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School of Economics and Management

# ECOWAS and WAEMU as Tools for Promoting Export Diversification

Alexander Edberg Thorén & Fredrik Azelius  
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Lund University, Department of Economics  
Tutor: Maria Persson  
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# Abstract

This paper examines export diversification with main focus on the Economic Community of West African States (ECOWAS), a union promoting economic integration in the region of West Africa. The West African Economic and Monetary Union (WAEMU), another Regional Integration Agreement (RIA), is also of main importance for the study. The study was conducted in order to determine whether ECOWAS and WAEMU, as unions, are broadening export diversification among its member states. If that would be the case, it would encourage other countries and unions to follow, especially in developing regions. To examine if there has been progress in export diversification within the region, regression analyses on the number of exported commodity groups and the Herfindahl-Hirschman Index have been executed. The paper will provide empirical support for the hypothesis that economic integration has led to export diversification in Western Africa.

**Key words:** Economic Integration, ECOWAS, Export Diversification, Intra-Regional Trade, and WAEMU.

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## Abbreviations

ASEAN	Association of Southeast Asian Nations
BCEAO	Banque Centrale des États de l'Afrique de l'Ouest
CET	Common External Tariff
CFA	Communauté Financière Africaine
ECOWAS	Economic Community of West African States
ETLS	ECOWAS Trade Liberalisation Scheme
EU	European Union
GDP	Gross Domestic Product
HHI	Herfindahl-Hirschman Index
IMF	International Monetary Fund
RIA	Regional Integration Agreement
SITC	Standard International Trade Classification
UN	United Nations
WAEMU	West African Economic and Monetary Union
WAMZ	West African Monetary Zone
WTO	World Trade Organisation

# 1. Introduction<sup>1</sup>

The Economic Community of West African States (ECOWAS) is a union consisting of 15 member states, and is working for economic integration within the region of West Africa. Its main objectives are to liberalise intra-regional trade, remove tariffs and barriers, integrate economic policies and achieving a monetary union throughout the entire region (Ukaoha & Ukpe, 2013). The region of ECOWAS is currently an area of free movement for its inhabitants with aims of creating a free trade area, a custom union and a common market. As recently as January 2015, a Common External Tariff (CET) was implemented (ECOWAS, 2016). ECOWAS is accordingly a community of great interest in the study of trade diversification. The West African Economic and Monetary Union (WAEMU) will also be examined in the paper, as this is a sub-region within ECOWAS. WAEMU consists of eight member states, of which all are a part of ECOWAS as well, and have reached higher levels of integration than ECOWAS (Shams, 2003).

Trade is an aspect significantly affecting the overall economy, and is a necessity for a number of economic factors to thrive. Revenues from trade are not least a prerequisite for progress in the well-being of a society (Ogundipe, 2011). However, there are more features to trade than the mere fact that trading is considered favourable. Diversifying one's trade is of vast essence in stimulating economic activity. Only increasing trade volume per se can be deceptive as it is equally important to deconcentrate exports in order to spark domestic production (Odularu, 2008). The dangers of too concentrated exports permeate several macroeconomic aspects, namely pillars of economics such as growth, employment and inflation. It also exposes the economy for limited import and export capacity and complications in debt repayment and investment planning. Concentrated exports creates a dangerous dependency on one or just very few commodities. This makes the economy very volatile to price shocks on the world market, and export revenues become unstable and unreliable. Studies also show that political uncertainties can occur due to lack in the diversification of exports. Dependency of very few commodities have shown tendencies to lead to weak governmental institutions and increased risk for internal conflicts. Introducing more different goods in the export base is therefore very essential due to several aspects, not only economical such (Samen, 2010).

It is in these questions regarding regional trade integration and specifically the diversification of trade where unions such as ECOWAS and WAEMU, with its characteristics and potentials, enter. Economic integration has empirically proved to be beneficial in the promotion of intra-regional trade, and in the process of larger internal markets (Hanink & Owusu, 1998). Higher trade costs make it less profitable to enter certain markets, and can have a deterrent effect on domestic producers. These barriers which restrain internal production possibilities weaken countries' export base. In turn a very concentrated export is developed. It is this problem that underlines the importance of intra-regional trade and economic integration. By applying trade openness, removing tariffs and barriers, these complications can be mitigated (Uexkull, 2011).

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<sup>1</sup> The authors are grateful for the valued comments and consultation from Maria Persson at Lund University.

The region which ECOWAS represents is characterised by vast poverty and overall weak economies. It is nevertheless a sizable region when it comes to both population and area. Due to the importance of diversification in trade for stimulating economic growth, there could lie great potential in the region. By cooperation, economic integrations, and by creating mutual policies concerning the intra-regional trade, a region of such characteristics could grow as a whole and lift themselves from poverty in a long term perspective (Ogundipe, 2011). Continuity in the work of promoting the regional trade is also of great importance in reducing the dependency of imports from more developed economies. Increased trade with nearby countries in a more diverse manner is more efficient and will stimulate local production to a much greater extent. All of which in a chain reaction have the possibilities to spark economic growth (Samen, 2010). Not at least have studies shown correlation between trade diversification, export growth and positive economic effects such as an increased domestic production base in the example of China and several ASEAN countries (Bonaglia & Fukasaku, 2003). If a correlation could be found, even though a marginal such over long term, between the existence of ECOWAS and WAEMU, and progress in the intra-regional trade and diversification in trade in the West African region, some striking economic analysis can be done.

This paper has a primary focus on trade diversification within the region of ECOWAS, and what factors are affecting the progress of it. More precisely, measurements will be conducted to examine if countries within the region trade in a more various manner with each other after the upcoming of the unions. The given data will be compared to countries outside of ECOWAS. When comparing these aspects, it will show if there is effect on trade diversification in the region. Furthermore, it will give a clear indication if ECOWAS and WAEMU change the trade behaviour of member states. The research question defining the purpose of the paper is for this reason formulated as follows: “Does economic integration in Western Africa lead to higher export diversification?”

To decide whether economic integration, in West Africa, is affecting the export diversification within the area, some econometric models and measures are of relevance. To best measure whether export diversification has increased, two different measurements are applied. The number of exported commodity groups and the Herfindahl-Hirschman Index (HHI) are both important for the outcome of the results. When running regressions on these, two results of different characteristics are going to be provided, which tell if certain variables have significant effects on export diversification. ECOWAS and WAEMU are represented in these regressions by creating dummy-variables which are coded 0, if not in the union, and 1, if in the union. From these dummies, one can see whether the unions have impact on the dependent variables.

The findings of this paper show empirical support for the hypothesis and hence satisfy the purpose and objective of it. Results on the positive effects the regional economic integrations do have on the export diversification will further on be presented. Very noteworthy is that WAEMU represents countries who have reached higher levels of integration within ECOWAS, and therefore its member states have been able to develop diversified exports to a greater degree as well.

The paper is distributed in a way that there is firstly a background, mostly with basic and vital information regarding the subject in question. This is followed by a theory part,

where the different aspects of trade will be described. A literature review is conducted, which describes previous studies regarding the subject. Thereafter, the actual econometrics will be presented, where all the data will be combined to regressions and models. The last part is the result of the paper. Here one can see the regression analyses, along with conclusion, which will finish the paper.

## 2. Background

### 2.1. Traits of the West African Countries

The region of West Africa is characterised by widespread poverty and limping economies. Some nations stand out more than others in this aspect, but altogether in an international perspective it is a region found at the bottom of most economical ranking lists. The union represents the second biggest populated region in Africa, with 320 million residents in 2012. The population makes up 5 percent of the world population, but only 0.5 percent of the world's BNP, at the time (Kilander, 2012 & Sweden Abroad, 2013).

