2011

Can the Monetary Integration of ECOWAS Improve Intra-Regional Trade?

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SUBMITTED TO

DEAN GREGORY HESS

BY

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FOR

SENIOR THESIS

FALL 2011

NOVERMBER 28

Acknowledgements

I would like to thank my thesis reader, Dean Gregory Hess, for his support and guidance throughout this period. It would not have been possible to conduct my research or write this thesis without his immense assistance. I also want to express my gratitude to my family and friends for their continual support throughout my college career.

Abstract

A gravity model is used to evaluate the effects of currency union on intra-regional trade of ECOWAS (Economic Community of West African States) member states. The panel data used includes bilateral observations for fourteen years spanning 1994 through 2006 for 16 countries. Controlling for determinants and deterrents of trade, I find the presence of a currency union three times as likely to increase intra-regional trade between ECOWAS member countries. In addition, I find that the effect on trade creation has been steadily falling since 1994.

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1. Introduction

Several studies have suggested that the small size of Western African economies renders them ineffective in determining the direction of foreign trade. The high level of foreign demand and supply encountered by small countries leaves them subservient to unfavorable changes in the international trade market. To gain greater international influence and decrease external dependence, Western African countries have sought to consolidate their economies. On many occasions over the years, intensified efforts have been made by Western African leaders to bring about greater trade between their countries through the formation of a trade union and eventually a currency union. The creation of ECOWAS (Economic Community of Western African States) in 1975 was viewed as the first step towards the realization of an economically integrated West Africa. Greater economic integration occurred between several Western African nations with the modification of the currency union, WAEMU. (West Africa Economic and Monetary Union)

Several economists examine the effect of a currency union on trade between countries and have had mixed conclusions. Some authors conclude a significant effect of a common union on trade while others maintain the effect has been negligible. Another group of authors concludes that a common currency has no direct effect; instead it has an indirect effect on trade due to economic integration. Exchange transaction costs and fluctuations, price transparency, unified trade and monetary institutions between states all accrue to potentially increase trade flow between members.

My thesis investigates the effect of a currency union on intra-trade volume in ECOWAS as well as the possible forms of currency unions, their respective strengths, and weaknesses, given the political and economical characteristics of Western African countries.

Using a gravity model which measures the level of trade between two countries, this thesis attempts to pinpoint the effect of a currency union on intra-trade. To examine whether the presence of a currency union leads to an increase in trade flow, this thesis will account for other main determinants of trade flow. The currency union, WAEMU serves as a great tool for measuring the effect of a currency union on trade between ECOWAS member states.

This paper will proceed as follows. Section 2 presents a history of the trade union and currency union present in West Africa. It also includes a review of existing literature on the effect of a trade and currency union on trade between member countries. Section 3 covers the hypothesis of this thesis as well as the model employed in determining trade between countries. Section 4 and 5 cover the empirical analysis and Section 6 concludes the paper and presents suggestions.

2. Literature Review

African countries have for a long time sought greater integration between their countries for economic and political reasons. Masson and Pattillo (2001) explain two principle motivations underlying the enthusiasm for monetary unions in Africa. First, the perceived success of the Euro has spurred African countries interest in monetary unions. Second, motivation for a monetary union has come from the desire to increase economic growth through integration and expand the

sphere of political influence. African countries could potentially have favorable trade agreements globally or bilaterally with the EU and the US.

Western African countries have aimed to accomplish regional integration through the establishment of ECOWAS.

2.1 ECOWAS (Economic Community of Western African States)

ECOWAS was established May 28, 1975 in Nigeria with the starting members of Benin, Burkina Faso, Cape Verde Islands, Gambia, Ghana, Guinea, Guinea-Bissau, Ivory Coast, Liberia, Mali, Mauritania, Niger, Nigeria, Senegal, Sierra Leone, and Togo. ECOWAS was created to promote trade, cooperation, and self-reliance in West Africa. In 1993, members signed a revised ECOWAS treaty to spur economic integration and political cooperation.[1] Studies analyzing trade integration in Africa place emphasis on the continent's potential to economically progress from trade integration.

At its onset, ECOWAS aspired to increase trade interaction between its members through certain objectives, such as the elimination of custom duties and other charges of equal effect in respect of the importation and exportation of goods between member states; abolition of quantitative and administrative restrictions on trade among the member states; establishment of a common customs tariff and a common commercial policy towards third countries; and abolition

[1] http://www.enotes.com/biz-encyclopedia/economic-community-west-african-states-ecowas

(as between the member states) of the obstacles inhibiting free movement of persons, goods, services and capital.[2]

Despite the target to comparatively increase intra-ECOWAS trade, the volume of trade flow between ECOWAS member countries and industrial countries has been proportionally larger than the intraregional trade flows. Annual volume of imports from industrialized countries to ECOWAS countries between 1981 and 1992 averaged to $13.22 billion. Volume of imports from African countries during the same period was only $1.59 billion. (Table 1) Exports for a majority of members declined between 1975 and 2003 (Niger, Senegal, Togo, and Sierra Leone), others stagnated (Benin) within this same period. A few others had a relatively significant increase in their export market.[3] (Table 2) These figures show a neutral trend in the export content of Western African countries.

2.1.1 Literature Summary on Effect of Regional Integration in West Africa

Several studies discovered that the effect of integration on regional trade in Western Africa has been unsatisfactory, as the majority of the objectives of the regional trade integration in this region have not been realized. Iqbal & Khan (2002) uses two methods of measuring the impact of ECOWAS on intraregional trade: the trade ratio, a measure of the share of intra-regional trade in total trade show and the gravity model, a measure of trade between two countries. Results from both methods show a lack of significant increase in intraregional trade between the Western African nations. Likewise, using the trade ratio method, Torre and Kelly

[2] E. Olawale Ogunkola. "An empirical evaluation of trade potential in the economic community of West African States." *Department of Economics and Centre for Econometric and Allied Research (CEAR) University of Ibadan, Nigeria.* (November 1998)
[3] Olumuyiwa Alaba. "EU-ECOWAS EPA: Regional Integration, Trade Facilitation and development in West Africa" (Spring 2006).

