utensils, carpets, household linen, basketwork, shoes, etc.;
- industrial products: these include both processed and semi transformed products of Community origin;

The benefits of ELTS in facilitating cross-border trade within the region are indisputable. If this program were fully implemented, this would Economic growth, more employment and lower prices for consumer goods. Even if the current ELTS has successfully eliminated some tariff and non-tariff barriers in the ECOWAS region, they ELTS remains confronted with major challenges in terms of its implementation and compliance Member States of ECOWAS.

Since 2000, the value of exports from ECOWAS countries has increased by 260 per cent. From \$ 34.5 billion in 2000 to almost \$ 124 billion in 2014 (USAID, 2015; Amoako-

Tuffour, 2016). Nevertheless, the volume of exports between members of ECOWAS remained constant, showing much less growth (from 7% to 11% only) (USAID, 2015, Torres and Seters, 2016).

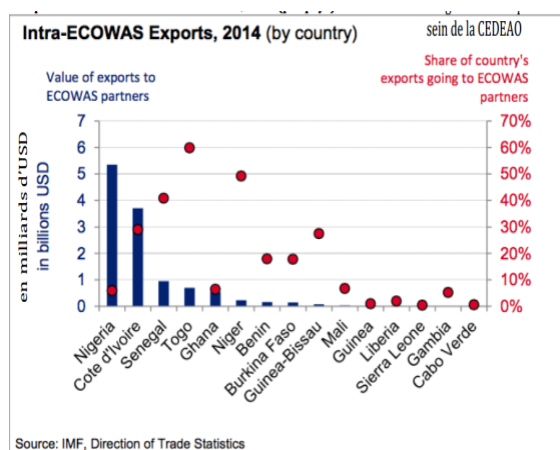
Concerning interregional trade, there has been a change in both volume and the direction of trade. In 2000, the United States was the largest recipient of ECOWAS exports (about 35%), while ECOWAS exports of the recent period targeted the markets Asia, especially China (Far East) and India (South Asia) and European markets Such as France and the Netherlands (ibid.). By 2014, India was the largest recipient of Exports of ECOWAS valued at \$ 16.73 billion. The ECOWAS countries also imported, collectively, more than \$ 33 billion worth of goods and services from China. The only ECOWAS Member State among the top five importers and exporters of goods was Nigeria, which in 2014 imported \$ 5.89 billion worth of Goods and services from other ECOWAS Member States.

In addition, the analysis of ECOWAS interregional exports shows limited diversification products and a high preponderance of mining products (eg oil and natural gas) and some agricultural products (such as cocoa, rubber and cotton) (Torres and Seters, 2016). However, imports from the ECOWAS area are more diversified, with a lot of industrial products (eg, refined petroleum, vehicles, boats and Telecommunications) and food products (eg rice and wheat). Clearly, therefore, the main trading partners are the highly industrialized countries like India, China, the United States and the member countries of the European Union, which buy raw materials and Sell industrial products to and from the region. Nigeria, due to its Economy and its exports of crude oil, remains the largest exporter of Region, accounting for 75.3% of total ECOWAS exports, followed by Ghana and Côte d'Ivoire, which together account for only 8% of total exports.

However, despite all the efforts made by ECOWAS over the past 40 in recent years, intraregional trade among ECOWAS Member States is interregional trade. In 2014, exports were estimated at less than Between ECOWAS Member States. Even within the ECOWAS Member States, some participate more than

others in intraregional trade, particularly exports. The Nigeria, for example, exports high volumes of goods (largely in the form of oil Crude) and services to other ECOWAS Member States. These exports were valued at more than 5 billion euros but constituted less than 10% of the total Nigerian exports. The in the same year, intraregional exports from Senegal, Togo and Niger less than 10% of total ECOWAS exports; Nevertheless, the Member States of ECOWAS represented more than 40% of the exports of these countries. In some countries, two or three goods account for 75% of exports (Amoako-Tuffour, 2016, Schmeig, 2015).