Nigeria, where ECOWAS' administrative headquarter is located, is also the biggest economy of the region (ECOWAS, 2016). With vast oil resources, Nigeria has emerged to be the largest economy in Africa. It is due to this that Nigeria's dominance in ECOWAS is unquestionable. It accounts for 66 % of the union's entire GDP and over half of its population. As also the most populous African nation, the assets are although still very unfairly distributed within the country (The World Development Indicators, 2016).

An interesting fact that arise due to the massive oil exports of Nigeria, is that the country therefore has developed the most concentrated exports among the countries in the region. Nigeria has i.e. the least diversified export basket, and by cause of this, making the large economy very vulnerable to price fluctuations (Uexkull, 2011).

After Nigeria there is quite a massive gap to Ghana and Cote d'Ivoire who although still can be defined as major economies of the union. Along with Nigeria they make up about 81 % of ECOWAS' total GDP. It is therefore easily concluded that the remaining 12 countries, who stand for about 19 % of the total GDP in ECOWAS, have fundamentally weaker economies and many of them de facto belong to the poorest group of countries in the world. This partly depends on the size of some of the countries, a lack in natural resources and the fact that many are landlocked. The economies of ECOWAS are therefore widespread, but in total very weak and are all in the progress of development. It is also very notable that a lack of export diversification not only is a phenomenon for the absolute poorest countries, as the largest economy, Nigeria, is having the least diversified export base of the region (CIA World Factbook, 2016).

### 2.2. ECOWAS

The Economic Community of West African States is a trade and economic agreement between 15 countries, located in the region of West Africa (ECOWAS, 2016).<sup>2</sup> These countries share both cultural and political ties, but they also have similar economic interests. ECOWAS was established in 1975, and have ever since been one of the pillars for the African Economic Community (Sweden Abroad, 2013).

The establishment of ECOWAS was built upon a main purpose of integrating member states in order to establish a free trade area with its core in economic cooperation. To develop an economic cooperation within the organisation, the aim is to establish trade integration without borders, to prevent obstacles for movement.

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<sup>2</sup> See Appendix Table 1

Further objectives are to i) introduce and implement a common external tariff (CET) for the entire union, ii) remove customs duties, iii) harmonise economic and financial policies, and iv) create a common monetary zone (The World Bank, 2016).

These operations are ongoing and some of them have already adopted very well to the organisation's structure.<sup>3</sup> A common monetary zone (WAEMU) is already adopted by some countries within ECOWAS (ECOWAS, 2016).

The common external tariff (CET) is a way for ECOWAS to promote its common market and make intra-ECOWAS trade more attractive. The structure of CET is of such that goods are divided into five categories with certain tariff bands. The categories have tariffs at 0 %, 5 %, 10 %, 20 % and 35 %. The category with a tariff of 0 % includes essential social goods. The 5 % tariff category is made up of raw materials and “goods of primary necessity”. The 10 % tariff category covers intermediate goods. The category of 20 % tariff includes so called final consumption goods, which are any finished products such as bicycles or clothing, for example. The fifth band with the highest tariff of 35 % is for products that are believed to have competitive advantages in the region of ECOWAS. These products are considered to be of great importance for domestic production, and are therefore assigned a high tariff for protection purposes. The products include for example mineral water and certain food products (Andoh, 2014).

In spite of this being a reform concerning external trade connections to ECOWAS, it does still have relevance for the intra-regional trade and diversification. The CET will coordinate imports tariffs from non-ECOWAS exporters, and defence measures concerning the entire union are available. These make it possible for ECOWAS to instantly apply higher tariffs, if needed, for protection purposes (Echenin, 2015 and Melo & Laski, 2014).

The CET is expected to promote and increase domestic production, and also decrease smuggling. Currently imported goods can arrive at a port, and thereafter be transported to another country where the buyer of the products is situated. This has been an efficient way of avoiding the paying of import taxes for many consumers. With the CET implemented it will not matter where the imported goods arrive, all ECOWAS members will pay the same tariff at their borders. This kind of smuggling is therefore highly expected to be minimised. Another positive effect with common tariff levels is that local companies naturally will be encouraged to produce and enter several new markets as importing goods will be costlier (Andoh, 2014).

Since ECOWAS is not a complete free trade union, there are no guarantees that intra-regional trade is working as wished. ECOWAS Trade Liberalisation Scheme (ETLS) is the main tool for promoting a Free Trade Area in West Africa. ETLS is a part of ECOWAS and has its main interest in introducing and establishing a free trade area. The main reason for this creation is to encourage entrepreneurial development, increase intra-regional trade, increase ECOWAS competitiveness on the global market and increase the welfare for member citizens (ECOWAS, 2016).

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<sup>3</sup> Common external tariff implemented January 2015 (see table 1). WAEMU was established 1994 (see table 2).

**Table 1** Historical Timeline of ECOWAS

<i><b>YEAR</b></i>	<i><b>COUNTRY/UNION</b></i>	<i><b>STATUS</b></i>
<i><b>1975</b></i>	ECOWAS	Establishment of ECOWAS
	Benin	
	Burkina Faso	
	Cote d'Ivoire	
	Gambia	
	Ghana	
	Guinea	
<i><b>1975</b></i>	Guinea-Bissau	Full Members
	Liberia	
	Mali	
	Mauritania	
	Niger	
	Nigeria	
	Senegal	
	Sierra Leone	
	Togo	
<i><b>1977</b></i>	Cape Verde	Full Member
<i><b>1979</b></i>	ECOWAS	Establishment of ETLs
<i><b>2000</b></i>	Mauritania	Defected from ECOWAS
<i><b>2015</b></i>	ECOWAS	Adoption of CET

**Notes:** The timeline is given for ECOWAS (IDC, 2012 & Echenin, 2015).

### 2.3. WAEMU

It would be rather difficult to discuss and explore ECOWAS without examining the West African Economic and Monetary Union, officially created 1994, but with origins from earlier African monetary unions. WAEMU has eight members<sup>4</sup>, who are all included in ECOWAS. Taking this into consideration, ECOWAS is very much dependent on the behaviour of WAEMU and its members. The currency of WAEMU is the, West African, Communauté Financière Africaine franc (CFA). Notably is that there is also a Central African CFA franc which shares the same monetary value towards other currencies, but is used as a separate currency in a number of Central African countries. The Central Bank of WAEMU is located in Dakar, Senegal. The currency was first established 1945 by the French, and is today pegged to the Euro (BCEAO, 2016).

WAEMU's structure is influenced by the European Union (EU) system. Its commission, located in Ouagadougou, Burkina Faso, is financed by charging a fee which makes up a share of one percent on all imports made into the monetary union. WAEMU's purpose is to "establish a customs union, harmonise investment incentives, public financial management procedures, and taxation, and monitor key macroeconomic convergence criteria - including fiscal deficits, inflation, public sector wages, and government arrears" (The World Bank, 2016).

<sup>4</sup> See Appendix Table 1

The relationship between WAEMU and ECOWAS is an interesting such as all WAEMU countries are within ECOWAS as well. WAEMU which, with the exception of Guinea-Bissau, only is consisting of francophone countries, have since the creation 1994 been able to integrate to a higher level than ECOWAS. It shares a common currency, has removed all tariffs within the union and adopted a CET already in 2000, which ECOWAS implemented as late as in January 2015 (Goretti & Weisfeld, 2008 and Shams, 2003). The subdivision between the francophone countries and the rest can be somehow problematic as it creates a sort of rivalry. Except for Cape Verde and Guinea-Bissau who are Portuguese speaking countries, ECOWAS is exclusively made up of anglo- and francophone countries. It is even claimed that Nigeria and Cote d'Ivoire are acting as leaders for each respectively, which does create a quite problematic divergence within the union. As the francophone countries through WAEMU have been more successful in integrating their economies, this can have effects on the intra-regional export diversification (Shams, 2003). With different levels of integration within ECOWAS it can therefore implicate that levels of export diversification are also different. Integrating the two sub-regions is consequently a very important step for ECOWAS in developing its intra-regional trade (Goretti & Weisfeld, 2008). Due to this higher level of integration for WAEMU, it is expected that these member states have been able to develop a more diversified trade among each other. Particularly as being a member of WAEMU also means the country is a member of ECOWAS, it implies that the effects of ECOWAS already are included, and that WAEMU therefore adds extra effects in addition to these. Namely, it is reasonable to expect the full effect of WAEMU to be given by adding up the regression coefficients for ECOWAS and WAEMU.