(1992), and Foroutan (1992) discover that such regional efforts have not significantly affected intraregional trade. They conclude that the share of intraregional trade flows of the member states of ECOWAS is small (in all cases, below 10 percent) and at best stagnant. More studies from Ogunkola (1994) and Rose (1997) come to similar conclusion on the non-significant effect of regional integration on trade between member countries of ECOWAS. Ogunkola (1998) compares a pre-integration period (1970-1972) to a post-integration period (1978–1980) and finds that intra-trade between ECOWAS member states remained weak during these periods.

In contrast, using a multivariate trade model Deme (1997) finds that the impact of ECOWAS on trade flow of its member countries from 1975 to 1991 is positive and that regional integration has succeeded in increasing trade flow between several members of ECOWAS. Cote d'Ivoire, Gabon, Mali, Mauritania, Niger, Sierra Leone, and Togo appear to be significantly impacted by ECOWAS. Foroutan and Pritchett (1993) use an augmented gravity model to compare potential trade in Sub Saharan African countries to current trade. Their study concludes that regional integration of Sub Saharan African countries positively affects bilateral trade in this region.

The mixed conclusions are simply an indication that the effect of regional integration on intra-ECOWAS trade is not as strong as leaders of member states hope for. Ballasa (1965) argues that developing countries like Western African nations mostly have a subsistent economy, and would need industries capable of producing competitive manufactured products to achieve trade creation. Ezenwe (1983) sees the results more as a matter of time and focuses more on the dynamic effects of trade integration and argues that the trade integration effect in LDC (Low Developing Countries) such as Western African nations will not be felt over a short period of

time. Musila's (2005) finding that the intensity of trade creation varies across period and region certainly augments Ezenwe (1983) position on the importance of the period.

2.2 WAEMU (West African Economic and Monetary Union)

Despite the rather disappointing intra-ECOWAS trade figures, the desire to accelerate the pace of regional integration through currency union has not been lacking. ECOWAS was established as a free trade agreement with the eventual goal of converting it into a customs union; however, this goal has never been achieved. The ECOWAS Head (Olusegun Obasanjo) made commitments to work towards a common currency by 2004. To date, there has been no evidence of a concrete move towards a single ECOWAS currency, save for WAEMU. In the attempt to bring about greater monetary integration, the nations of the West African Monetary Union, Benin, Burkina, Côte d'Ivoire, Guinea Bissau, Mali, Niger, Senegal and Togo formed the West African Economic and Monetary Union (WAEMU) in January 1994. The creation of a single currency as well as the adoption of convergence criteria, establishment of a common external tariff, harmonization of taxes, and establishing structural funds to further a more balanced development across the union have brought deeper economic integration to WAEMU member countries.

WAEMU has the CFA Franc as its common currency; the currency was previously pegged to the French Franc since 1948 and currently to the Euro since 1999. Inflation has been consistently low, although output has been subject to large swings due a severe recession from 1986-1993. During the 1994-1998 period, output, export, and investment rose faster in WAEMU member countries than other Western African countries, possibly due to the devaluation of the CFA Franc. (Masson and Pattillo, 2001)

A different trend is demonstrated when WAEMU's intra-regional exports as a percentage of total exports is compared to its total exports. Intra-regional trade accounts for less than 10% of the total trade in WAEMU countries. From Table 7, intra-regional exports have comparably increased from 9.6% in 1980 to 14.3% in 2001. Moreover, intra-regional exports have been on an upward trend since 1995, as opposed to the downward trend in ECOWAS intra-regional exports.

2.3 Literature Summary on Effect of a Currency Union

Theoretically, currency union brings about a number of effects which could be dynamic and/or static. According to Dramani (2011), reduction of the costs of transaction and the speculative movements, the reduction of uncertainty, the increase of commercial relationship and the reduction of the negative externalities between the zone counties are advantages accrued from the adoption of a common currency. Other benefits include true price comparison between countries, removal of exchange rate risk and inducement of competition.

2.3.1 Direct Trade Effects

Results from studies on the effects of a single currency appear mixed, as some studies find significant effect while others report little effect. Using cross-section analysis, Andrew Rose (1999) found strong evidence of monetary union on trade, with a monetary union increasing trade trice as much. Rose and Stanley (2005) conducted a meta-analysis of recent studies on the effect of common currencies on trade and surmised that common currency increases the bilateral

trade of goods by 30 to 90 percent. Glick and Rose (2000) find lower estimate of about 1.7 using time series data with country fixed effects. Carrère (2005) uses the Hausman–Taylor (1981) approach to show that the countries of the WAEMU and the CEMAC trade more within each union that with other countries.

Such positive findings contrast with the findings of Persson (2001), Rose (2000), and Pakko and Wall (2001) who all came up with negative or negligible effects of a monetary union on bilateral trade. Rose (2000) argues that such result was due to the small size of samples and that the effect is actually large. [4] Perrson (20110 questions Rose's (2000) method of linear regression by suggesting a method that uses non-parametric matching estimators, which allow for "systematic selection into currency unions as well as non-linear effects of trading costs on trade."[5] He obtains estimate that are not significantly different from zero, indicating that currency unions have little effect on trade.

Interestingly, Agbodji (2008) discovers that since 1995, WAEMU members' export to the rest of the world decreased, while exports amongst themselves increased: an indication of trade diversion of exports within WAEMU rather than trade creation.

The reason a common currency might have a significant effect on trade is unknown. Rose (1999) has several potential explanations. He reasons that a common currency means that the government has a strong commitment to long term integration. This commitment might stimulate private sector engagement in greater international trade. Also, a common currency could instigate greater financial integration leading to stronger trade in goods and services.

