Does Monetary Integration Lead to an Increase in FDI Flows? An Empirical Investigation from the West African Monetary Zone (WAMZ)

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This paper investigates the relationship between monetary integration, Foreign Direct Investment (FDI) and trade. It test the hypothesis that trade and FDI are substitutes. Economic theory states that FDI flows to countries where there are scarce resources. Given that the zone has not progressed much with growth, monetary union could serve as a stimulus to economic growth via trade and FDI flows.

The empirical results suggest that FDI inflows in the second West African Monetary Integration (WMU2) and new joiners (WNJ) are expected to increase. The West African Monetary Zone (WAMZ) and joiners can benefit from a surge FDI inflows only if they proceed into a full-fledged monetary union; otherwise, an increase in FDI inflows can come via an increase in income growth and or through active government policies that are conducive to doing business. Our empirical finding supports the hypothesis that FDI and trade flows are complementary. The results confirm earlier research findings. Therefore, any policy that promotes trade such as monetary integration also enhances FDI inflows as well.

1. Introduction

Monetary integration or regional integration could lead to an increased inflow of FDI. In theory, capital moves from places where it exists in abundance to places where it is limited. Because capital is relatively scarce in West African states it is argued that a monetary integration can attract a great amount of capital into the zone. Barriers that formerly confront investors are not only removed but investors have the ease to

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move around within the zone.   From the host country perspective, FDI inflows are usually regarded as openly beneficial. They finance substantial amounts of domestic investment in host countries. In addition, they are less volatile than other forms of capital flows because investors have long-term orientation schedules. They also bring a huge package of managerial and technological know-how that the host country welcomes. However, it should be noted that FDI flows could have cost implications to the host country. The issue of moral hazard could likely to be developed for countries that depended heavily on FDIs in carrying out their development agendas. Hence a decline in FDI inflows during the recent global financial crisis impacted FDI recipients. This paper however did not focus on the recent decline or cost but rather considered the growth in FDI in the pre and post crisis period. Furthermore, the implications of FDI flows on exchange rate of the host country is beyond the scope of this paper.

In this paper, we assess the impact of deepening integration within West Africa paying more attention to the second monetary zone on potential FDI flows to zone member countries. Consequently, we seek to answer the question: is there an increase in FDI flows to WAMZ zone and how has it been evolving over the years? We seek to contribute to the empirical literature on FDI determinants. To our knowledge, this is the first study that clearly considers the impact of monetary integration in the West African region on FDI inflows and the complementarity or substitutability of trade and FDI flows in the region. This paper is organized as follows: literature review on FDI flows and regional integration is discussed in section 2, which is followed by data and methodology for the empirical work in section 3. Section 4 discusses the empirical findings. Summary and conclusion are discussed in section 5.

2. Literature Review

The initial research carried by Mundell (1961) and McKinnon (1963), the pioneers of Optimum Currency Area (OCA) have triggered further research in the field. Among the studies includes the suitability of a region as an optimum currency area and its economic impact (see Alesina and Barro (2002), Alesina, Barro and Tenreyro (2002), Alesina et al. (2000) and Casella (1992)). Masson and Pattillo (2004) and Devarajan and de Melo (1987) have done substantial work on monetary

integration in the African continent. However, prior to the European Monetary Integration, few studies looked into the impact of regional integration on FDI flows. Number of research have been carried on monetary integration and its impact on trade flows (see Frankel, and Rose (1998, 2000, and 2002), Rose and Glick (2001) and Rose and van Wincoop (2001)). Since the euro came into existence more studies on trade, monetary integration and FDI began to surface. Breton's (1996) study on the impact of European Union (EU) on investment flows revealed that EU single market program led to significant increases in investment by EU firms in other EU countries in the late 1980's. Markusen et al (2000) also surveyed the literature and he developed a model that takes into account both vertical and horizontal multinational activity with intra and inter industry trade. In his model, he incorporated economic size as one of the explanatory variables for the level of bilateral FDI. Subsequently, other researchers followed and the empirical research of the bilateral distribution of FDI using the gravity model began to gain much attention. Brainard (1997) and Eaton and Tamura (1996) surveyed the literature and employed the gravity model to investigate bilateral FDI flows.

