Effects of exchange rate policy on bilateral export trade of WAMZ countries

Balogun, Emmanuel Dele
Department of Economics, University of Lagos, Lagos, Nigeria

11. December 2007

EFFECTS OF EXCHANGE RATE POLICY ON BILATERAL EXPORT TRADE OF WAMZ COUNTRIES

By

Emmanuel Dele Balolgun*
Email: edbalogun@yahoo.com
ebalogun@unilag.edu.ng

Department of Economics
University of Lagos
Akoka, Lagos
Nigeria

* E. D. Balogun is a Lecturer in the Dept. of Economics, University of Lagos. The views expressed in this paper are strictly those of the author.

TABLE OF CONTENTS

EFFECTS OF EXCHANGE RATE POLICY ON BILATERAL EXPORT TRADE OF WAMZ COUNTRIES

By

E. D. Balolgun [*]
Email: edbalogun@yahoo.com
ebalogun@unilag.edu.ng

ABSTRACT

This study examines the effect of exchange rate policy on the bi-lateral intra-WAMZ and global inter-WAMZ export trade, with a view to gauging its relative veracity among other determinants. The regression results show that the coefficient estimates of bilateral exchange rate (variable of interest in this study) was not significant in explaining the changes in the bilateral intra-WAMZ exports. This is not the case with the world inter-WAMZ regression results in which one of the partner's exchange rate is significant and positively influences their collective exports to the rest of the world. This result is considered interesting as it tends to validate the assertion that exchange rates does not matter much to intra-WAMZ exports to warrant its use as an instrument of bilateral trade stimulation, but can potentially be useful as a common tool of balance of payment adjustment against the rest of the world (third parties). In conclusion, the study inferred that the maintenance of independent flexible exchange rate policy by either party to the bilateral trade makes no difference in terms of export performance, and may indeed constitute an impediment to free trade within the WAMZ region. Among the impediments identified are the microeconomic costs of foreign exchange conversion and high incident of trade diversion associated with it.

[*] E. D. Balogun is a Lecturer in the Dept. of Economics, University of Lagos. The views expressed in this paper are strictly those of the author.

KEY WORDS: Exchange rate policy, export trade, panel data regression model, WAMZ,

1. Introduction

Exchange rate policy and export performance has been studied in a large number of theoretical and empirical papers globally, focusing on its regime, extent of volatility and nominal/real effects. While there seem to be no ambiguity about exchange rates regimes effects on bi-lateral export trade between developed economies with competitive market profile, it is however debatable when analyzed from the perspective of developing countries that are mainly primary commodity producers. Indeed, for developed economies with convertible or traded currencies, the traditional view is that a responsive exchange rate policy serves as incentives and guide to investors on the effective way to strike a balance between trading and investing at home or abroad. The need to contend with a rise in exchange rate volatility becomes imperative because of the uncertainty of profits on contracts denominated in a foreign currency. Egert, et. al. (2005) note that there is no consensus on this view, as most studies show that there is no clear and statistically significant link between exchange rate regimes and aggregate or bilateral export flows. Although a number of studies have pointed to the likelihood that exchange rate volatility could depress or have negative effects on exports of developing countries, it is again debatable if such effects would be significant given the fact that most of their currencies are un-traded but pegged to a basket of major traded currencies.

The pertinent research question that this study seeks to answer is: has an independent exchange rate policy of participating countries in the WAMZ been important in the determination of bilateral export flows to the extent that it could imply significant losses when they give up its control? The objective of this test is to assess the effect of exchange policy on bilateral export trade among WAMZ countries. The hypothesis to be tested is that independent exchange rate policies of each participating country in the WAMZ have been relatively ineffective in influencing bilateral export trade.

2. Conceptual Framework and Literature Review

Foreign exchange rate is simply the rate at which one currency exchanges for another (Jhingan, 2003; Appleyard & Field , 1998). A most prominent issue in economic literature is the degree of exchange rate flexibility that should be permitted by any country. An exchange rate system is said to ***fixed*** if it permits only very small, if any, deviation from officially declared currency values. However, by ***flexible*** exchange rates, we mean rates that are completely free to vary. A hybrid of the two is represented by the Optimum Currency Area (OCA), which for optimal balance-of-payments adjustments and effectiveness of domestic macroeconomic policy, has ***fixed exchange rates*** within the area but maintain ***flexible exchange rates*** with trading partners outside the area.