**Table 2** Historical Timeline of WAEMU

<i><b>YEAR</b></i>	<i><b>COUNTRY/UNION</b></i>	<i><b>STATUS</b></i>
<i><b>1994</b></i>	WAEMU Benin Burkina Faso Cote d'Ivoire Guinea-Bissau	Establishment of WAEMU
<i><b>1994</b></i>	Mali Niger Senegal Togo	Full members
<i><b>1996</b></i>	WAEMU	Adoption of free-trade area
<i><b>2000</b></i>	WAEMU	Adoption of CET

**Notes:** The timeline is given for WAEMU (Doré & Masson, 2002, Echenin, 2015, and Goretti & Weisfeld, 2008).

### 2.4. WAMZ

Although the non-WAEMU countries have not been able to reach the same level of economic integration as WAEMU, there are initiatives and desire to go through with a similar process. The West African Monetary Zone (WAMZ) was founded in 2000 by five ECOWAS members, namely Gambia, Ghana, Guinea, Nigeria and Sierra Leone. The aim was to establish a common central bank and currency, such as WAEMU. In 2010 Liberia also joined

the zone. The planned currency called Eco is to be pegged to the CFA franc and eventually merge together so all the ECOWAS members use the same currency. Cape Verde who is currently using its Escudo is expected to join WAMZ when it is properly established (Gopaldas, 2014).

As for ECOWAS in general, WAMZ members have had a hard time fulfilling the requirements for such a monetary zone and therefore the implementation, which was supposed to already have been implemented, is constantly delayed. The future of the ambitious plans of WAMZ, and later on a common currency throughout all of ECOWAS is therefore precarious (West African Monetary Institute, 2016). The continual delays of the Eco currency, and in turn the unification of ECOWAS as a common monetary zone is worrisome from an intra-regional trade perspective. It is as though ECOWAS is a region of convergence, yet still a subdivided such with different levels of economic integration. WAMZ is a process which plays a big role for WAEMU and ECOWAS as well. The integration among the subgroups is of highest significance in the facilitation of export diversification (Shams, 2003).

As WAMZ has not been successfully implemented, and no common currency has been established, it is not to be considered as a variable in the regression analyses. WAMZ is nevertheless of importance for future perspectives in the region of ECOWAS, as it plays a large role in the overall convergence of the region.

### 3. Theory

In this section, a theoretical overview will be introduced. Intra-regional trade and regional integration are explained. Export diversification is introduced and explained as a very important aspect in trade. How export diversification can be affected, and what role economic integrations play in promoting the diversification of a region's exports are cores of the section.

Economic integration is the unifying of countries which has its main purpose in generating positive economic effects for the involved parties. A common form of economic integration is custom unions. To be considered a custom union, some requirements need to be fulfilled. Elimination of tariffs and other trade restrictions between members is a requirement. Furthermore, there must be an establishment of tariffs and other regulations towards non-members. The discrimination that occurs, towards non-members, when establishing and using a union of this kind, is of huge importance for the integration to work properly (Balassa, 2011).

If a free trade area is established, the commodities are being produced at the cheapest source of supply. The only price difference is the transportation cost, which may differ due to different distances between countries within the area. Since tariffs are removed within the union, and the products are being exported at the lowest cost, consumers will furthermore buy within the area to a higher extent, instead of searching for the products outside of the union. Hence, some products will go from being a low-cost foreign product, to a high-cost product within the union. This leads to both higher trade volumes within the area, but also with a larger amount of different products, which will promote economic growth and stabilise the overall economic situation in the union (Balassa, 2011).

When an economic integration is properly functioning, there are numerous benefits to be gained from it. The member states become more specialised in the products that they will now export, due to comparative advantages. The economies of scale and efficiency improvement also benefit the member states. When economies of scale is enhanced, it will generate lower production costs, and furthermore lower prices. The widening of markets will lead to better usage of countries' comparative advantages and will facilitate the diversification of production, and hence also the export diversification. Without integrating economies, countries will separately try to develop, which means smaller resource bases, production possibilities and industry capacity, this hence leads to concentrated exports as well as an economic dependency. The removal of tariffs and barriers will let countries take advantage of each other's different strengths, which implies a more advanced trade involving a higher degree of product differentiation. The generation of higher revenues per se, due to increased trade possibilities, allows a large production base to be developed which in turn lays the basis for more diversified exports (Robson, 2011).

Empirical studies have shown correlation between integrating and decreasing trade costs and diversifying production and exports. Another aspect of importance is the facilitation of domestic business operations. For instance, removal of export taxes, improvements of local

infrastructure are some measures which have shown to have positive effects on export diversification (Odularu, 2008).

Studies have also shown that political stability and stable relations are very important factors for progress in export diversification. Countries such as Congo, Liberia and Sierra-Leone are examples of countries where export diversification has increased during post-conflict periods. Stable conditions in a country itself, and in its surroundings, are crucial for diversifying production and exports. Unifications and integrations also play a role in this matter. By assimilating and harmonising a region, such as ECOWAS does, it creates more stable and stimulating conditions for export diversification to thrive (Siope, Spence, Mevel & Karingi, 2012).

For countries to economically grow and enjoy overall economic development, the aspect of trade is of major importance. Trade does not only create revenues, but also generates jobs and economic stability in a wider aspect. By focusing on emerging the trade and reach out to more sections of production, the dangers of economic dependency can greatly be mitigated. Being concentrated to very few exported commodity groups exposes countries to great risks of developing a thoroughgoing dependency. An example, on how external shocks can affect countries characterised by low export diversification, is Nigeria and its export of crude oil. The international price on crude oil drastically dropped in the 1980ies. The low price hit Nigeria severely, and their exchange earnings declined drastically. If Nigeria would have had a more diversified export, they might have compensated their loss in oil revenues, by exporting more of other commodities (Odularu, 2008).

To conclude, economic integration has generally positive effects on export diversification. First and foremost, there are several benefits with integrating and removing trade barriers, which in turn have positive effects on the diversification of exports. Increasing and facilitating trade have positive economic effects overall, which imply greater revenues and a more reliable and stable economic situation. Positive effects involving production intensification, reduced unemployment and larger foreign capital inflow will provide solid bases to widen the domestic production base, and hence increase the export diversification.

Elimination of tariffs and other trade barriers result in more incentives for domestic producers to widen their production, and enter new markets. This provides opportunities to export more different products, and thus deconcentrate exports. There is also importance in facilitating for local producers by certain tax benefits and improved transportation possibilities, as examples. Stability and diplomatic relations in the regions are also essential aspects in promotion of export diversification. Here, ECOWAS has the potential to play a major role for the stabilisation of the region.

## 4. Previous Studies

A literature review has been made in order to see if there have been previous studies regarding export diversification and economic integration in the region of West Africa.

The literature regarding trade export is most frequently described as how trade volumes affect overall trade and economic growth. Diversified export is not at all as described and explored. Although, one early paper by Yannopoulos (1986) regarding how trade aspects are not only about trade volumes, but also in how countries diversify their trade was a starting point to the subject. This paper is the earliest that could be found regarding export diversification.

There are studies proving that export diversification and income levels are correlated in a U-shaped relationship. Hence, lower income levels tend to lead to faster growth in export diversification, until a certain level of income. Then, when the higher income levels are being reached, the growth stagnates. Furthermore, the high growth rate of poorer countries is generally due to the already low levels of diversification (Cadot, Carrère and Strauss-Kahn, 2011). This is also being covered in other studies, such as Bebczuk and Berrettoni (2006) and Parteka and Tamberi (2011).