[4] Akoété Ega Agbodji, 2008. "The Impact of Subregional Integration on Bilateral Trade: The Case of UEMOA." AERC Research Paper 186 African Economic Research Consortium, Nairobi
[5]

Masson and Pattillo (2001) disagree with the premise that monetary integration can stimulate other forms of integration. From historical experience, they insist that due to the disparate nature of Western African countries, a monetary union will not produce other integration benefits. They conclude that the evidence of a positive impact of monetary integration on other aspects of integration is at best mixed. However they concede that "The objective of monetary union however could be a positive force if it initiates a sustained economic convergence process and involved building the basis for regional cooperation."[6] Irrespective of Masson and Pattillo's (2001) conclusion, other studies point out several other effects of the adoption of a common currency that could augment intra-trade volume.

2.3.2 Reduction of Transaction Cost

By using a single currency, a monetary union may improve economic efficiency by lowering cost of currency conversion. Currency conversion requires a medium of exchange or transactions medium subject to a network externality (Dowd and Greenaway, 1993). "Middle-men" agents are removed from the currency exchange transaction. Hence, by eliminating the need for the exchange of one currency for another, monetary union saves real resources. (Buiter, 1999)

Rose and Van Wincoop (2001) theoretical models suggest a single suggest that a singular currency has more importance than is allotted to it. National currency seems to be a significant barrier to international trade in their data. Using a gravity model along with dummy variables delineating countries with a different currency and multilateral currency unions, they try to

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estimate the real benefits of currency unions. They conclude that currency unions lower barriers associated with national borders, leading to substantial increases in both trade and welfare.

2.3.3 Lowering Speculative Movements & Reduction of Uncertainty

Uncertainty in exchange rate poses as another barrier to trade, as it might reduce potential investment. Firms are less likely to make investments given that fluctuations in exchange rates increase their potential risks. Reducing such fluctuations could potentially increase investment and trade. Several models indicate that reduction in exchange rate volatility increases trade and vice versa. Clark (1973) examines the export or import decision of risk averse firms and concludes that an increase in exchange rate uncertainty makes firms reduce trade. Alexander (2006) makes a more moderate conclusion that the effects of exchange rate uncertainty on trade are sometimes of uncertain direction and depend on model structures and estimation techniques.

Rose (2000) reviews his assumption in a previous paper (Frankel and Rose, 1998) that a common currency is equivalent to reducing exchange rate volatility to zero. Equivalence of the two would indicate that both had the same effect on trade between countries. He argues that the effects of currency unions and exchange rate volatility are not only precisely estimated, but economically distinguishable. Hence, currency union has a much higher effect on trade than that of simply reducing exchange rate volatility. Frankel and Rose (1996) found that countries with closer trade links tend to have more tightly correlated business cycles.

2.3.4 Facilitation of Price Comparison

A common currency facilitates price comparison as well. Consumers are thus able to make a more direct comparison of the value of goods traded. The ability to directly compare value and price of goods traded brings several markets closer to being a homogenous market based on one common unit of account. In one homogenous market, consumers benefit from competitive pricing and are incentivized to import from other nations with more favorable pricing which spurs trade.

Moreover, such adoption of a single currency increases exposure of a domestic market to other foreign markets. Such exposure increases competition between the member countries and changes the competitiveness of national industries requiring adjustments in the structure of the production and distribution processes (Alexander and Mandler, 2006). Such structural changes might boost the productivity of domestic industries; incite innovations and create new methods of cost reduction.

2.3.5 Effect on Tourism

Although not included in trade flow data, tourism usually makes up a significant portion of foreign trade for several nations. Therefore, an examination of the effect of a single currency on tourism could produce results significantly related to trade. The obvious effect of the implementation of a single currency would be greater convenience to tourists, as the hassle and possible loss from currency conversion is avoided. Only three studies have taken into account the effect of a common currency on tourism. (Gil-Pareja, 2007; Santana, 2010; Gallego and Rodriquez, 2010) The first two studies conclude that a single currency has a moderate effect on tourism. The third study concludes that single currency adoption not only promotes tourism, but

also trade. However, they also discover that the estimated effect on tourism is lower for low-income countries. Consequently, this type of estimated effect would be absent in Sub-Saharan African countries.

2.4 Implementation of a Currency Union in Western Africa

For ECOWAS to expand into a monetary union, it must have a plan for the execution and form of such a monetary union. ECOWAS states could all be integrated into a monetary union in two ways: by expanding the current WAEMU union to include all ECOWAS member countries or by selectively creating smaller groups of monetary unions. Monetary unification entails giving up monetary policy as an instrument of stabilization of country-specific economic shocks. Hence, each country's loss of independent monetary policies can only be justified by the gains of a currency union.

2.4.1 Expansion of Current WAEMU Union

To expand the current WAEMU union to include outside ECOWAS member countries, certain criteria would have to be met by these outside ECOWAS countries. These countries would have to have maximum budget deficits (excluding grants of 4% of GDP), a rate of inflation of no more than 5%, gross official reserves covering at least six months of imports of goods and services, and central bank financing of the budget deficit limited to 10 percent of the previous year's tax revenue. Masson (2001) emphasizes that apart from the established criteria, several lessons from failed monetary unions have to be learnt. First, a true monetary union must be accompanied by the creation of a single institution with clear assignment of responsibility for formulation and conduction of monetary policies. Second, the central bank must be free from

pressures to finance governments, whether directly or indirectly. The monetary union must be organized around a strong existing central bank or through a peg to a stable international currency.

Expansion of the current monetary union offers the potential for a significant expansion of market due to the increase in the number of member countries. The size of the market also offers member countries the potential for specialization. Moreover, a larger market increases foreign trade influence on the union. The expansion of WAEMU currency zone to every ECOWAS member could potentially increase trade between the countries. Ballasa (1965) points out that for an integration of a given size, the greater the increase in size of the market, the larger the gain from integration.