Brenton, P. and Lucke, M. (1999), using simulation models with certain choice of parameter specifications, assessed the impact of deepening integration between the EU and Central and Eastern European Countries (CEECs) on FDI. They addressed the following: the expected long-term level of FDI flows in the CEEC; whether FDI and trade are either complements or substitutes; and whether an increase in integration in the region will lead to a reduction of FDI inflows from the CEEC to other European countries. According to their findings, FDI diverges from the normal pattern in the CEEC, that is, there is no substantial evidence of a surge in FDI inflows in the CEEC. They found trade and FDI are complementary. They also found no evidence that an inflow of FDI going to the CEEC region has a clear negative impact upon the amounts of overseas investment going to other European countries such, as Spain and Portugal.

Dabla-Norris and Honda et al (2010) examined FDI flows to low-income countries- Global drivers and Growth implications using large sample of middle and low-income countries. They found key drivers to FDI to low-income countries before the crisis was due to lower

borrowing costs and positive real side external factors. They also found strong economic reform and guarantee to macroeconomic discipline are important determinants to benefit in the growth of FDI. Mlachila and Takebe (2011) examined the flow of FDI from the BRICs to low income countries. They found that official data on FDI are seriously underestimated in volumes due to informal operation of most small and medium enterprises (SMEs) but recognized the increased in FDI flow has been significant. They also found FDI flow from BRICs into many non-rich resources in LIC and play a significant role in the growth of these countries. Lumbila (2005) used panel analysis of the effect of FDI on economic growth using 47 African countries from 1980 to 2000. Their results revealed that FDI positively impact growth. In addition, human capital, conductive investment climate from a well-developed infrastructure and stable macroeconomic environment in the host countries enhance FDI positive impact on growth.

Farole and Winkler (2014) assessed whether FDI work for Africa. They found exports and FDI are becoming much more interwoven which is an opportunity for developing countries. That is countries should not only limit in attracting FDIs but take advantage of the productivity enhancing potential of FDIs which depends on how integrated FDI is to local economies. Hence, governments need to take note of spillovers and the level of leverage to make it happen. Hence government need to take the right approach to ripe the benefit of FDI.

3. Data Set and Methodology

The FDI data set consist of annual observation of stock FDI inflows from eleven (11) OECD countries between 1980 and 2013. These OECD countries are chosen based on the following, they are known as the main source of FDI for these countries, historical connection as the colonial masters and based on their high GDP. However, some high GDP countries such as Canada are omitted as a source country from the research.

The data is sourced from the World Bank's World Development Index 2015 database. We dropped observations where data is missing. Real Gross Domestic Product and population are also sourced from World Bank's World Development Index 2015 database. Distance is measured

as the great circle distance between countries' principal cities. We used kilometers per square as a measurement scale for distance. *The Economic Freedom Index (EFI)* is extracted from the Heritage Institute site *(www.heritage.org).* The trade data set consist of bilateral trade observations consisting of 34 years. We used bilateral trade data covering data from 1980 through 2013. Direction of Trade (DoT) data set is used from the database developed by the *International Monetary Fund* (IMF). The DoT data set covers bilateral trade between 217 IMF country codes. Bilateral trade on FOB exports and CIF imports are recorded in U.S. dollars. The values of exports and imports in US dollars is used as a bilateral trade measure. We then added a number of other variables that are necessary to estimate the gravity model.