**Figure 1:** Intra ECOWAS Exports performance, in 2014



According to the Doing Business report of the World Bank (World Bank, 2014), all ECOWAS have made satisfactory progress in recent years in terms of distance of the border, progress being reflected on their overall score in the Report.

The term "frontier" defined in the report, represents the best performance observed across all countries covered by Doing Business since 2005, and the "distance from the border" makes it possible to observe the between the performance of an economy in relation to the best overall performance over time for an entire sample of 36 indicators and 10 Doing Business themes (World Bank, 2014, p. 100; USAID, 2015). Between 2009 and 2014, six ECOWAS countries arrived 60% closer to the border on the credit access indicator.

As a region, ECOWAS has made impressive progress on all indicators in relation to medium-

and low-income countries and in relation to the CAD and sub-Saharan Africa. On average, all ECOWAS countries are closer to 20 % to the border between 2009 and 2014.

The World Bank's Doing Business Report (World Bank, 2016) also examines the number of days that ECOWAS countries are generally required to import and export goods by inter-regional maritime transport. For all ECOWAS countries, clearance times of imports are higher than those of exports and, as a rule; it is the preparation of the documents that devotes the most time in the countries of ECOWAS.

With regard to international trade, the number of days required for customs clearance goods imported into customs are subject to significant variations. For example, it is indicated that Nigeria needs 12 days for the clearance of imported goods, which is more than twice the average in the ECOWAS region, while Liberia goods imported in one day (USAID, 2015). In addition, in landlocked ECOWAS countries (Niger, Burkina Faso and Mali), the time spent on imports is 4.5 times higher than for imports into other ECOWAS countries that are not enclaved (Amoako -Tuffour, 2016).

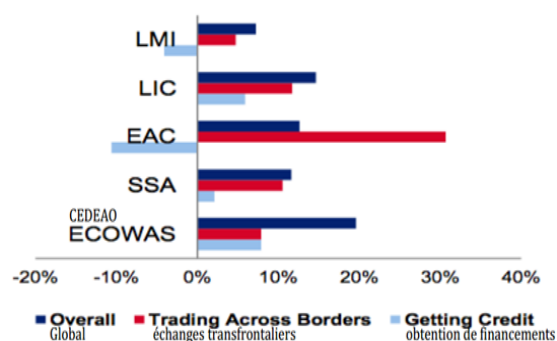
Time-consuming border controls and procedures not only have a negative impact on trade volumes, but they also reduce the likelihood that firms will enter on markets for perishable products (such as agricultural and other exports) or products to be delivered in a short period of time to preserve competitiveness.

The World Bank's Doing Business 2016 report, however, pointed out that the majority of ECOWAS countries had facilitated and accelerated cross-border trade over the years by adopting different tools to facilitate trade such as one-stop shops (In Benin and Côte d'Ivoire), risk-based inspections (eg. Côte d'Ivoire and Liberia), effective port management systems (eg Guinea) and (For example, Ghana, Mali, Togo, Niger or Sierra Leone).

Nevertheless, the report listed some ECOWAS countries where cross-border trade has become somewhat more difficult. For example, the report (World Bank, 2016) found that in Niger, the time and cost of documentary and border

compliance for imports had increased when returning inspections were made mandatory. Similarly, in Togo, cross-border trade has become more difficult because of the monopoly granted to a private company to control all port activities in the port of Lome. The report also indicated that Ghana had increased its import clearance times by introducing import scanning and changing its customs clearance system.