In reality, the process of such an expansion faces several obstacles. First, for a monetary union to succeed, legal, geographical, and cultural barriers to labour mobility should be absent. The current situation of Western African nations easily depicts them as disparate countries: different monetary policies, geographical disparities, and high terms of trade differences. For example, Nigeria is a substantial oil exporter, while most of other countries of the region are net oil importers. As a result, Nigeria's terms of trade changes are substantially negatively correlated with those of Cote'd Ivoire, Niger, Ghana, Liberia, and Sierra Leone, and either weakly negatively or weakly positively correlated with the rest, except for Guinea. (Masson and Pattillo, 2001) Hence seigniorage revenues play a relatively large role and are likely to continue because the new common central bank might be unsheltered from political pressure (Beetsma and Giuliodori, 2010). Simulations by (Masson and Pattillo, 2001) indicate that a full monetary union among ECOWAS countries would be undesirable for most potential members.

2.4.2 Separate Monetary Union of Countries

The second method is a more cautious method that could have economic stabilizing advantages. Selective expansion of smaller countries creates great incentives for existing members to scrutinize the policies of potential members. Given the widespread lack of both fiscal discipline and stable macroeconomic policies, the use of monetary union as a tool to encourage greater discipline and better governance is vital. (Masson and Pattillo, 2001)

As earlier detailed, high costs of transportation in ECOWAS is a huge barrier to trade. Hence, creation of smaller groups of monetary unions based around geographical proximity, language, or other similarities might significantly reduce such cost. A monetary union like WAEMU could be selectively expanded, as neighboring countries achieve greater convergence with the countries that already share a common monetary policy and currency (Masson and Pattillo, 2001). Such a strategy ensures that existing monetary unions are not destroyed, rather improved and built upon.

However, complimentarity of economies might decrease as proximity of Western African countries increases. Exports of Western African countries are mostly agricultural products. Close countries tend to have similar climates and hence grow similar crop products. Production of similar goods might make trade between such nations non-existent.

2.5 Barriers to Integration

A currency union could potentially suffer from the same barriers that have hampered trade within ECOWAS intra-trade. The effectiveness of a currency union would be tempered if current barriers to trade remained present. Alaba (2006) identifies two sets of barriers to regional trade integration. The first is the barrier associated with tariff policies and the second relates to barriers created by non-tariff barriers. Tariff levels in Western African countries tend to be high. Government reliance on tariff revenue and protection of domestic industries are the main reasons for the high tariffs. The government's inability to find other sources of income to substitute for import tariffs has been a significant barrier to trade flows. About a quarter of government revenue of ECOWAS countries depends on import duties. This problem is made worse by the fact that many of the Western African countries are operating huge fiscal deficits. For example, every Western African country except Cote d'Ivoire had fiscal deficits in 2001 (Adenikinju and Alaba, 2004). Past efforts by ECOWAS to ensure a common external tariff have all failed. On several occasions, a common external tariff (CET of 0%, 5%, 10%, and 20%) has been set, but has never been respected by most ECOWAS members, barring WAEMU member countries. A free trade system could worsen the trade accounts of these countries.

In Western Africa, the lack of infrastructure greatly hampers the progress of trade integration. Movement of goods and services incurs high costs due to limited means of transportation. Besides, Ogunkola (1998) explains the relationship between distance and cost of transportation in Western Africa, using descriptive statistical data. He finds a high correlation coefficient: an indication of the substitutability between distance and cost. Such substitutability indicates that the greater the distance between two countries, the higher the cost of

transportation. In West Africa, mismanagement of roads, poor communication and erratic power supply have all combined to heavily weigh down the intra-ECOWAS efforts at free trade flows and ability to respond to trade opportunities and economic integration. Such degenerate level of infrastructure ensures that Africa cannot gain from economies of scale and reduction of transaction costs, even in proportion to its economic size. (Masson and Pattillo, 2001)

Besides the similar nature of goods traded between the WAEMU nations, trade is dominated by a small number of countries selling a small range of products. Products exported from one WAEMU country to other member countries mainly consist of primary products especially livestock, maize, cocoa, fresh fish, vegetables and sugar. Manufactured products make up less than 10% of trade. (Agbodji, 2008) Reliance on agricultural exports presents adverse implications for the trade and growth of Western African economies. First, it weakens the installation of reliable commercial policies insofar as this sector is dependent on the climatic risks and chances of rainfall. (Dramani, Latif and Laye, 2007) Second, Western African economies suffer from low level of complementarity due to agricultural product as main export item. Most domestic products cannot be traded, as they tend to be similar across Western African countries and as such competitive rather than complimentary. Indeed, the similarity of the structures of production makes that the countries, end up proposing on the markets the same lines of goods. What causes to weaken the trade between close countries, since the consumers with range of identical product will choose to get a stock on the local market. Thus, on making the assumption that the snobbery effect is very marginal. (Dramani, Latif and Laye, 2007)

Moreover, the dependence of WAEMU countries on the rest of the world for manufactured products (more than 60%) and food and energy supplies stymies the growth of

new markets within WAEMU and ECOWAS. It is thus, essential to envisage a diversification of industrial and economic fabric, to allow the emergence of new capable sectors in the long term to ensure a regular rate of growth of these economies. (Dramani, Latif and Laye, 2007) By diversifying from only agricultural goods, Western African countries increase the range of goods that could be potentially traded between them. Moreover, they reduce the risk of adverse shocks that could hamper economic growth.

These constraints have two implications for the potency of the effect of currency integration on trade. First, the effect of currency integration could be stymied by the constraints of political instability, which affect fiscal and monetary decisions made; inability of member countries to stabilize inflation levels, and inadequate institutions, which make planning and decision-making cumbersome. Non-trade barriers such as roadblocks and administrative harassment still hamper intra-zone trade. The union still faces other obstacles: financial market depth still remains low, and WAEMU countries still face imposing structural problems in the banking and financial sectors. (Masson and Pattillo, 2001) Alternatively, the creation of a currency union is the last step towards full trade integration which could lead to better implementations of standards, regulations and policies; greater business synchronization between member states.