When examining how economic integration in America affects export diversification, it was found that exports, clearly, were more diversified with an established economic integration in the region (Beine, 2006). This statement is also given by Ferdous (2011), when examining how economic integration affects export diversification in East Asia. Hence, other regions which have economically integrated with each other, have proved to have positive effects on how countries within these unions diversify their exports.

Another paper acknowledges that comparative advantages may have an important role in how countries diversify their exports. Countries with highly developed comparative advantages in various commodity groups tend to easier adapt to other areas of production, which would make it easier for workers to change field of work when countries start to export new commodity groups (Minondo, 2011). A way of gaining comparative advantages is through economic integrations (European Bank, 2012). Hence, economic integrations generate comparative advantages, which, in turn, generate more diversified exports.

There is overall quite little research regarding export diversification in Africa. Siope, Spence, Mevel & Karingi (2012) wrote a paper regarding export diversification and intra-industry trade in Africa. They found that Africa, overall has a very low export diversification. Although, intra-African trade has increased over the past years. It furthermore concludes that Africa is lagging in comparison to other continents (Asia, Pacific, North America & South America). Another paper (Parteka and Tamberi, 2011) also concludes that Africa, and South America, have lower export diversification than other regions.

When researching export diversification in the region of West Africa, or more precisely within ECOWAS and WAEMU, there is not much that concludes and describes the subject. A lot of papers define ECOWAS as a union in need of further diversified exports, but studies and examinations regarding the subject are not that thorough. Although, some analyses have been done and have shown examples of how ECOWAS has positive effects on the export diversification (Uexkull, 2011). Uexkull (2011) covered countries within the

region, and concluded that all countries, except for Nigeria, have increased their export diversification. Notable, though, is that neither this paper covers all years since establishment of ECOWAS, nor the influence of WAEMU.

Odularu (2008) covers the export diversification in ECOWAS quite well and describes how export diversification strategies in the region could lead to economic growth. Even this paper has its flaws in the fact that it does not cover the entire time span of ECOWAS, nor does it sufficiently include WAEMU.

Odularu (2008) describes that ECOWAS countries are heavily dependent on few commodity exports, which make them very vulnerable to external shocks. The way to become less vulnerable is to extend the export diversification. Previous research has provided evidence that ECOWAS has had a difficult time adopting the strategy. The paper focuses on how ECOWAS countries should increase trade within the area, instead of the intensive trade with non-regional partners. The benefits of regional trade in Africa are also included. The benefits of intra-regional trade are given by two factors in particular:

- i) economic growth and economic convergence,
- ii) higher diversified exports which mitigates dependence on trade from developed markets.

In Odularu (2008), the importance of export diversification is furthermore explained in the theory, where various examples are given. Once again, the author points out the fact that countries which do not diversify much, are vulnerable to external shocks. Nigeria had a drastic decline in export income between 1980 and 1986, due to external shocks on the oil market.

The paper measures the export diversification in ECOWAS. The measurement is although of quite weak character. It only gives some diversifying indices, but no real regression to back it up. The fact is, thus, that there are some countries which have higher diversified exports. On the other hand, it also states that there are countries which have far less diversified exports.

Odularu (2008) concludes that ECOWAS has, for a long time, desired to increase trade diversification among its members. The process has not gone as predicted. This might be due to high trading costs among members, and also weak infrastructure. It is also considered that the World Trade Organisation (WTO) and the International Monetary Fund (IMF), could play large roles in the matter. If they continue their work for reaching and maintaining macroeconomic stability, and strengthen the help in managing external shocks, ECOWAS has possibilities of reaching improved levels of trade diversification.

## 5. Method

In this part of the paper the data estimations will be introduced. Here is where actual data and information will be combined and described. Various econometric- and trade models will be presented.

### 5.1. Measuring Export Diversification

Empirically there have been many ways of measuring export diversification. Common measurements are to calculate the number of goods being exported, which would give indications on how much countries export. One of the advantages with a broader measurement of commodities is, since values of exports are not included, the simple calculation and interpretation of it. On the downside, every product group is counted as equal, which is not an entirely correct assumption. One group of exported goods might have much smaller trade value than another, but it is still counted as equal in this measurement (Persson & Wilhelmsson, 2013). However, the Herfindahl-Hirschman Index manages this issue as it takes trade value into consideration as well (Dennis & Shepherd, 2011).

In this paper, two approaches will be made to calculate and investigate export diversification.

- i) Baseline (number of exported commodity groups).
- ii) Herfindahl-Hirschman Index (HHI).

To measure export diversification a Herfindahl-Hirschman Index provides a useful measurement. The function is given by the following **equation**:

**Equation (1):**

$$HHI_j = \frac{\sqrt{\sum_{i=1}^n \left(\frac{x_{ij}}{X_j}\right)^2} - \sqrt{\frac{1}{n}}}{1 - \sqrt{\frac{1}{n}}},$$

Where  $x_{ij}$  = the export value for a given country  $j$  and a commodity group  $i$ .  $X_j$  = the total value of exports for a given country  $j$ , hence:  $X_j = \sum_{i=1}^n x_{ij}$ . Further on,  $n$  is the number of different commodity groups which are exported from the given exporter, during the given year. The **equation** generates a value between zero and one, where a value closer to one indicates that the exports are more concentrated, i.e. lower numbers of products are being exported from the given country (UNCTADstat database, 2014). Value closer to zero implies that the exports are highly diversified. The products are based on a 4-digit SITC rev.1 level (UN Comtrade, 2016).

The Herfindahl-Hirschman Index is not recognised if country-pair does not have trade at the given year. If trade exists (7038 in this paper), the value of the HHI is between 0 and 1. If value 1, there is maximal concentration that given year, for the given country-pair. The lower the number, the more diversified the trade is for the country-pair. Trade with new commodities, all else equal, would generate a lower index, hence, a higher diversification. If

trade values for already existing commodity groups, which represent low shares of total exports, increase, the index would be lower. If trade value for commodities which make up larger shares of total export increases, the HHI would be higher (Chandra, Boccoardo and Osorio, 2007).

## 5.2. Empirical Model

To analyse the effects of export diversification, various estimations can be made. This paper will mainly focus on two different measurements, which both are commonly used when analysing and measuring export diversification (Persson & Wilhelmsson, 2013 and Samen, 2010). A baseline will first and foremost be shown and described. The baseline will be applied in a regression analysis. The Poisson model is being used in this case. To complement the regression, a figure will be presented and described. As a complement to the regression, calculations providing a percentage on how much the dependent variable differs when countries are members of ECOWAS and WAEMU, will be illustrated. Furthermore, a Herfindahl-Hirschman Index will be presented as a regression and figure. The Poisson model will be used for the regression regarding HHI as well.

### 5.2.1. Baseline

To analyse the effects of export diversification a baseline estimation has been made.

#### Equation (2):

$$\begin{aligned} \text{No. of exported commodity groups}_{ij} &= \exp(\lambda_t + \text{Neighbour}_{ij} + \text{SameCountry}_{ij} + \text{Commonlanguage}_{ij} + \text{ComCola45}_{ij} \\ &+ \text{BothinECOWAS}_{ijt} + \text{BothinWAEMU}_{ijt}) \\ &* \ln \text{GDP}_{it} \ln \text{GDP}_{jt} \ln \text{GDPpc}_{it} \ln \text{GDPpc}_{jt} \ln \text{Dist}_{ij} \varepsilon_{ijt} \end{aligned}$$

The number of exported goods from country  $i$  to country  $j$  at the given time  $t$ , gives *No. of exported commodity groups*, where  $\lambda$  is the time fixed effect. The dummy variables *Neighbour*, *Common Language*, *Common Coloniser* and *Same Country* are all either 1 or 0.<sup>5</sup> They do not change over time, and therefore have the same numbers no matter the year. The dummy variables *ECOWAS* and *WAEMU* do change over time, and therefore they might have different numbers depending on the year of estimation. *ECOWAS* was established 1975, and our data was collected with the starting point 1970, which furthermore implies that all dummies from before 1975 are zero. In *WAEMU*'s case, all dummies before 1994 will be coded as zero. *GDP* and *GDP per capita* are given for both exporter and importer, at any time given. Bilateral distance is of major importance for the regression, and is here given as *Dist*. All of these are log, and the *GDP* values are in nominal US dollars from 2005. All of the changing variables are cross-sectional data, due to changes over time and since that they are individual for any given time period (Möller, 2011 and Santos Silva & Tenreyro, 2006).  $\varepsilon_{ijt}$  is an error term.