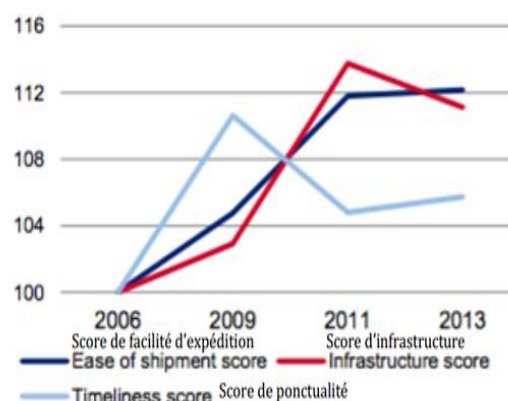
**Figure 2:** Doing Business indicator performance of ECOWAS Countries (% change in distance to frontier, 2009-2014)



**Source:** World Bank, *Doing Business* 2016

The World Bank also compiles a Logistics Performance Index (IPL) that provides information on the progress of transport networks in the ECOWAS region. Three important transport-related indicators are punctuality, infrastructure and ease of shipment, which are essential aspects of improving the competitiveness of trade in the region. The IPL shows clearly that, since 2006, ECOWAS countries have, on average, improved their scores in these three areas, but there are still areas for improvement.

**Figure 3:** Logistics performance Index Indicator progress in ECOWAS average, Index 2006 =100



**Source:** World Bank Logistics performance Index, 2016

## PREVIOUS EMPIRICAL RESEARCHES

The literature on the issue of trade facilitation measures and the effects on trade costs is little abundant. However, some economists have broached the subject to explain the poor commercial performance of Africa and also how the trade facilitation can aggravate the costs of returns of an asset and thus reduce the purchasing power of households.

Trade costs are broadly defined to include all costs incurred in getting a good to a final user other than the production cost of the good itself. Among others this includes transportation costs (both freight costs and time costs), policy barriers (tariffs and non-tariff barriers), information costs, contract enforcement costs, costs associated with the use of different currencies, legal and regulatory costs, and local distribution costs (wholesale and retail).

We do not cover the structural determinants of these trade costs except in passing. Our focus is on the prior step of measuring the costs. Ultimately, with a firmer understanding of the size and pattern of the costs, the profession can and should proceed to the explanation of the costs.

There is undoubtedly a rich structure of endogeneity between various types of domestic and international trade costs, market structure and political economic structure. Some trade costs provide benefits, and it is likely that the pursuit of benefits partly explains the costs (Anderson and Wincoop, 2003).

Limão and Venables (2001) use different data sets to investigate the dependence of transport costs on geography and infrastructure. Infrastructure is an important determinant of transport costs, especially for landlocked countries. Their analysis of bilateral trade data confirms the importance of infrastructure and gives an estimate of the elasticity of trade flows with respect to the trade cost factor of around -3.

A deterioration of infrastructure from the median to the 75th percentile raises transport costs by 12 percentage points and reduces trade volumes by 28 percent. The analysis of African trade flows indicates that their relatively low level is largely due to poor infrastructure.

Anderson and Wincoop (2003) used partial and incomplete data on direct measures of costs go together with inference on implicit costs from the pattern of trade across countries. Representative margins for full trade costs in rich countries exceed 170% based on our pushing the data very hard. They found that poor countries face even higher trade costs.

There is a lot of variation across countries and across goods within countries, much of which makes economic sense. Theory looms large in their survey, providing interpretation and perspective on the one hand and suggesting improvements for the future on the other hand. Some new results are presented to apply and interpret gravity theory properly and to handle aggregation appropriately.

For others economists (Njinkeu and PowoFosso, 2006; Yang and Gupta, 2007), high trade costs are the main cause of the poor trade performance of Africa. The research works of Njinkeu and al. (2009) lead to the same conclusion relying on infrastructure and port efficiency as the cause of the weakness of intra-African trade.

Similarly, the African Bank export/import in his study, stresses that the growth in the volume of intra-African between 2001 and 2003 trade is due to the reduction of the costs of trade through the improvement of transport, the continuation of reforms of trade and the procedures for payment, the reduction

of tariff and non-tariff barriers, improving the commercial infrastructure and a better flow of information (AFREXIMBANK, 2003).