Hans Linneman (1966) defines the determinants of trade flow as consisting of potential supply, potential demand and trade impediments. Potential supply constitutes the part of a country's production not dedicated to domestic needs, but foreign needs. Potential supply varies with national production and the ratio of exporter's domestic market to foreign market production. (Deme, 1995) An increase in national production leads to more production than

domestic demand can consume. Potential supply increases due to this greater increase in national production. A rise in the ratio of exporter's domestic market to foreign market decreases potential supply due to the increase in population size. "The domestic market to foreign market production ratio is determined by population size. A country with a larger population size will have a larger domestic market size which allows it to produce a more diversified national output, and to achieve economies of scale in more lines of production." (Deme, 1995) Hence, a rise in population size increases the ratio and decreases potential supply.

The same forces that affect potential supply are expected to determine potential demand. A rise in national production is expected to increase potential import demand, while a rise in population size is expected to increase the domestic market to foreign market production ratio and thus lower the potential demand.

Linnemann(1966), and Aitken and Lowry (1973) point out two groups of factors that determine trade resistance, natural trade impediments and artificial trade impediments. Geographic distance, a natural trade impediment, is assumed to play a key role in determining trade flows between trading partners. A longer distance between trading partners imposes a higher transportation cost, a longer arrival time of shipments, and a limitation on market information. Another natural trade impediment is the landlocked status of a nation. Landlocked countries have a more difficult time trading with other nations. Thus, both variables are expected to have a negative impact on trade flows. Artificial trade impediments, i.e., impediments created by government policy, include tariffs; exchange controls, preferential trade arrangements, and trade embargoes. Linnemann argues that artificial trade impediments that affect the pattern of

trade flows, such as embargoes and preferential trade arrangements, should be specified in a trade flow model.[7]

3. Hypothesis

This study adds the presence of a currency union to the determinants of the size of trade flow between both nations. The hypothesis is that a currency union will have moderate effect on bilateral trade flow. The presence of barriers to trade; policy-wise and infrastructural dampens the trade effect of such a monetary union.

3.1 Gravity Model

The gravity model has been utilized in several variations by a number of authors to determine the trade flow between two countries. The theoretical foundations of these models progressively developed thanks to the works of Linneman (1966), Leamer (1970, 1974), Anderson (1979), Bergstrand (1985 and 1989), Deardorff (1995), Evenett and Keller (1998)[8]. The numerous authors who use this model agree that the determining factors of the bilateral trade are the distance, the levels of income and the size of country (Rose, 2001)

[7] Deme, Mamit. 1995. "The Impact Of ECOWAS On Intraregional Trade Flows: An Empirical Investigation." *Review of Black Political Economy* 23 (3) (Winter): 113-29.

[8] Dramani, Latif and Laye, Oumy. "Impact on the bilateral trade in uemoa and cemac zone: Structural VAR approach." *National Agency of Statistics and Demography.*(08 March 2007)

4. Methodology and Data

Based on the determinants of trade flow; we use the gravity model to analyze the data and explain the effect of the following variables on intra-trade volume. The variable of interest is WAEMU as the intent of this study is to examine the effect of a monetary union on intra-trade flow. All other variables are control variables.

$$\log M_{jkt} = a_0 + \beta_1 \log Y_{jt} + \beta_2 \log Y_{kt} + \beta_3 \log POP_{jt} + \beta_4 \log POP_{kt} + \beta_5 \log DIST_{jkt} + \beta_6 ECOW_{jkt} + \beta_6 WAEMU_{jkt} + e$$

Where j and k denotes countries, t denotes time, and the variables are defined as:

- Y_{jt} and Y_{kt} are the total income for country j and k respectively. $\beta_1 > 0$ and $\beta_2 > 0$ indicate that the bigger the economy, the more significant trade becomes.
- POP_{jt} and POP_{kt} are the population of country j and k respectively. The impact of the size of the population on bilateral trade can be positive or negative depending on the comparative size of the absorption effect to the economies of scale effect, which is equally related to the population. A big population can be synonymous with a big domestic market and a significant endowment in resources so that the high-absorption effect leads to less dependence on international trade; in this case, a negative coefficient would be expected. In contrast, a large domestic market enables the gains of economies of scale to be fully realized, especially in terms of trade opportunities with foreign partners covering a variety of goods;

this would justify a positive coefficient. The assumption then is that $\beta 3 > 0$ or < 0 and $\beta 4 > 0$ or < 0.[9]

- $DIST_{jk}$ measures the geographic distance between nations j and k.
- WAEMU is dummy variable denoting trade occurring between ECOWAS countries due to their membership in WAEMU Currency Union. It is equal to 1 if both countries are members of a currency union and 0 if they are not.
- ECOW is a dummy variable denoting trade between the countries due to their membership in ECOWAS. It is equal to 1 if both countries are members of a currency union and 0 if they are not. All countries in this dataset are members of ECOWAS; hence, this variable is omitted from the equation.
- e is the error term.

The coefficient of interest is $\beta_{6,}$ which is the effect of the WAEMU currency union on trade flows. $\beta_6 > 0$ indicates an increase in the propensity to trade given that both nations belong to a currency union. Hence, greater membership of states in WAEMU should lead to an increase in intra-trade between ECOWAS member states. [10]

Additionally, separate regressions are estimated for the three quarters of the 1994 to 2006 period, including a pooled regression with year controls.

[9] Akoété Ega Agbodji, 2008. "The Impact of Subregional Integration on Bilateral Trade: The Case of UEMOA." AERC Research Paper 186 *African Economic Research Consortium, Nairobi*

[10] WAEMU is not solely monetarily integrated, but also integrated by trade, hence several other factors other than a singular currency might account for the difference in trade between WAEMU nations and other ECOWAS nations not in WAEMU. This will need to be taken into account in the equation.

4.1 Data Description

Data on trade flow is collected from *Direction of Trade Statistics*.[11] The DoT data set covers bilateral trade between 217 IMF country codes between 1948 and 2010; however, we restrict our data to the 16 ECOWAS member states.