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<sup>5</sup> Further explanations regarding dummies are given in the section below.

In the two regression analyses, a set of relevant variables were established. All variables are, according to the authors, relevant to trade aspects, and are expected to positively affect the observed countries' trade behaviour.

#### *No. of exported commodity groups*

The dependent variable in the first regression indicates how many different commodity groups which are being traded in each combination of the possible trade relations. To study the impact ECOWAS and WAEMU have on export diversification, this variable is tested in order to see if other variables significantly affect the number of different commodity groups which are being exported.

#### *Herfindahl-Hirschman Index*

For the second regression the average of the HHI for each year is examined and tested against the other variables. The HHI differs from just looking at the number of exported commodity groups, as it also takes trade value of each export group into account. The measurement therefore shows to what degree the value of the total exports is diversified among the different exported groups.

#### *Both in ECOWAS/WAEMU (Dummy)*

Shows if both countries are members of ECOWAS and WAEMU, or neither. Essential variable in examining whether the unions significantly affect the number of commodity groups being exported. This is the most important variable for the purpose of the paper, and is expected to show significant results. It is believed that these unions do have a positive effect on the diversification of exports.

#### *GDP and GDP per capita*

These variables simply tell the total GDP and the GDP per capita for both the exporter and the importer for every given year. These were acquired from the World Development Indicators of the World Bank. As GDP values reflect the countries' economic strength, the hypothesis is that these affect the total amount of trade. Higher values likely mean countries trade more. Although it is more ambiguous if it affects the diversification of trade, which is of another character. As seen previously, Nigeria which has the largest GDP is also having the most concentrated exports, due to its enormous resources of oil. Nevertheless, the authors believe that in general, GDP values should significantly affect the export diversification as well.

#### *Distance*

Distance is of natural reasons a key factor for trade. Shorter distances should facilitate trade and therefore this is an important variable to include. As the region of ECOWAS is geographically quite big, it is of use to see to what extent distance matters in relation to other aspects. This variable is expected to give significantly positive effects.

#### *Common language (Dummy)*

Africa as a continent in general is characterised by common official languages originating from the colonial period. The region of ECOWAS is no exception and many countries share

the same official language. Having the same language could have impact on the choice of trade partners and is therefore a vital variable in the regression. Although, as in the case of ECOWAS there are almost exclusively English and French speaking countries, except for the Portuguese speaking Cape Verde and Guinea Bissau. Due to lack in the number of different (official) languages, it might not lead to any effect. What is notable though is that WAEMU is, except for Guinea-Bissau, consisting of only francophone countries. This unification which seemingly occurs among countries who share the same language could possibly imply it affects export diversification positively.

#### *Common Coloniser (Dummy)*

If countries used to belong to the same coloniser, it could imply that they share some historical aspects and this could hence be influential. That influence might make countries reach for specified trade relations, due to earlier connections. For the same reasons as previous variable, it was mainly France and the United Kingdom who were colonising this region, and the lack of number in different colonisers could mean it does not have an effect. Although once again, there are unifications in the shapes of WAEMU and WAMZ, who seem to correlate with the former colonised areas. This could imply that a mutual colonial history will have positive impact on the dependent variables.

#### *Neighbour (Dummy)*

When countries are neighbours and share the same border, this variable will tell. Sharing the same border is, just like distance, a natural aspect in the facilitation of trade. The variable should therefore have significantly positive impact on export diversification.

#### *Same Country (Dummy)*

Just as *Common Coloniser* is giving information about former colonial ties, this one says if the two countries in a given trade relation once used to be the same country (slightly different from having been the same colony). Having been the same country indicates that there have been historical ties, which should give positive effects on export diversification.

### 5.2.2. Estimation Issues

The dependent variable is integer, hence count data. When the data is integer it can be measured with a Poisson model. The problem that needs to be considered is that there might be heteroscedasticity in the data. Although, this is covered when using Poisson with robustness (Cameron & Trivedi 1998).

### 5.2.3. Problem

This paper requires that there are valid data since the founding of ECOWAS until present day, and that this data covers all of our research aspects. Since ECOWAS was founded 1975 it is not at all safe to say that valid data is collected. It will furthermore be hard to distinguish if there really is a difference from before its upcoming. This problematic aspect is given even more ground as ECOWAS has not yet progressed into a full blown trade union, but is, currently, rather an economic union with mutual trade policies, and therefore it could be harder to connect to the main purpose. Measuring the change in trade diversification is

difficult per se because it both can be problematic to find suitable data but also the measuring of diversification itself is challenging. The region of ECOWAS consists of some countries who are notably poor and lack in statistical registers. The fact that all countries in ECOWAS are very young nations, due to colonialism, obviously affects the availability of relevant data. Most countries gained independence in the late 1950ies and early 1960ies. Although Cape Verde and Guinea-Bissau did not gain independence until 1975 respectively 1974. When measuring trade diversification, GDP and GDP per capita are vital aspects of the results. They both have significant relevance for the trade of the countries. It is therefore a major problem that some nations are missing GDP data for some early years. As the data is acquired from various external sources, it is of great difficulties to control the validity of the values in the different datasets.

#### 5.2.4. The Dataset

The gathering of data was made in the UN Comtrade database, with a 4-digit level range of the Standard International Trade Classification (SITC), rev.1. UN Comtrade provides a dataset of the time period 1962-2014 which would imply that ECOWAS countries' trade set would lie in the given period of time. The sample includes the 15 ECOWAS countries and five non-ECOWAS countries.<sup>6</sup> Notable is that eight of the ECOWAS member states also belong to WAEMU, which is also included as a part of the estimation. The given group of countries account for a small part of the world trade, but a relatively much larger part of the world's population.<sup>7</sup>

The data on variables such as distance, neighbour, common language and common historical links are all given by the working paper of Mayer & Zignago (2011) on distance measures. The dataset on countries GDP and GDP per capita are given by World Development Indicators (2016).

There are 17 100 potential observations in the dataset. For a large share, in fact more than half, of these observations, there is no trade at all between the given trade partners. Due to missing observations on some variables, the actual number of observations used in the regression is therefore 16 132.

The regression regarding HHI will also have less observations than the potential amount. This is due to the fact that HHI does not generate values for non-existing trade. Hence, all the country-pairs where there is no trade at any given year, will not get a HHI-value. So, all the combinations which have no HHI value, are automatically removed from the regression.

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<sup>6</sup> See Appendix Table 1

<sup>7</sup> See Appendix Table 2

## 6. Result

### 6.1. No. of Exported Commodity Groups

**Figure 1** illustrates an average of the amount of 4-digit commodity groups which were exported from and within the 20 countries during the time span 1970-2014. These values are averages of the number of exported commodity groups, for all combinations of trade partners for every given year. These include 15 ECOWAS members, eight WAEMU members and five other African countries belonging to neither. The graph of ECOWAS is only covering trade within the 15 member nations, hence exports to the five exterior countries are not included. The same method is applied to WAEMU, only trade within the 8 member nations is concerned. This as the paper desires to focus on the intra-regional trade within the unions. Nevertheless, the graph representing the five non-union countries shows the exports from each of these countries to all of the remaining 19 countries. This because there are solely five countries which belong to neither of the unions in the dataset. Also, as there is no interest to look at intra-regional trade within these exterior countries it is of more value to get a larger number of observations in this case.