Trade costs have adverse effects on the country's economic performance. Indeed, in countries where the trade costs are relatively high, consumers see their property be reduced because the price more high of the imported goods. The high costs of trade in Africa are the consequence of a lack of facilitation of trade (Lisinge, 2005; Njinkeu et al. 2009; ECA 2010).

Kouty (2013) uses data from 30 African countries and 100 trading partners to analyze, the results show that exogenous factors such as the distance and the isolation affect positively and significantly trade costs. However, the area, the common official language, the common border and belonging to the same regional community influence negatively and significantly trade costs.

With regard to endogenous factors, he found that port efficiency and the penetration of new technologies influence negatively the commercial costs. The customs tariff and the cost of launching a case affect positively the commercial costs in Africa.

It appears from this overview of the literature that there is not yet a formal comparative study between various regional trade agreements on the analysis and the determination of factors affecting trade costs. In this paper, ECOWAS countries are taken into account.

## EMPIRICAL STRATEGY

The theoretical framework of this paper is based on the theoretical foundation of gravity model. The gravity model explains how factors such as distance, population size, income level and others determine the level of trade between nations (Anderson, 1979). The gravity model is one of the remarkable successes in the history of empirical economics. After Tinbergen's use in 1962, to make bilateral trade estimates, the gravity model became the focus of bilateral trade flow analysis. Bayoumi and Eichengreen (1997) note that the gravity equation has long been the working tool of trade analysis studies.

Tinbergen (1962), Linnemann (1966), Aitken (1973) and Sapir (1981) note that at the base the gravity model had no theoretical basis, it was inspired from the theory of gravity law of physical science.

The law of gravity specifies that the force of attraction between two bodies is proportional to the product of their masses and inversely proportional to the distance which separates them. Tinbergen (1962) is the first researcher who was inspired by the law of physics, and made it a tool for analyzing bilateral trade flows. The specification of the Tinbergen model was as follows:

$$A_{ij} = \alpha \cdot Y_i^\beta \cdot Y_j^\gamma / d_{ij}^\theta \quad (1)$$

$\alpha$ ,  $\beta$ ,  $\gamma$  and  $\theta$  are partial elasticities. According to this equation, the trade in product A between countries i and j ( $A_{ij}$ ) depends on the same period of the GDP of the exporting country ( $Y_i$ ) and ( $Y_j$ ) for the importing country and the distance separating the two countries. After tinbergen several authors have tried to bring a theoretical framework to what seems very logical.

Basing themselves mainly on product differentiation, notably Poyhonen (1963) and Linnemann (1966), they added variables theoretically justified by Walrasian general equilibrium. Following Leamer and Stern (1970) and Leamer (1974) relied on both the gravity equation and the HO model to motivate new explanatory variables but did not integrate both approaches. Unfortunately all these attempts were theoretically weak (Deardorff, 1998).

The first author who provided a theoretical explanation as such is Anderson (1979), several other authors have improved and expanded the theoretical framework of the gravity model. The most important of these are: Bergstrand (1985, 1989), Helpman (1987), Oguledo and MacPhee (1994), Deardorff (1995), Hummels and Levinsohn (1995), Anderson and Van Wincoop (2001), Evenett and Keller (2002), Rose (2006), Bergstrand and Baier (2005), Helpman et al. (2008), and Arkolakis et al (2012). Some of these authors have deduced a theoretical equation from the two main determinants of the model of new

theories of international trade: economies of scale and product differentiation. Other authors have contributed to refining the gravity model by taking into account new explanatory variables