According to Brenton et al (1999), three main conditions need to exist before a firm can engage in direct investment outside the host country: ownership, location, and internalization advantage.[2] Foreign firms secure an advantage over local rivals in the foreign markets either via the quality of the product or process or as a result of superior management quality. Location advantage permits firms to produce or provide the services. Over the past twenty five years, foreign direct investment (FDI) flows exhibit features similar to the evolution of trade flows. This paper employ the gravity model which was developed in the 1960s and is the most popular model apply in measuring trade flows. We follow the work of Brainard (1997), Eaton and Tamura (1996). The rationale for using the model is that the evolution of trade and FDI share some common features. We borrow from the work of Brenton et al (1999) with little modification of the gravity model by including Economic Freedom Index dummy which captures instability taking into account that the zone is characterized by wars and coups. The model treats FDI as an increasing function of the countries' income and population and a decreasing function of distance between the two countries. The model is given as:

$$\ln X_{ij} = \alpha + \beta_1 \ln Y_j + \beta_2 \ln Pop_j + \beta_3 Dist_{ij} + \beta_4 EFI_j + \beta_5 WMU2_j + \beta_6 WNJ_j + \sum \gamma_k D_{kij}$$

where

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[2] See Brenton, P. and Lucke, M. (1999)

X_{ij} is any flow of FDI, exports or imports or stock from source country i to host country j per cent of host country's GDP;

Y_j is the income of host country j;

Pop_j is the population of country j;

$Dist_{ij}$ is the distance between source and host countries i and j respectively;

EFI_j represents Economic Freedom Index for host country j;

$WMU2_j$ is a dummy representing the second monetary integration in west Africa;

WNJ_j is a dummy representing countries that are new joiners or observers of the second monetary integration; and

D_{kij} is preferential relationships such as common language, common colonies etc. between country i and j which influence the flow of stock from source to host country.

In a traditional bilateral trade equation, the volume of flow into a country is positively influenced by income level and population size. Consequently, FDI flows are expected to be positively related to income level of the host country since it has positive influence on the domestic market. However, distance is expected to have a negative influence on FDI although the greater the distance between the source country and host, the greater the need for the source country to form an affiliate in the host country. Distance is expected to have a dampening effect on FDI inflows.[3] Intuitively, as the distance between the source and host country widens, the higher the associated cost such as communication costs, language and cultural difference, exchange rate cost, etc.

The empirical measurement for the model will be employed in the following two ways. First, the 'normal pattern' of FDI stock net inflows to the zone coming from major investing Organization for Economic

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[3] Theory however suggests that firms will tend to prefer FDI to exports as trade costs, rises due to distance.

Co-operation and Development (OECD) countries[4] is estimated. The normal pattern reflects FDI stock inflows under the conditions where stocks have been fully adjusted to any changes in the explanatory variables that took place in the past. The current actual level of FDI from the source OECD countries to the West African integrated countries can be compared to this 'normal pattern' by using dummy variables for the groups of West African Monetary Union. The first group consist of countries forming a monetary integration (WMU2) and the second group consists of new joiners (WNJ).

Second, the hypothesis that trade and FDI flows are complementary or substitute is tested using the model, with exports, imports, or exports plus imports as percent of GDP as a measure for trade. We then add the residual from the FDI regression as one of explanatory variable in the trade regression. If the coefficient of the FDI residual is positive, we conclude that trade and FDI are complementary. However, if the coefficient of the FDI residual is negative, we do not reject the hypothesis that FDI and trade substitutes. The empirical results are discussed in the next section.

4. Empirical Results

4.1 The Actual and Expected FDI Stocks in WAMZ

This section discusses the regression results of FDI net inflows from investing OECD countries to selected countries in West Africa using 1980-2013 data. As discussed, the gravity model is employed to estimate the 'normal pattern' of FDI inflows. Dummy variables are added for the two groups of West African economies- the first monetary integration members and new joiners to test for any divergence from the normal pattern. If the coefficients are significant and negative then WMUs can expect to benefit from further larger FDI inflows from these investing countries as investors adjust their stocks to the new opportunities that come as a result of more economic integration. However, if the coefficients of the dummy are insignificant, then any further increase in FDI inflows may come via changes in the 'normal'

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[4] The source countries we considered are: Austria, Finland, France, Germany, Netherlands, Norway, Switzerland, UK, USA, Japan, and South Korea.

determinants of FDI, particularly GDP growth. The *Economic Freedom Index* (EFI) constructed by the Heritage Foundation is added as an explanatory variable in the regression. The index takes into account factors that influence investors to undertake investment in any particular country. It provides an annual ranking for about 150 countries.[5] As a prior the higher the EFI index, the lower the inflows. We used Augmented Dickey-Fuller unit root test to examine where the data is stationary. While real GDP series are stationary at level and intercept, population and distance series are stationary at first difference and intercept.