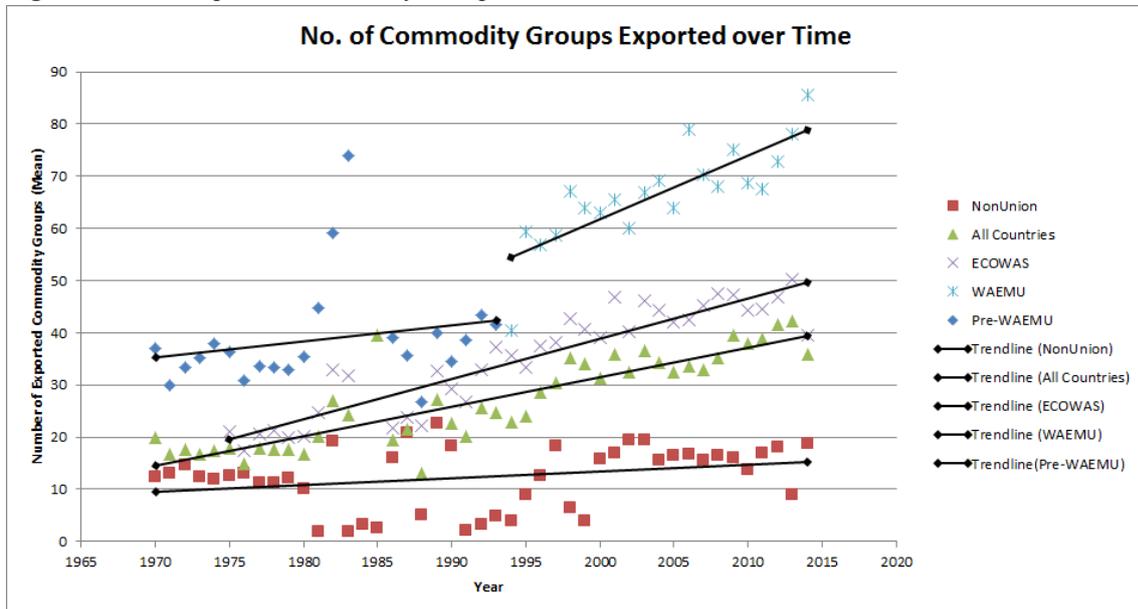
The graph shows notable differences between the different groups of countries. The graph indicates that WAEMU members seem to export a higher number of different commodity groups on average. ECOWAS countries also show signs of an increasing export diversification. Although there seems to be a general increase in the number of different commodity groups, as the trendlines illustrate, there are some noticeable fluctuation points which do not correspond to the trend. In the year of 1984 there are extremely low values for all concerned groups. Then in 1985 there is a giant peak for ECOWAS members, which then goes back to values following the trend again. The explanations for these fluctuations are not completely clear, but a legitimate hypothesis is that the data for these years are uncertain and thus not representative. By considering these as outliers, not much notice should be taken of them as they do not correlate with the general tendency seen over 45 years.

It can also be said that the non-member nations have perceptible low values in relation. This strengthens the hypothesis that unions of economic integration have positive effects on the export diversification. Nevertheless, attention should be paid to the fact that the **figure** is based on descriptive statistics. The **figure** does not catch the causality connection, but only correlations between the lines. With this in mind, the **figure** only gives an indication on how diversified the different groups of countries are.

Further on there are only five countries outside of ECOWAS included in the data. A higher number of countries outside of ECOWAS could adjust the low values of the non-union observations. There could also be complications as the data only covers trade with each other and with the ECOWAS region. The low values in the export diversification of these five countries should therefore be interpreted wisely and cautiously. These countries can most likely have major trade partners elsewhere, which could raise these values drastically. This would however require sizable datasets which this analysis does not administer. Due to the fact that this is a **figure** depending on descriptive statistics, no proper analysis can be

conducted. As it solely provides indications, a regression analysis will be run in order to see if there are significant results.

**Figure 1** No. of Exported Commodity Groups over Time



**Notes:** Index of export diversification for 20 countries, divided into different categorised groups, over a 45-year time period (UN Comtrade, 2016).

**Table 3** shows the result from the baseline estimations of export diversification with the use a Poisson regression. The dependent variable in this estimation is *No. of exported commodity groups*.

**Table 3** Regression of Baseline

VARIABLES	Poisson FE	P-value
Neighbour	0.364*** (0.0265)	0.000
SameCountry	0.219*** (0.0539)	0.000
CommonLanguage	0.0462 (0.0492)	0.348
ComCola45	0.551*** (0.0441)	0.000
Indist	-0.968*** (0.0265)	0.000
lnGDPExporter	0.334***	0.000

	(0.00990)	
lnGDPcapExporter	0.556***	0.000
	(0.0342)	
lnGDPImporter	0.171***	0.000
	(0.00895)	
lnGDPcapImporter	0.140***	0.000
	(0.0177)	
BothinECOWAS	0.767***	0.000
	(0.0428)	
BothinWAEMU	0.631***	0.000
	(0.0473)	
Observations	16,132	
Number of Years	45	
Time FE	YES	

**Notes:** Robust standard errors in parentheses. The significance is given as: \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

**Table 3** shows the result of this paper's baseline. It is calculated with a Poisson model as described above. The standard errors, coefficients and P-value are all being given above.

Regarding the significant results of the estimation, the dummy variables *Neighbour*, *SameCountry* and *ComCola45* are all significant at a 1 % level. Hence, they all matter in how countries diversify their trade. *CommonLanguage*, on the other hand, is not significant at all.

The log-formed variables are all significant at a 1 % level. Distance has significant value for export diversification. The same goes for all GDP variables. If countries have higher GDP and GDP per capita, they tend to diversify their trade more and vis-à-vis. Both ECOWAS and WAEMU have significant results on a 1 % level. Thus, they both do play a big role in how much countries diversify their exports. Members within the unions hence trade more diversified, than they do with non-union countries.

The coefficient that is given indicates how much each variable affect the dependent variable. If the coefficient has a positive value, it indicates that it has a positive effect on the dependent variable. This works vis-à-vis when a negative number is given. In **table 3**, only *Indist* gives a negative number. This is due to the fact that the higher this value is, the further away the countries are. It implies that this coefficient value will be inversely related, compared to the others. Hence, further distance between trading countries affects export diversification negatively. As shown, both ECOWAS and WAEMU have positive coefficient, and therefore positively contribute to the dependent variable.

With the coefficients given, an equation is able to calculate a percentage of how much the dependent variable differs if a dummy variable is coded 0, or 1. In other words, when the

dummy variables are coded 0, the **equation** gives a percentage on how much the number of exported commodity groups increases if the dummy variables would be coded 1. So when applying this for the variables *BothinECOWAS* and *BothinWAEMU*, it can be shown how much the number of exported commodity groups would differ in percent if countries were not members of the respective unions (Gordon, 2012).

The **equation** is given as:

**Equation (3):**

$$\% - change = 100 * (e^{\beta} - 1)$$

The  $\beta - value$  is the coefficient given from the regression, and  $e$  is approximated to 2,7183. When computing this **equation** for ECOWAS and WAEMU, the result is given by **table 4** below:

**Table 4** Percentage Change in No. of Exported Commodity Groups

**UNION THE % THE DEPENDENT  
VARIABLE WOULD  
DIFFER IF DUMMY=1**

<b>ECOWAS</b>	Approx. 115
<b>WAEMU</b>	Approx. 88

**Notes:** ECOWAS' starting date is 1975, and WAEMUS' starting date is 1994.

In **Table 4**, the calculations show that a membership in ECOWAS makes the number of exported commodity groups differ with 115 % compared to if countries would not be members. In WAEMU's case, the calculations imply a difference of 88 %. Noteworthy is that being a member of WAEMU, automatically means being a member of ECOWAS as well. Therefore, being in WAEMU brings an extra dimension, as the positive effects of ECOWAS already are included.