To achieve the two main objectives of this research, the methodology to be used will be based on the approach developed by Novy (2013), Arvis and al. (2013) this approach is to build a gravity model to determine the impact of different factors on trade costs. Just as Kouty (2013), our model is therefore an enhanced version of Arvis and al. (2013) and is as follows:

$$\begin{aligned} \ln TC_{ij} = & \beta_0 + \beta_1 \ln GDP_i + \beta_2 \ln GDP_j + \beta_3 \ln Exch_{ij} + \beta_4 \ln D_{ij} + \beta_5 \ln S_i + \beta_6 \ln S_j + \beta_7 \ln S_{ij} + \beta_8 \ln I_{ij} \\ & + \beta_9 \ln I_{ij} + \beta_{10} \ln CB_{ij} + \beta_{11} \ln RTA_{ij} + \beta_{12} \ln CL_{ij} + \beta_{13} \ln col_{ij} + \beta_{14} \ln PE_{ij} + \beta_{15} \ln CE_{ij} \\ & + \beta_{16} \ln IE_{ij} + \beta_{17} \ln NTech_{ij} + \beta_{23} \ln (1 + Tariff_{ij}) + \beta_{24} \ln SCost_{ij} + \lambda_i + \varepsilon_{ij} \end{aligned} \quad (2)$$

TC refers to trade costs. In this research, both total trade cost and manufactured trade cost are considered in separated equations to be estimated. The explanatory variables are: the gross domestic product (GDP), the exchange rate (Exch), the distance (D); area (Area); land-locked (ll); the common border (CB), the regional trade agreement belonging (RTA); the common language (CL), common colonizer (col), port efficiency (PE), the Customs environment (CE), the institutional environment (EI), the penetration of new technologies (Ntech), tariffs (Tariff) and business costs of starting (SCost).

### Data and Estimation technique

The data used come from several sources i.e. the UNESCAP-World Bank Trade Cost Database for costs bilateral trade, the World Bank (World Development Indicators) and Global Competitiveness Report for the other explanatory variables. The research focuses on ECOWAS countries. The study covers the period from 2010 to 2014. We use panel data econometrics to estimation our model. For that, random model (RE), fixed effect model (FE) and Poisson Pseudo-Maximum Likelihood (PPML) estimators.

## RESULTS AND DISCUSSION

The results of estimation show that trade costs in between ECOWAS countries and their trade partners are mainly influenced by some factors such as common border, the use of common language, the cost of firm creation, custom environment, benefit of firms, GDP of export country, GDP of import country and by the distance. More specifically, one can notice that the state of development of countries, measure by GDP, have negative effect on trade cost.

It means, as far as a country being developing, its infrastructure and other facilities improve and make more favorable the business environment. Doing business (DB) indicators explain significantly trade cost. This result shows that a country that improves its score of DB ranking reduce more trade cost.

This country would more participate to international trade with its partner. More interestingly, the customs environment is the factors that impeded more business. The impact is very high both for total trade cost and manufacturing trade cost.

One can explain this finding by the revenue oriented of trade policy of ECOWAS countries. For this reason, the facilitation trade agreement (FTA) comes as a great opportunity for reducing trade cost between countries. (See tables 1 and 2).

**Table 1:** Total trade cost determinants

	(1)	(2)	(3)
VARIABLES	RE	FE	PPML
Ldist	0.224*** (0.0497)	-2,271 (2,659)	0.208*** (0.0276)
lpibi	-0.341*** (0.0752)	- 0.477** *	-0.151 (0.132)
lpibj	- 0.0688** *	-0.0612 (0.0838)	-0.0586*** (0.00819)
Ldd	-0.0163 (0.0283)	-0.0212 (0.0285)	0.0464 (0.0556)
ltchang	0.0217	0.0588	0.000850

	(0.0195)	(0.0736)	(0.0321)
ldelai	0.00298	0.00442	0.0171
	(0.0591)	(0.0627)	(0.132)
lbenef	-0.0240	- 0.713** *	-0.110
	(0.105)	(0.216)	(0.131)
lsup	0.161**		-0.0218
	(0.0712)		(0.109)
lefficaport	-3.308***		-2.632***
	(0.690)		(0.948)
lcreationEntr	0.0400	0.0869	0.0148
	(0.0717)	(0.0727)	(0.157)
lenvirDouan	1.472***		1.265***
	(0.422)		(0.420)
limpot	0.102	0.635**	-0.125
	(0.213)	(0.273)	(0.455)
lcout	0.00898	-0.0167	0.243***
	(0.0421)	(0.0437)	(0.0812)
Intech	2.106***		0.748
	(0.771)		(1.182)
langue	-0.278		-0.386***
	(0.384)		(0.0987)
front_com	-0.246**		-0.223***
	(0.123)		(0.0536)
col_com	0.0177		0.0441
	(0.381)		(0.0956)
enclav	-0.0627		0.00168
	(0.276)		(0.0690)
Constant	10.30***	18,168	9.478***
	(0.953)	(21,253)	(1.345)
Observations	800	800	800
R-squared		0.123	0.510
Number of paraid	177	177	