Population and Real GPD Data were obtained from the *World Development Indicators* (taken from the World Bank's WDI 2006 Online Dataset) data. Augmentations of other variables came from IMF's *International Financial Statistics.*[12] Geographical data comes from the database of Centre d'Etudes Prospectives et d'Informations Internationales (CEPII) website. Other variables such as latitude and longitude, land area, landlocked and island status, physically contiguous neighbors, language, colonizers, and dates of independence were gotten from a compiled dataset on this site.

Using panel data, an econometric analysis is conducted to determine the effect of a currency union on the intra-trade of ECOWAS member countries. As stated previously, a dummy variable is used to show presence of membership in ECOWAS. The coefficient of this variable is a measure of the trade stimulating effect of the integration scheme. Since seven members of ECOWAS are also members of WAEMU, another dummy variable is specified to account for trade flows between ECOWAS member countries resulting from membership in WAEMU. Membership in WAEMU represents the single currency effect on bilateral trade between states in ECOWAS.

The period for the model is between 2001 to 2010 since tariff dismantling became complete and effective for all approved products with the coming into force of the common external tariff (CET), set up to regulate the Union member's foreign trade.

[11] International Monetary Fund, *Direction of Trade Statistics.*
[12] International Monetary Fund, *International Financial Statistics*

5. Results and Analysis

Table 5 provides the correlation summary for the regression variables while Table 6 provides the correlation summary for the regression variables with the period divided into three quarters. Table 7 provides the summary statistics and correlation analysis for the 2621 observations included in the data set. The coefficient of interest (β_6) for common currency seems to be significant at 1.12 which when converted gives a coefficient of 3.1($e^{1.12} \approx 3.1$). The β_6 estimate of 3.1 implies that a pair of ECOWAS countries joined by a common currency trade about three times as much with each other.

Table 6 shows the coefficients for common currency progressively decrease with each consecutive quarter. From 1994 to 1997, the effect of common currency on intra-regional trade flow is 4.2(after conversion back to natural numbers): an indication that countries sharing the common currency are four times likely to trade with themselves. The period from 1998 to 2001 period shows a coefficient decrease from 4.2 to 2.9 indicating that these countries will trade only three times as much with each other. And finally, the period from 2002 to 2006 with a lower β_6 estimate of 2.5 compared to previous periods. Overall, the β_6 estimate gradually declines from year 1994 to 2006.

The currency devaluation in 1994 might be responsible for the large effect seen at the onset of the period, i.e. the first quarter. The devaluation of the CFA Franc made the currency cheaper and made WAEMU exports favorable to other countries. Thus exports rapidly increased during this period. We might be viewing the declining effect of currency devaluation as exports begin to decline from 1998 to 2006.

A percent GDP increase in both countries seems to positively affect intra-regional trade. Countries with greater GDP tend to be more willing to engage in trade with other nations. A one kilometer increase reduces intra-regional trade between two West African countries by a third. Given the dismal state of transportation infrastructure in Western Africa, an increase in distance seems to significantly decrease intra-regional trade volume. A state of congruity of countries increases intra-regional trade by about a half (0.567). Contiguity entails that nations share a border. Countries with shared borders are more likely to trade between themselves compared to countries that do not share borders.

An unobserved estimate is the effect of unofficial trade barriers such as numerous roadblocks and unofficial stringent prerequisites on imports. Since such data cannot be effectively monitored and recorded, a significant determinant of the level of intra-trade regional flow goes unrecorded.

6. Conclusion

The current study investigate the effect of a currency union on intra-trade between ECOWAS member countries, how it could be implemented and barriers that could potentially reduce this effect. In an effort to expand on previous literature, which presented mixed effects of currency unions on trade, this research specifically examined the interaction between currency union and ECOWAS member states.

The results suggest that the presence of the WAEMU monetary union has a significant positive effect on trade between ECOWAS member states. The effect is significant enough to triple trade between members of the currency union, a conclusion much similar to that of Rose

(2000), who found that in "two countries shar[ing] the same currency trade substantially more than countries with their own currencies … trade is over three times higher between common-currency countries."[13]

Interestingly, dividing the 1994 to 2006 period into quarters shows a less positive trend. The effect of the currency union on intra-regional trade decreases over time. The depreciation of CFA Franc might have been the factor which boosted trade after 1994, but declined over time. Also, the varying currency union estimates in the different periods indicate that the effect of a currency union on intra-trade depends on the time period investigated.

Selective expansion of current currency union would be the most cautious and economically sensible method of expanding the currency union. Given the eclectic monetary and fiscal policies of Western African countries, stringent rules for fiscal and monetary discipline would ensure that incoming countries do not disrupt the stability of the currency. This way, the countries may reduce monetary and fiscal differences while improving infrastructure for a high level of integrated trade. Ogunkola (1998) believes that a gradual approach to regional integration that does not directly emphasize an increase in intra-regional trade flow, but concedes that views such trade as a derivative of economic growth and development of members should be considered.

A more nuanced impact of barriers such as inadequate infrastructures and other unofficial trade barriers remains undetermined. Not only might it be reducing trade within the ECOWAS trade region, it might potentially hamper the effectiveness of a more integrated monetary union

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on intra-regional trade. The governments of ECOWAS member states should intensively invest in improving infrastructure.

7. Bibliography

Aitken, ND, and WR Lowry. 1973. "A Cross-Sectional Study of the Effects of LAFTA and CACM on Latin American Trade." *Journal of Common Market Studies* 11

Borrmann, Axel, and Matthias Busse. 2006. Institutional prerequisites of economic partnership agreements: The EU-ECOWAS case. *Intereconomics/Review of European Economic Policy* 41 (4) (July): 231-6.

Buiter Willem H., "Optimal Currency Areas: Why does the Exchange Rate Regime Matter?" C.E.P.R. Discussion Papers, CEPR Discussion Papers: 2366, 2000), <http://search.ebscohost.com/login.aspx?direct=true&db=ecn&AN=0693631&site=ehost-live; http://www.cepr.org/pubs/dps/DP2366.asp >.