**Table 5** Impacts of Memberships in Percentage

<b>Countries</b>	<b>Bilateral combined trade if one country is a member of ECOWAS or WAEMU</b>	<b>Bilateral combined trade if both countries would have been members of ECOWAS or WAEMU</b>
<b>Cameroon &amp; Nigeria</b>	2209	4750
<b>Nigeria &amp; Cote d'Ivoire</b>	1649	3100

**Notes:** Cameroon (non-ECOWAS), Nigeria (ECOWAS & non-WAEMU) and Cote d'Ivoire (ECOWAS & WAEMU)

For the sake of putting this into context, an example involving Cameroon, Cote d'Ivoire and Nigeria is provided. In a bilateral trade where one of the countries belongs to ECOWAS, and

the other one does not, the calculations have shown that the number of exported commodity groups would have increased with 115 %, within this specific bilateral relation, if both of the countries were members of ECOWAS, during the given time span. **Table 5** shows the bilateral relations Nigeria has with Cameroon and Cote d'Ivoire. If Cameroon would also have been a member of ECOWAS, the number of exported commodity groups would have been expected to increase by 115 % in the trade between these countries between 1975-2014, hence from 2209 to 4750 exported commodity groups.

The other example shows what impact a membership in WAEMU for Nigeria would have been expected to have on the bilateral trade relation between Nigeria and Cote d'Ivoire. If Nigeria would have been a part of WAEMU since its creation in 1994, the number of exported commodity groups between these countries would have been expected to increase by 88 % between 1994-2014, hence from 1649 to 3100 exported commodity groups.

With several significant results from numerous variables in the regression, it is however these findings which should be paid uttermost attention. The significant results of *ECOWAS* and *WAEMU* and, as **table 5** so clearly illustrates, to the high extent the variables affect the export diversification are of main importance. This is highly relevant for the purpose of the paper and shows that the unions of economic integration do have positive impact on the export diversification of the member states.

## 6.2. Herfindahl-Hirschman Index

The Herfindahl-Hirschman Index, is a statistical measure of concentration. The intent of HHI is to measure the way different countries rely more or less heavily on the number of products which are being exported, as well as how different trade values of the commodity groups are a part of the total trade value (Dennis & Shepherd, 2011).

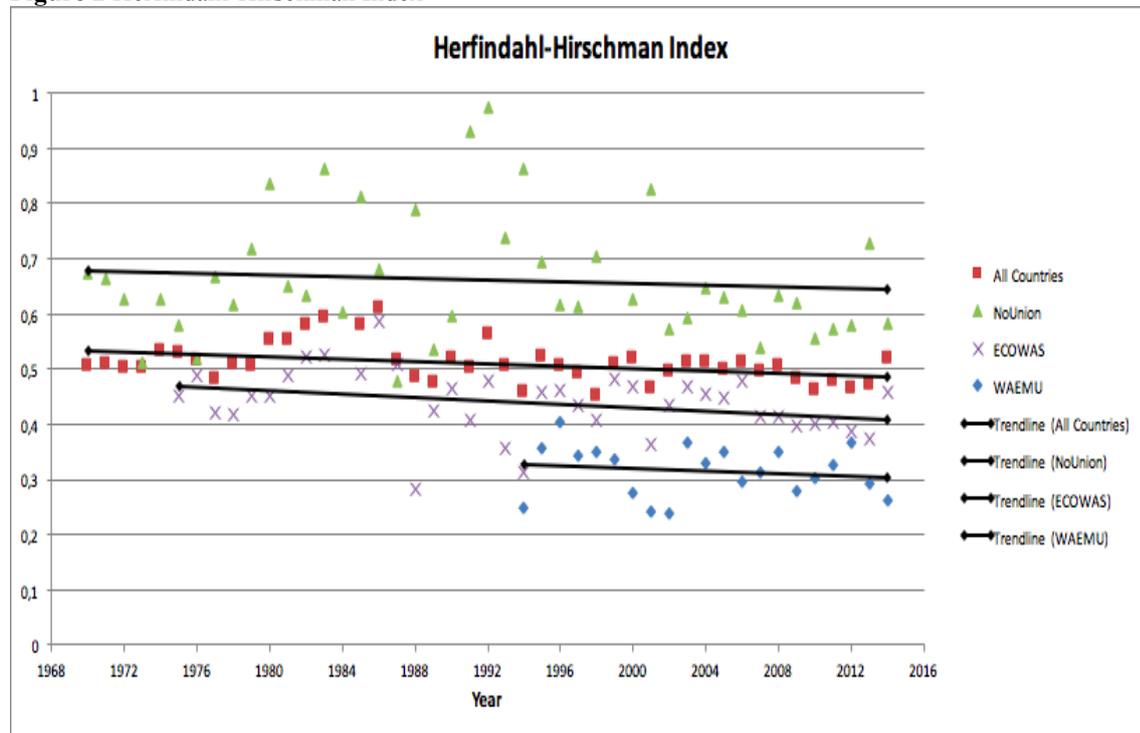
The difference with HHI, compared to **figure 1**, is that it takes the trade value of the exported good into account as well. By exclusively exporting several different kinds of commodities does not necessarily imply that a country will get a low index value. It is of significance in the HHI that the value of the exports is evenly distributed among the exported commodity groups. If there are numerous different groups of goods being exported, but it is just a few of them with high trade values, the model will still give a quite high index value (Samen, 2010). This is a very useful complement for our baseline. Due to this extra dimension in the measuring methods, the application of HHI is of great essence.

Although there are differences in the two measurements, a correlation to some extent between them two should still be expected. With this being said, the HHI is therefore a very good way of measuring export diversification. When measuring the number of commodity groups, results of more basic character are given. The number of exported commodity groups is not that valuable if the trade value is not relatively equally distributed over all commodity groups. The using of both methods therefore provides a more stable and reliable measurement of export diversification.

As well as in **figure 1**, the fact that the **figure** is based on descriptive statistics does not make it reliable as a result to take into consideration. It also contains, as above, the same structure regarding group identification. Fluctuations in the data is given in **figure 2** as well, and is due to the same problem as explained in **figure 1**.

Notable for **figure 2** is that there is not much difference for the index values in general, from starting to ending year, which could imply the export values have not diversified to a particular high degree. However, values differ greatly between the groups of countries, and the results still lead to some conclusions. WAEMU has, in contrary to the above given **figure**, the flattest slope. They have over time the smallest change in HHI, which might be explained by the fact that their data begin in 1994, when trade in general was larger than back in the 1970- and 80ies. The other datasets start at a much higher index value, and therefore gets a slightly steeper slope. Nonetheless they do have a HHI just over 0,3, which actually implies that they have relatively highly diversified exports within the union. ECOWAS has, as predicted, also a slightly downward sloping line. Their export has slowly grown in both actual trade value, as well as in number of exported commodity groups. ECOWAS has a steeper slope than WAEMU, something that indicates that their export diversification growth is marginally faster than WAEMU's. Notably is though, that ECOWAS has 15 member states, and WAEMU only eight, this fact might be a part of the given result. The countries outside of any union in the region have the highest index value. Hence, their export diversification is quite low, and of course this have its explanations. Non-union bound observations are only represented by five countries. One of the countries, Algeria for example, could reasonably have a larger share of their trade with Europe, given their geographical location.

**Figure 2** Herfindahl-Hirschman Index



**Notes:** Index of export diversification for 20 countries, divided into different categorised groups, over a 45-year time period (UN Comtrade, 2016).

**Table 6** shows the results from the HHI estimations of export diversification with the use a Poisson regression. With **figure 2** in mind, the conclusion from the **figure** cannot be properly analysed. The **figure** is descriptive, which is not enough, as a base, for this paper. The

regression in **table 6** is, however, a justified measurement. In this **table**, the dependent variable is the *Herfindahl-Hirschman Index*. The independent variables are the same as in the baseline regression. The HHI values are, in **table 6**, inverse to the ones given in **table 5**. Hence, a low value of the estimation indicates that export diversification is higher. This is also reflected in the **table**, in the sense that coefficients are now inverse. A negative value on the coefficients now indicates a lower HHI, which implies that the variables positively affect export diversification.