The ordinary least squares (OLS) regression results are tabulated in *tables1 to 3* with different specifications for the investing OECD countries. Summary statistics of growth of yearly FDI flows from OECD countries to the West African countries considered in the study is presented in table 4. Although OECD countries exhibits similar growth in FDI flows, France, Germany and United States topped the list. Since one of the problems in applying OLS is the presence of heterskedasticity, we applied white heteroskedasticity test to examine the robustness of standard errors. The robust standard errors are reported in column 9 in *tables 1 to 3*. When three variables such as income, population and distance are included in addition to dummies, most coefficients have the expected signs. The coefficient of real GDP growth have the expected sign and is statistically significant. Host country GDP growth significantly influences Foreign Direct Investment (FDI) flows from OECD countries. The coefficient for population, have positive sign. From the results, in West African countries, the higher the population growth the higher FDI flows. All OECD countries show positive and statistically significant relationship between host country's population growth and FDI inflows. The coefficient for distance, three countries (France, Netherland and Switzerland) have a negative sign. Furthermore, only Switzerland is significant, the remaining countries show a positive relation between distance and FDI inflows. The results are not only positive but statistically significant. Our results to certain

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[5] The ten factors that are taken into consideration when ranking a country are: trade policy, taxation, government intervention in the economy, monetary policy, foreign investment, banking, wage and price controls, property rights, regulation and black market activity.

extent differ from that of Brenton et al (1999) where coefficients for population and distance have negative signs for most of the OECD investing countries to CEECs host countries.

The coefficient for Economic Freedom Index shows the expected negative sign, with the exception of Finland and Norway which show positive coefficients but statistically insignificant. The monetary union dummies show positive sign. Out of the eleven (11) OECD countries considered, the WMU2 (second West Africa monetary integration) show positive sign indicating that monetary union positively impact FDI inflows. In addition, with the inclusion of new joiners (Liberia and Cape Verde), the coefficient of WNJ dummy is positive and statistically significant for all OECD source countries.

To investigate the relationship between FDI and trade, we estimate the gravity equation for exports and imports for source countries to and from host countries. We follow the same specification with Economic Freedom Index and monetary union dummy. Dummy variable for WMU2 and WNJ are included to test for any potential divergence from the "normal pattern" of trade between West Africa countries and OECD countries. The expected sign is positive for monetary integration, colonial affiliation and common language between host and source countries. From the OLS regression results in *table 2*, the coefficients of the two dummies, the second monetary integration in West Africa and new joiners WMU2 and WNJ respectively have positive signs and statistically significant. With the exception of Finland, WNJ dummy have positive coefficient for all the OECD countries. It therefore suffices to conclude from the analysis that our results collaborate with earlier research that monetary integration enhances trade flows (see Anderson, Brenton, Frankel, Rose et al).

4.2. Trade and FDI Relationship: Are they Complement or Substitute?

To examine how FDI can have an impact on trade, the residual from FDI regression is included in the gravity models for trade measures-exports. We follow the approach of Brenton et al (1999) and Graham (1996) and assume that trade and FDI are substitutes. That is trade will be lower when FDI increases. Given *the null hypothesis that trade and*

FDI are substitutes, the coefficient of the FDI residual in the trade (exports, imports, or exports plus imports) should have a negative sign. The same explanatory variables as in the FDI gravity model regression are used for the trade regressions. We follow Brenton et al (1999) and allow the residuals to vary between the two groups of countries (WMU2 and WNJ). To do this, the products of the FDI residual and the two dummies (WMU2 and WNJ) are added as explanatory variables in the regression.