Debrun, Xavier, Paul Masson, and Catherine Pattillo. 2005. "Monetary Union In West Africa: Who Might Gain, Who Might Lose, and Why?" *Canadian Journal of Economics* 38 (2) (05): 454-81.

Deme, Mamit. 1995. "The Impact Of ECOWAS On Intraregional Trade Flows: An Empirical Investigation." *Review of Black Political Economy* 23 (3) (Winter): 113-29.

Charles M. Engel and Andrew K. Rose, "Currency Unions and International Integration" C.E.P.R. Discussion Papers, CEPR Discussion Papers: 2659, 2001), <http://search.ebscohost.com/login.aspx?direct=true&db=ecn&AN=0693945&site=ehost-live; http://www.cepr.org/pubs/dps/DP2659.asp>.

Frankel, Jeffery, and Andrew Rose. 2002. "An Estimate Of The Effect Of Common Currencies On Trade And Income." *Quarterly Journal of Economics* 117 (2) (05): 437-66.

Gbetnkom, Daniel. 2006. "On the empirics of market integration in ECOWAS." *Journal of Policy Reform* 9 (4) (12): 289-303.

Glick, Reuven, and Andrew K. Rose. 2002. Does A Currency Union Affect Trade? The Time-Series Evidence. *European Economic Review* 46 (6) (06): 1125-51.

Glick, Reuven, and Andrew K. Rose. 2001 "Does a Currency Union Affect Trade? the Time Series Evidence" C.E.P.R. Discussion Papers, CEPR Discussion Papers: 2891, 2001), <http://search.ebscohost.com/login.aspx?direct=true&db=ecn&AN=0694165&site=ehost-live; http://www.cepr.org/pubs/dps/DP2891.asp>.

Hanink, Dean M., and J. H. Owusu. 1998. "Has ECOWAS Promoted Trade Among Its Members?" *Journal of African Economies* 7 (3) (10): 363-83.

Langyintuo, Augustine S., J. Lowenberg-DeBoer, and Channing Arndt. 2005. "Potential Impacts Of The Proposed West African Monetary Zone On Cowpea Trade." *Agricultural Economics* 33 (3) (11): 411-21.

Linnemann, Hans,. 1966 *An econometric study of international trade flows / Hans Linnemann* North-Holland, Amsterdam :

Masson, Paul, and Catherine Pattillo. 2004. "A Single Currency For Africa?" *Finance and Development* 41 (4) (12): 9-15.

Musila, Jacob Wanjala. 2005. "The Intensity Of Trade Creation And Trade Diversion In COMESA, ECCAS And ECOWAS: A Comparative Analysis." *Journal of African Economies* 14 (1) (03): 117-41.

Rose, Andrew K. 2007. "Checking Out: Exits From Currency Unions." *Journal of Financial Transformation*(19) (04): 121-8.

Rose, Andrew K. 2001. "Currency Unions And Trade: The Effect Is Large". *Economic Policy: A European Forum*(33) (10): 449-57.

Rose, Andrew K. 1999 "One Money, One Market: Estimating the Effect of Common Currencies on Trade" C.E.P.R. Discussion Papers, CEPR Discussion Papers: 2329, 1999), <http://search.ebscohost.com/login.aspx?direct=true&db=ecn&AN=0693595&site=ehost-live; http://www.cepr.org/pubs/dps/DP2329.asp>.

Rose, Andrew K., and Charles Engel. 2002. "Currency Unions And International Integration." *Journal of Money, Credit, and Banking* 34 (4) (11): 1067-89.

Rose, Andrew K., and T. D. Stanley. 2005. "A Meta-Analysis Of The Effect Of Common Currencies On International Trade." *Journal of Economic Surveys* 19 (3) (07): 347-65.

Rose, Andrew K., and Eric van Wincoop. 2001. "National Money As A Barrier To International Trade: The Real Case For Currency Union." *American Economic Review* 91 (2) (05): 386-90.

Santana-Gallego, Maria, Francisco Ledesma-Rodriguez, Jorge Perez-Rodriguez, and Isabel Cortes-Jimenez. 2010. "Does A Common Currency Promote Countries' Growth Via Trade And Tourism?" *World Economy* 33 (12) (12): 1811-35.

Santana-Gallego, María, Francisco J. Ledesma-Rodríguez, Jorge V. Pérez-Rodríguez, and Isabel Cortés-Jiménez. 2010. "Does A Common Currency Promote Countries? Growth Via Trade And Tourism?" *The World Economy* 33 (12): 1811-35.

8. Appendix: Tables and Figures

Table 1: 1981-1992 Average Annual Volume and Rate of Growth of Imports by

Each ECOWAS Member Country*

	Imports from Partner Countries		**Imports from Industrial Countries**	
ECOWAS Country	**Rate of Growth (%)**	**(Million $)**	**Rate of Growth (%)**	**(Million $)**
1. Benin	13	30	16	341
2. Burkina Faso	9	118	2	235
3. Cote d'Ivoire	14	323	-1	1,350
4. Gabon	72	30	3	732
5. Gambia	-1	6	7	113
6. Ghana	3	215	6	740
7. Guinea	7	8	16	55
8. Guinea Bissau	12	0.5	5	342
9. Liberia	22	22	24	1,209
I0. Mali	8	129	2	254
11. Mauritania	16	20	-2	298
12. Niger	-3	58	3	232
13. Nigeria	8	82	-3	6,099
14. Senegal	5	138	-2	746
15. Sierra Leone	45	7	1	118
16. Togo	23	55	-1	360

*Computed using data gathered from the Direction of Trade Statistics.