Foreign exchange rate policy relates to the determination of exchange rates under different exchange rate regimes. Appleyard and Field (1998) notes that central issue in the fixed-flexible exchange rate debate relates to provision of "domestic policy discipline" effects, the need to serve as instrument of greater growth in international trade and investment. It also includes the need to provide for greater efficiency in resource allocation and promotion of growth as well as forestall destabilizing speculations in foreign exchange markets. Since this paper is concern with examining the extend to which exchange rates policies of the 5 participating countries in the West African Monetary Zone (WAMZ) projects affected individual and zonal export trade with the rest of the world, a number of related literature is reviewed to provide the needed theoretical and analytical framework..

A number of economic analysts studied the direct and indirect effects of exchange rates policies on export performance. Egert, et. al. (2005) analyze the direct impact of exchange rate volatility on the export performance of ten Central and Eastern European transition economies as well as its indirect impact via changes in exchange rate regimes. The results suggest that the size and the direction of the impact of foreign exchange

volatility and of regime changes on exports vary considerably across sectors and countries and that they may be related to specific periods.

Martin Berka (2005) asserts that the physical characteristics of goods and geography can explain both the puzzling persistence and volatility in the deviations of the international relative prices and the real exchange rate (the PPP persistence puzzle). He argues further that tradability of goods is endogenous, in that only goods with a deviation from the law of one price in excess of their trade cost are traded. He concludes that a model with quadratic adjustment costs in the volume of trade is also capable of creating real exchange rate volatility, and so can explain the PPP puzzle entirely as a trade phenomenon.

Duane, C., Philip R. Lane & Tara McIndoe (2006) investigated the impact of currency unions (OCA exchange rates arrangements) on Irish trade patterns. In contrast to most of the multi-country panel studies, they do not find any impact of EMU on trade. This, they argued is qualitatively consistent with the pattern noted by Baldwin (2006) that EMU has had a bigger impact on the 'core' member countries than on the peripheral member countries that have weaker economic linkages with the rest of the currency union. They however, acknowledge that the time period may be too short to pick up the EMU effect on Irish trade, but noted the importance of the need to re-visit the study in a few years.

Egert et. al. (2005) notes that from an empirical point of view, the large body of literature focusing on developed countries generally cannot establish any clear and statistically significant link between exchange rate volatility and aggregate or bilateral export flows. Although Klein (1990), Bini-Smaghi (1991), and McKenzie (1998), among others, show in their studies that differentiating between sectors yields more encouraging results, evidence from sectoral data suggests that the impact of volatility differs both in magnitude and direction across sectors. Interestingly, Fontaigne and Freudenberg (1999) showed that exchange rate volatility has a negative impact on intra-industry trade. This

last assertion seemed to be supported by Doroodian (1999), Chou (2000), Achy and Sekkat (2001), Siregar and Rajan (2002), Arize et al. (2004) and Baak (2004), which showed that for less developed countries exchange rate volatility has negative effects on multilateral, bilateral and sectoral export data. Generally speaking, these papers unanimously support the hypothesis that exchange rate volatility has a negative effect on exports flows. In other words, an increase in volatility appears to depress exports in less developed countries. Along these lines, a related question very few researchers have investigated is whether changes in exchange rate regimes which can be associated with a shift in the amplitude of volatility cause export flows to decrease.

3. Model Specification

The underlying assumption of this model is that if exchange rate devaluation and/or volatility do not significantly influence bilateral and/or intra-regional trade flows of any group of countries, then these countries would be better off by eliminating the incidental foreign exchange transactions costs through a fixed exchange rate arrangements. They are almost certain to face a common external market situation, and as such, they can collectively take a common stand when they trade with other third parties.

Although the selection of the correct trade equation in general and that of an export equation in particular is problematic, I adapt the specification by Egert and Morales-Zumaquero (2005) who analyzes the relationship between exchange rate volatility and trade flows for East and Central European countries in a very meticulous and systematic way. The export functions are estimated in nominal terms, and include domestic and foreign income (Y_{Di} and Y_{Fi}), relative prices (P_{Di} and P_{Fi}), usually defined as export prices in the domestic economy and import prices in the foreign economy, the nominal exchange rate (Ex_{Ni}) for nominal exports (X_{Ni}) respectively.