The results are tabulated in *table 3*. The coefficients of FDI residuals for seven out of eleven OECD countries have positive sign in the trade measure regression and of this, the coefficients for five are statistically significant. However, four countries (Finland, France, Norway and Switzerland) out of eleven FDI source countries have negative coefficient. In addition, the coefficient of the product of the residual FDI and the two dummies are positive for all eleven OECD countries. Thus it suffices to state that FDI and trade move in the same direction. Using export as a trade measure, the hypothesis that trade and FDI flows are substitutes is rejected. Consequently, the stock of exports and FDI inflows are complementary.

The results are in line with earlier findings by Brenton et al (1999) and Mauro (1998) who found a complementary relation between FDI and trade flows using the same method. The intuition of the complementary relation between FDI and trade is that FDI enhances the presence of source country firms in the host country. The presence of these firm leads to transfer of technological know-how from sources to host country through in-house training that enhances human capital, thereby increase economic growth. Therefore, monetary integration can lead to a surge in trade, FDI and growth.

5. Summary and Conclusions

The empirical results highlight the fact that currency integration impact is stronger than it is commonly perceived. Notwithstanding, the cost associated with forgoing independent monetary policy, the benefits outweighed the cost. Currency union reduces trade barriers which are associated with national currencies which hinders trade. Consequently, forming a single currency, countries eliminate this barrier leading to a

substantial increase in trade and welfare. In other words, a country's currency seems to be a significant barrier and could adversely affect trade flows. Therefore, any policy to eradicate or minimize these barriers, such as monetary integration could increase trade.

The empirical results highlight the following: FDI inflows in WMUs countries are expected to increase. The results collaborate with earlier findings.[6] The second West African monetary integration countries can benefit from a surge in FDI and trade flows. Our empirical findings support the hypothesis that *FDI and trade flows are complementary*. Therefore, any policy that promotes trade such as monetary integration can enhance FDI inflows. It is reasonable, to conclude that the second West African monetary union will benefit from increase in trade, FDI inflows, and economic well-being of member countries. The main shortcoming of this paper is that we could not exhaust all the trade measures due to data limitation. Also we could not explicitly include all the variables such as colonial relation, area, etc. in the gravity model. However, we thought that some of these variables are captured in the Economic Freedom Index. Subsequent research in this area and region could look into all monetary unions in Africa and other parts of the world to assess the relationship between monetary union, FDI and trade flows.

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[6] See Brenton et al. (1999)

Table 1: Ordinary Least Squares Regression Results: Determinants of Bilateral FDI, Major OECD Investing Country (Dependent variable: Log of FDI Flows), 1980- 2013

Investing country	Real GDP	Log of population	Log of distance	Economic Freedom Index	WMU2	WNJ	Adj. R2	Robust S.E
Austria	0.03***	0.45***	0.90***	-0.01***	0.07	0.43***	0.21	0.81
Finland	0.02***	0.47***	0.42***	0.00*	-0.02	0.58	0.12	0.66
France	0.01*	0.54***	-0.38	-0.01***	5.15*	5.11*	0.59	0.53
Germany	0.01**	0.57***	1.00***	-0.01***	-0.11*		0.39	0.43
Netherlands	0.01**	0.25***	-1.14	-0.01***	9.88*	10.25*	0.23	0.69
Norway	0.01**	0.52***	0.49***	0.00*	0.02	0.32**	0.11	0.75
Switzerland	0.03***	0.29***	-2.70**	-0.01***	13.95**	14.59**	0.36	0.72
UK	0.01*	0.83***	0.02	-0.00	1.16***	0.66***	0.51	0.71
US	0.01**	0.66***	0.68***	-0.00	0.01	0.58***	0.31	0.48
Japan	0.02**	0.48***	1.15***	-0.01***	-0.05	-0.38***	0.30	0.70
South Korea	0.01**	0.25***	0.86***	-0.00	-0.25***	-0.48***	0.10	0.75