Table 2: Exports of goods and services (% of GDP)

Country	Benin	Burkina Faso	Cote d'Ivoire	Niger	Senegal	Togo	Ghana	Sierra Leone	Nigeria
1960	6.1	4.9	34.2	7.1	18.9	31.1	28.2	21.3	9.2
1965	7.3	4.7	36.8	9.5	19.7	32.0	17.1	28.9	10.9
1970	15.2	5.5	35.8	10.8	26.4	49.6	21.3	31.0	8.4
1975	**14.5**	**7.3**	**36.7**	**19.2**	**35.4**	**43.4**	**19.4**	**25.1**	**18.3**
1980	**15.8**	**9.0**	**35.0**	**24.6**	**26.9**	**51.1**	**8.5**	**22.9**	**29.4**
1985	**23.7**	**9.6**	**46.8**	**20.7**	**28.6**	**48.4**	**10.7**	**14.8**	**16.1**
1990	**14.3**	**11.3**	**31.7**	**15.0**	**25.4**	**33.5**	**16.9**	**22.4**	**43.4**
1995	**20.2**	**12.4**	**41.8**	**17.2**	**34.5**	**32.4**	**24.5**	**17.4**	**44.3**
2000	**15.2**	**9.1**	**39.7**	**17.8**	**29.9**	**30.7**	**49.0**	**17.3**	**53.3**
2003	**14.0**	**8.5**	**46.7**	**16.0**	**28.4**	**33.8**	**40.3**	**22.4**	**50.0**

Source: World Development Indicator, WDI, 2005.

Table 3: Comparison of ECOWAS and WAEMU Indicators

	1975-79	1980-85	1986-89	1990-93	1994-98
WAEMU Region[1]					
Real GDP Growth	5.9	1.2	2.8	0.4	5.0
Real GDP Per Capita Growth	2.8	-1.9	-0.2	-2.7	1.9
Export Volume Growth	6.7	-2.7	3.9	2.2	7.3
Import Volume Growth	9.6	-4.2	0.5	0.7	6.2
Inflation	14.8	7.4	1.9	0.4	10.6
General Government Fiscal Position[2]	…	-5.5	-6.1	-6.7	-2.4
Gross National Savings	17.0	10.7	6.7	5.7	12.9
Gross Fixed Capita Formation	18.6	15.9	13.9	13.0	16.4
Non-WAEMU Region[3]					
Real GDP Growth	0.3	0.6	3.3	4.3	3.0
Real GDP Per Capita Growth	-2.4	-2.4	0.5	1.4	0.0
Export Volume Growth	6.7	-2.2	7.5	4.5	6.8
Import Volume Growth	23.5	-0.7	-5.1	8.9	5.2
Inflation	29.2	31.0	28.2	27.2	30.4
General Government Fiscal Position	…	-1.7	-0.7	-0.2	-3.5
Gross National Savings	48.5	11.6	13.3	17.7	16.6
Gross Fixed Capital Formation	20.5	15.6	18.2	19.7	18.4

[1] Sources:IMF African Department; IMF *World Economic Outlook* Database.

[1] Includes Benin, Burkina Faso, Cote d'Ivoire, Mali, Niger, Senegal, and Togo.

[2] Including grants.

[3] Includes Cape Verde, Gambia, Ghana, Guinea, Guinea-Bissau, Liberia, Nigeria, and Sierra Leone

Table 4: Summary Statistics of Base regression

Variable	Obs	Mean	Std. Dev.	Min	Max
year	2621	2000	4	1994	2006
contig	2621	0	0	0	1
distw	2621	1272	684	188	4246
pop_o	2621	19	55	1	1110
gdp_o	2621	8119	34261	132	906268
gdpcap_o	2621	351	176	63	947
pop_d	2621	17	31	1	145
gdp_d	2621	7587	16255	132	114727
gdpcap_d	2621	368	238	63	3440
rta	2621	1	0	1	1
comcur	2621	0	0	0	1
flow	2621	21	109	0	2538
logYo	2621	8	1	5	14
logYd	2621	8	1	5	12
logpop_o	2621	2	1	0	7
loppop_d	2621	2	1	0	5
logDist	2621	7	1	5	8
logFlow	2118	0	3	-10	8

Table 5: Effect of variables on ECOWAS Trade Flow

Independent variables	*Coefficient* *Dependent Variable: logFlow*
Common Currency	1.127
	(9.63)**
logDist	-1.402
	(12.78)**
loppop_d	0.902
	(6.76)**
logpop_o	-1.050
	(7.71)**
logYd	0.002
	(0.02)
logYo	2.120
	(19.05)**
Contiguity	0.331
	(2.26)*
Constant	-7.665
	(6.83)**
Observations	2118
R-squared	0.46

Absolute value of t statistics in parentheses
Notes: Distance, Population and GDP are converted to log values. * significant at 5%; ** significant at 1%

Table 6: Effect of variables on ECOWAS Trade Flow over Three Quarters

	1994-1997	**1998-2001**	**2002-2006**
	Coefficient	***Coefficient***	***Coefficient***
Independent variables	***Dependent Variable: logFlow***	***Dependent Variable: logFlow***	***Dependent Variable: logFlow***
comcur	1.438	1.085	0.937
	(6.47)**	(4.69)**	(5.06)**
logDist	-1.066	-1.374	-1.675
	(5.38)**	(6.31)**	(9.43)**
loppop_d	0.612	0.541	1.346
	(2.84)**	(2.02)*	(5.38)**
logpop_o	-0.450	-1.788	-1.560
	(2.13)*	(6.49)**	(5.90)**
logYd	0.164	0.340	-0.301
	(0.90)	(1.51)	(1.57)
logYo	1.679	2.899	2.381
	(9.29)**	(12.10)**	(11.65)**
Contiguity	0.567	0.217	0.177
	(2.09)*	(0.74)	(0.76)
Constant	-8.610	-14.252	-5.183
	(4.32)**	(5.97)**	(2.73)**

Absolute value of t statistics in parentheses
Notes: Distance, Population and GDP are converted to log values. * significant at 5%; ** significant at 1%

Table 7: Evolution of Intra-Regional Exports as a Percentage of Total Exports

	1980	1985	1995	1997	1998	1999	2000	2001
UEMOA	9.6	8.7	10.3	11.8	11.0	13.1	13.1	14.3
ECOWAS	10.1	5.2	9.0	8.6	10.7	10.4	9.5	9.6

Sources: World Bank's World Development Indicators (2004); UEMOA Commission (2000).