The implicit function of this model takes the following form:

$$X_{Ni} = \oint (Y_{Di}, Y_{Fi}. P_{Di}, P_{Fi}, E_{XNi}) \quad \cdots \quad \cdots \quad \cdots \quad \cdots \quad \cdots \quad (1)$$

Economic theory suggests that the impact of nominal and real income should be positive on nominal exports. Moreover, exchange rate depreciation may increase exports and the impact of domestic (foreign) relative prices on exports should be negative.

Panel Data Issues and the Explicit Model

Given that WAMZ is made up of 5 countries, the logical method to be adopted for estimation of equations (1) would be pooled or panel data regressions. The class of models that can be estimated using a pool object can be written as

$$y_{it} = \alpha_{it} + x_{it}'\beta_i + \varepsilon_{it} \quad \cdots \quad \cdots \quad \cdots \quad \cdots \quad (2)$$

where y_{it} is the dependent variable, x_{it} and β_i and are k-vectors of non-constant regressors and parameters for $i = 1, 2, \ldots, N$ cross-sectional units. Each cross-section unit is observed for dated periods $t = 1, 2, \ldots, T$. This basic specification treats the pool specification as a system of equations and estimates the model using system of OLS. This specification is appropriate when the residuals are contemporaneously uncorrelated, and time-period and cross-section homoskedastic:

$$\Omega = \sigma^2 I_N \otimes I_T \quad \cdots \quad \cdots \quad \cdots \quad \cdots \quad (3)$$

The coefficients and their co variances are estimated using the usual OLS techniques applied to the stacked model.

For bilateral trade functions involving 5 countries, this would require the construction of a 5 x 2 cross sectional panel in order to capture the entire bilateral relationships. The cross-sectional identifiers for the model are therefore 10 in numbers and reflected the following bi-lateral relations: Gambia-Ghana, Gambia-Guinea, Gambia-Nigeria, Gambia-Sierra Leone, Ghana-Guinea, Ghana-Nigeria, Ghana-Sierra Leone, Guinea-Nigeria, Guinea-Sierra Leone and Nigeria-Sierra Leone.

Two sets of pooled single equations models would be estimated: the first is the bilateral intra-WAMZ export functions, while the second, is designed to capture the global inter-WAMZ export functions. Their implicit form is rooted in equation (1) specification which for analytical convenience is represented here as:

$$X_{Ni} = \oint (Y_{Di}, Y_{Fi}. P_{Di}, P_{Fi}, E_{XNi}) \quad \cdots \cdots \cdots \cdots \cdots \quad (4)$$

These equations can be rendered in a modified form as:

$$BTE_{ij} = \oint (EX_{ij}, GDP_i, GDP_j. PME_i, PME_j) \quad \cdots \cdots \cdots \cdots \cdots \quad (5)$$

and

$$TTE_{ij} = \oint (EX_i, EX_j, GDP_i, GDP_j. PME_i, PME_j) \quad \cdots \cdots \cdots \cdots \cdots \quad (6)$$

Whereby:

$$BTE_{ij} = BTE_i + BTE_j \quad \cdots \cdots \cdots \cdots \cdots \quad (7)$$

$$TTE_{ij} = TTE_i + TTE_j \quad \cdots \cdots \cdots \cdots \cdots \quad (8),$$

$$EX_{ij} = EX_j / EX_i \quad \cdots \cdots \cdots \cdots \cdots \cdots \quad (9)$$

$$PME_i = PM_i / PE_i \quad \cdots \cdots \cdots \cdots \cdots \cdots \quad (10)$$

$$PME_j = PM_j / PE_j \quad \cdots \cdots \cdots \cdots \cdots \cdots \quad (11)$$

Under the assumption that:

$$PME_i = PME_j \quad \textit{for bilateral nonoil exporters}$$

$$PME_i \neq PME_j \quad \textit{for bilateral oil versus nonoil exporters}$$

And the variables defined as follows: *BTE and TTE* are the bilateral exports and total trade between two pairs ith and jth WAMZ member country (intra-WAMZ and global inter-WAMZ), GDP is defined as Real GDP; *PMEi* = Terms of Trade; PE_i = Index of Export price; PM_i = Index of Import price; *EXij* = Bilateral Nominal Cross Exchange rate

between countries i and j; EX_i = Nominal Exchange Rate of country i to the US dollar; EX_j = Nominal Exchange Rate of country j to the US dollar.