**Table 6** Regression of Herfindahl-Hirschman Index

VARIABLES	Poisson FE	P-value
Neighbour	-0.110*** (0.0218)	0.000
SameCountry	-0.110*** (0.0360)	0.002
CommonLanguage	-0.253*** (0.0193)	0.000
ComCola45	0.0301 (0.0217)	0.166
Indist	0.342*** (0.0150)	0.000
lnGDPExporter	-0.0139 (0.0111)	0.209
lnGDPcapExporter	-0.120*** (0.0201)	0.000
lnGDPcapImporter	-0.0310*** (0.0100)	0.002
lnGDPImporter	-0.0153*** (0.00421)	0.000
BothinECOWAS	-0.133*** (0.0206)	0.000
BothinWAEMU	-0.220*** (0.0371)	0.000

Observations	7,038
Number of Year	45
Time FE	YES

**Notes:** Robust standard errors in parentheses. The significance is given as: \*\*\*= p<0.01, \*\*= p<0.05, \*= p<0.1.

As shown, all except two variables are significant at a 1 % level. *CommonLanguage* is now significant, comparing to the regression regarding exported commodities. Otherwise, both *Neighbour* and *SameCountry* have significant results, as they had before. Another difference is that *ComCola45* did not produce a significant result. Distance, once again, has significant relevance to the measured variable. Notable is that the exporter's GDP does not have significant relevance to the HHI. Otherwise, the dummies for both unions, the GDP for importer and the GDP per capita for both countries all give significant results. The coefficients are negative for all variables except for two. Hence, if significant, they all affect export diversification in a positive way. *Lndist* and *ComCola45* both have positive coefficients. As mentioned in prior regression results, the distance is inversely related to the coefficient value, compared to the other variables. This means that this positive value of the coefficient implies that shorter distance has positive effects on the dependent variable. Considering the insignificant result of common coloniser, the positive coefficient value has no relevance in this case. Given the fact that both ECOWAS and WAEMU have negative coefficients values, memberships in the unions have positive effects on lowering the HHI for the given countries.

Due to the different and smaller numbers regarding HHI, the **eq. 3** will not be applied. A percentage value could be generated, but to almost no use.

The first regression analysis provided results that clearly indicated that both ECOWAS and WAEMU have positive effects on the number of exported commodity groups. However, as has been described throughout the paper, it is of great essence to examine other measurements which take the value of the exports into account. The regression analysis treating a yearly average of the Herfindahl-Hirschman Index as the dependent variable should therefore be paid substantial attention. The regression provides similar results as the mentioned above. This strengthens the thesis, and ECOWAS and WAEMU do both still have significant effects on the export diversification, even when values are investigated as well. All in all, it can be concluded that the two economic integration projects in West Africa do have significantly positive impact on the diversification of exports among its member states. Very noteworthy is also that WAEMU members are also included in ECOWAS. This implies that WAEMU, due to higher level of economic integration, adds an extra dimension of positive effects to its members, in addition to the effects of ECOWAS.

## 7. Conclusion

This paper has studied and estimated how ECOWAS has affected the regional trade in West Africa since its establishment in 1975. The rather unexplored subject regarding export diversification in the area has been analysed and described to the extent needed for the research question. Studying the time span 1970-2014, and using all trade and bilateral data that were given, tests have been formed to examine ECOWAS' effect on the member states' export diversification. Considering WAEMU's presence in the region, it was also included in the estimation and analysis.

Predictions were that ECOWAS would have effect on diversification in the region. Even though ECOWAS is not a complete trade union, it still has advantages over non-members, which were expected to make difference.

Comparing to studies in the area of the subject, a long timeline has been covered. As far as findings have shown, there is no paper covering a timeline of such length. This led to certain problems due to missing data for early years. Although, it is believed that some valid conclusions and points could be made and used for future purposes. Considering that trade volumes are more common to measure, than number of exported commodity groups, previous studies have not quite covered the results of this paper.

The estimation was based on regression analyses testing the *no. of exported commodity groups*, and the *Herfindahl-Hirschman Index*. To complement the regressions, figures showing values for both number of commodity groups and HHI are being presented and explained thoroughly. The regression estimations produced results close to what was expected. The regression analysing effects on the number of exported commodity groups showed that ECOWAS and WAEMU did have significant impact on the dependent variable. When measuring the HHI, there were also significant results for ECOWAS and WAEMU. Hence, ECOWAS and WAEMU both contribute to the diversification of the exports among its member states.

Concluded in the paper is first and foremost, the need of further research regarding the subject. It is a major concern that many countries have such weak export diversification within one single union. If more valid data could be collected for both GDP and trade, that would be a major boost for other researchers' results. There is much research that can be identified and explained. This paper has though ended up in the conclusion that ECOWAS and WAEMU as economic integrations do have impact, and are hence functional tools for the promotion of export diversification. With this being said, deeper analysis and more advanced estimations can be done for more thorough results. Also, issues concerning the number of observations should be highlighted. The number of observations from outside of ECOWAS could be increased for more thorough and representative results, as there are only 5 exterior countries in this paper's dataset. One can consider this as a brief starting point and introduction to the subject that is export diversification in West Africa, and more precise the region of ECOWAS.

It is very evident that WAEMU has reached higher levels of economic integration than ECOWAS, and hence higher levels of export diversification have also been accomplished. Aims of ECOWAS should be to work along with WAEMU, and keep proceeding with the

developments of WAMZ. The establishment of another monetary zone lays good basis for the convergence of the entire region, which have possibilities to finalise in a common currency throughout all of ECOWAS. Also, in the shorter term perspective, the implementation of CET has yet to show substantial effects. With mutual tariff policies, the export diversification in the region as a whole will have better potential to progress even further.

## 8. References

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# Appendix

**Appendix Table 1** Members and Non-members of ECOWAS and WAEMU

Country	ECOWAS	WAEMU
ALGERIA	-	-
BENIN	X	X
BURKINA FASO	X	X
CAMEROON	-	-
CAPE VERDE	X	-
CHAD	-	-
CONGO	-	-
COTE D'IVOIRE	X	X
GAMBIA	X	-
GHANA	X	-
GUINEA	X	-
GUINEA-BISSAU	X	X
LIBERIA	X	-
MALI	X	X
MAURITANIA*	-	-
NIGER	X	X
NIGERIA	X	-
SENEGAL	X	X
SIERRA LEONE	X	-
TOGO	X	X

**Notes:** Member States of ECOWAS and WAEMU.

\*(Mauritania withdrew from ECOWAS in 2000.)

**Appendix Table 2** Data Sources

<b>VARIABLE</b>	<b>DESCRIPTION</b>	<b>DATA SOURCE</b>	<b>Notation</b>
<b>Trade Data</b>	Country-pair trade data for the time span of 1970-2014.	COMTRADE DATABASE	4-digit, SITC rev 1.
<b>GDP &amp; GDP per capita</b>	GDP and GDP per capita for every country, given in 2005 US dollar.	World Development Indicators	Missing data for Cape Verde and Guinea for early years.
<b>Bilateral distance</b>	Distance between trading countries, calculated from countries' most populated cities.	CEPII:s distances measures.	
<b>Common Language</b>	If the countries share the same official language.	CEPII:s distances measures.	
<b>Same Country</b>	If the countries have ever been the same country.	CEPII:s distances measures.	
<b>Common Coloniser</b>	If countries used to belong to the same coloniser.	CEPII:s distances measures.	
<b>Neighbour</b>	If the countries share the same border.	CEPII:s distances measures.	

**Notes:** The regression variables are all included in the table.