*** 1 % significant level, ** 5 % level significant and * 10% significant level

Table 2: Ordinary Least Squares Regression Results for Bilateral Trade, Major OECD Countries (Dependent variable: Log of Exports), 1980- 2013

Reporting country	Real GDP	Log of population	Log of distance	Economic Freedom Index	WMU2	WNJ	Adj. R2	Robust S.E
Austria	0.00	0.97***	0.14*	-0.01***	0.19***	0.06	0.51	0.59
Finland	-0.014*	0.89***	-0.25*	-0.01**	0.28**	-0.05	0.23	1.08
France	-0.02***	1.62***	-0.94***	-0.00	0.04	0.43***	0.60	0.72
Germany	0.002	1.07***	0.07*	-0.00**	0.21***	0.87***	0.77	0.31
Netherlands	0.01**	0.72***	0.84***	-0.01***	0.18***	0.38***	0.50	0.42
Norway	-0.01*	1.24***	-0.76***	0.00	0.53***	1.78***	0.50	0.73
Switzerland	-0.01**	1.15***	-0.34***	-0.00	0.06*	0.60***	0.62	0.50
UK	-0.00	0.85***	0.56***	-0.01***	0.64***	0.27***	0.65	0.45
US	0.01**	1.01***	0.23***	-0.00***	0.35***	0.62***	0.69	0.39
Japan	-0.01**	1.21***	-0.54***	0.01***	0.20***	1.10***	0.54	0.61
South Korea	-0.01	1.56***	-1.32***	0.01***	0.31***	1.87***	0.50	0.85

*** 1 % significant level, ** 5 % level significant and * 10% significant level

Table 3: Ordinary Least Squares Regression Results for Exports with FDI Residual, Major OECD Countries, 1980- 2013

Investing country	Real GDP	Log of population	Log of distance	Economic Freedom Index	FDI Residual	WMU2	WNJ	Adj R2	Robust S.E
Austria	0.00	0.96***	0.18*	-0.01***	0.14*	0.02	0.05	0.50	0.58
Finland	-0.02**	o.93***	-0.25*	-0.01***	-0.44***	0.77***	2.03***	0.26	1.05
France	-0.02***	1.52***	-0.69***	-0.01***	-0.18**	0.53***	0.68***	0.59	0.71
Germany	0.01*	0.79***	0.73***	-0.01***	0.13**	-0.01	0.57***	0.59	0.40
Netherlands	0.01**	0.64***	1.06***	-0.01***	0.03	0.16*	0.26*	0.46	0.43
Norway	-0.01*	0.79***	0.36**	-0.01***	-0.03	0.31*	1.37***	0.27	0.87
Switzerland	-0.01***	0.96***	0.14*	-0.00***	-0.08*	0.05	0.94***	0.59	0.48
UK	-0.00	0.85***	0.66***	-0.01***	0.02	0.16*	0.37**	0.50	0.51
US	0.01***	087***	0.60***	-0.01***	0.10*	0.12*	0.58***	0.62	0.42
Japan	-0.01**	1.2***	-0.51***	0.01***	0.24***	0.19***	1.09***	0.54	0.60
South Korea	-0.01*	1.60***	-1.39***	0.01***	0.49***	0.33***	1.90***	0.53	0.82

*** 1 % significant level, ** 5 % level significant and * 10% significant level

Table 4: Descriptive Statistics: Growth in FDI outflows from selected OECD countries

	Mean	Std. Dev.	Observations
Austria	5.39	0.92	509
Finland	5.07	0.70	510
France	7.23	0.83	510
Germany	7.23	0.83	510
Japan	6.82	0.82	510
South Korea	5.04	0.79	510
Netherlands	6.64	0.79	509
Norway	5.74	0.79	509
Switzerland	6.09	0.90	510
United Kingdom	6.14	1.02	507
United States	7.19	0.57	502

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