It is pertinent to note that three of the explanatory variables were included in the model in their ratio forms. These are the ratios of export to import prices for each of the countries and the ratios of their exchange rates to the dollar. While the former is included to capture each of the country's terms of trade, the later is included as proxy for the implicit bilateral exchange rates between any of the two WAMZ countries, whose explicit exchange rates are recorded in local currency per US dollar (their official trading currency).

4. The Empirical Results

Equations 5 and 6 were estimated through the GLS methods (cross section weights), using a quarterly sample data which spans 1996:1 to 2004:4. A total of 36 observations were included while the number of cross-sections used is 10. The total panel (balanced) observations were 360 and the estimation procedures used a one-step weighting matrix. Given the nature of the panel data, a GLS procedure is more likely to yield consistent estimates of the parameters of the pooled equation model than any other method.

The log linear regression models were estimated and the results are summarized into a number of tables for analytical convenience. It is worthy to mention that the relationship of interest in this regression analysis is the effect of bilateral exchange rate developments firstly on bilateral intra-WAMZ exports and secondly on the bilateral exports of the same set of countries with the rest of the world. It is instructive to caution here that because the currencies of these countries are not convertible, and bilateral trade takes place between them through third party currencies (US dollar), this variable (the ratio of each countries exchange rate to the dollar) can be viewed as a good notional proxy for the implicit bilateral exchange rate of the two countries. The effective transaction nominal

exchange rates between any pair of the countries is therefore expected to be understated, when they engage in trade, by the magnitude of currency conversion costs in addition to tariffs.

The decision to present the export supply functions in its explicit log linear forms is informed by the econometric properties of the parameter estimates of the regression as well as the overall goodness of fit.

Exchange Rate and Aggregate Bilateral Intra- and World Inter-WAMZ Exports

Table 1 presents the pooled regression results for bilateral intra-WAMZ and inter-WAMZ exports trade with the rest of the world. A comparison of the properties of the two single equation regression results shows that the overall goodness of fit of both equations is good. A closer look at the bilateral intra-WAMZ regression results show that the coefficient estimates of bilateral exchange rate (variable of interest in this study) was not significant in explaining the changes in the bilateral intra-WAMZ exports. This is not the case with the world inter-WAMZ regression results in which one of the partner's exchange rate is significant and positively influences the collective exports of the two countries to the rest

Table 1: Regression Results of Exchange Rates and WAMZ Exports

	BILAT. INTRA-WAMZ			WORLD INTER-WAMZ		
Dep. Variable	LOG(BTEIJ)			LOG(TTEIJ)		
Indepent Variable	Coef.	t-Stat.	Prob.	Coef.	t-Stat.	Prob.
LOG(EXi?)				0.120	3.4	0.00
LOG(EXj?)				0.017	0.6	0.52
LOG(EXij?)	0.011	0.1	0.94			
LOG(GDPi?)	-6.380	-4.4	0.00	0.058	0.3	0.77
LOG(GDPj?)	-3.872	-2.1	0.04	0.508	5.7	0.00
LOG(PMEi?)	-5.869	-6.0	0.00	-0.509	-4.3	0.00
LOG(PMEj?)	0.660	1.5	0.14	-0.856	-13.2	0.00
Fixed Effects						
_GAMGHA--C	47.2			2.9		
_GAMGUI--C	48.0			1.8		
_GAMNIG--C	46.2			5.5		
_GAMSLN--C	44.3			-0.3		
_GHAGUI--C	48.1			2.4		
_GHANIG--C	53.0			4.9		
_GHASLN--C	44.9			2.2		
_GUINIG--C	50.6			5.0		
_GUISLN--C	48.6			1.4		
_NIGSLN--C	44.1			5.2		
Weighted Statistics						
R-squared		0.9678			0.9959	
Adjusted R-squared		0.9635			0.9957	
S.E. of regression		0.7944			0.2823	
Log likelihood		-115.2			96.8	
Durbin-Watson stat		0.8574			0.9572	
Mean dependent var			-1.8			11.0
S.D. dependent var			4.2			4.3
Sum squared resid			66.3			27.4
F-statistic			225.1			5593.6
Prob(F-statistic)			0.0			0.0