Standard errors in parentheses \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

**Table 2:** Manufacturing goods' trade costs determinants

	(1)	(2)	(3)
VARIABLES	RE	FE	PPML
ldist	0.292*** (0.0534)	-5,621* (3,114)	0.273*** (0.0258)
lpibi	- 0.240***	- 0.481** *	-0.0428 (0.141)
	(0.0924)	(0.131)	
lpibj	- 0.0652**	- 0.238**	- 0.0512**



	*		*
	(0.0180)	(0.101)	(0.00780)
Ldd	0.0568*	0.0454	0.0899
	(0.0340)	(0.0342)	(0.0570)
ltchang	0.00660	0.310**	-0.0207
	(0.0234)	(0.0901)	(0.0358)
ldelai	0.0177	-0.0454	-0.0853
	(0.0740)	(0.0776)	(0.150)
lbenef	-0.158	-	-0.329**
	(0.120)	0.966**	
	(0.120)	(0.262)	(0.141)
lsup	0.0150		-0.201*
	(0.0852)		(0.119)
lefficaport	-1.962**		-1.494
	(0.805)		(1.016)
lcreationEntr	0.0882	0.159*	0.160
	(0.0880)	(0.0889)	(0.180)
lenvirDouan	1.210**		1.269***
	(0.477)		(0.457)
limpot	0.262	1.249**	0.294
	(0.264)	*	(0.503)
lcout	0.0856*	0.0593	0.328***
	(0.0510)	(0.0528)	(0.0870)
Intech	0.428		-1.064
	(0.915)		(1.273)
langue	-0.315		-0.380**
	(0.399)		(0.179)
front_com	-0.192		-
	(0.134)		0.190***
	(0.134)		(0.0626)
col_com	-0.0213		-0.0163
	(0.396)		(0.178)
enclav	-0.0402		0.0116
	(0.385)		(0.135)
Constant	9.244***	45,186*	8.301***
	(1.104)	(25,022)	(1.497)
Observations	725	725	725
R-squared		0.169	0.580
Number of paraid	163	163	

Standard errors in parentheses \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$

### FINAL REMARKS

Since WTO agreements on trade liberalization, tariff fall down. Despite the fall of tariff, other barriers impede trade such as trade cost. The aim of this research is to show the factors that impact trade cost in ECOWAS countries.

The result shows that trade costs are impacted by several factors but most important is customs environment. This result could be explained by the fact that for ECOWAS countries, trade policy is more oriented of revenue collection than promoting exports and private sector.

For this, the enter in force of the trade facilitation agreement would lead countries to make more reforms in order to reduce trade cost and allow consumers to benefit from trade.

The main question that would be addressed is the capacity of ECOWAS countries to meet the demand of goods and services they face in their regional area and the rest of world.

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**ANNEX: ECOWAS and their main trade partners**

<b>ECOWAS Countries</b>	<b>Trade partners</b>
Benin	South Africa
Burkina Faso	Germany
Cabo Verde	Holland
Côte d'Ivoire	Brasilia
The Gambia	India
Ghana	Italy
Guinea Bissau	Canada
Guinea-Conakry	Japan
Liberia	China
Mali	Mexique
Niger	Spain
Nigeria	USA
Senegal	France
Sierra Leone	Grande Bretagne
Togo	Portugal

Source: author