of the world. This is an interesting result as it tends to validate our assertion that exchange rates does not matter much to intra-WAMZ exports to warrant its use as an instrument of bilateral trade stimulation, but can potentially be useful as a common tool of balance of payment adjustment against the rest of the world (third parties). It can be inferred that the maintenance of independent flexible exchange rate policy by either party to the bilateral trade makes no difference in terms of export performance, and may indeed constitute an impediment to free trade within the WAMZ region. Among these impediments are microeconomic costs of foreign exchange conversion and high incident of trade diversion associated with it.

The signs of the coefficients of real GDP of both countries and the terms of trade of one of the countries in the bilateral intra-WAMZ equations are negative, suggesting that changes in them adversely affect bilateral exports contrary to theoretical expectations. The story is not the same with respect to global inter-WAMZ exports. Indeed, the coefficient of the parameter estimates of these same variables are positive in signs, confirming that a common policy stance which stimulates their collective growth, and improves their terms of trade augurs well for their global export performance. It is quite logical to deduce that improved terms of trade against third-parties should indeed have positive effects on the global exports of the sub-region, if and only if it is universal. A priori information however show that although their structure of exports are similar when viewed from the perspective that they are all primary commodity exporters, there is a significant difference in their collective terms of trade. The difference stems from the fact that while four of the countries – Gambia, Ghana, Guinea and Sierra Leone – face the same terms of trade as the rest non-oil exporting countries which seemed to have deteriorated during the period, Nigeria had faced better terms of trade as a result of rise in crude oil prices in the international market during the same period.

Although insignificant, the positive sign of the parameter estimate of the exchange rate variable in the aggregate bilateral trade equation is remarkable. This is because as a ratio the magnitude and direction of change is determined by the direction of the net difference in percentage changes over a comparative period of the individual exchange rates to the common third-party currency, in this case the US dollar. It is therefore quite complementary to note that the parameter estimate of this variable has a positive sign suggesting that a common stand (especially one based on irrevocable commitments to one another) would augur well for intra-WAMZ and inter-WAMZ exports. This may not be far from being correct as can be observed that one of the coefficient of the exchange rate variable in the global inter-WAMZ export model is significant and positively signed, while the second which also has a positive sign is insignificant. This leads us to conclude that the net effect (which is insignificant) was driven by the small weight implied by the foreign exchange value of exports of the one with significant and credible exchange rate relative to the other. Indeed, it also suggest that there exist within the sub-region an exchange rate stance which can form the basis for a credible anchor or irrevocable relationship, provided there exist the political will among members to act collectively.

Another interesting feature of the regression results is the fixed effects which are captured by the bilateral exports constants parameter estimates. It is apparent that the two countries with the highest bilateral trade intensity is Nigeria-Ghana followed by Nigeria-Guinea. Incidentally, these are also the dominant economies of the sub-region with Nigeria alone accounting for more than 50 per cent of the population, GDP and exports of the region.

Exchange Rate and Nigeria's Bilateral Intra- and World Inter-WAMZ Exports

Table 2 presents the cross-sectional regression results of exchange rates (and other variables) on bilateral intra- and world inter-WAMZ exports of Nigeria to each of the other

member countries and jointly to the rest of the world. Four pairs of equations are presented for Gambia-Nigeria, Ghana-Nigeria, Guinea-Nigeria and Nigeria-Sierra Leone bilateral exports. The explanatory variable of interest in each of the model is the performance of the exchange rate defined as the bilateral cross rates (EXij), and the independent national exchange rates (EXi and EXj).

The row represented by the cross rate variable in Table 2 is that of LOG(EXij). As can be observed the signs of 3 out of the 4 estimated coefficients of the bilateral trade

Table 2: Regression Results of Exchange Rates and Exports - Gambia-Nigeria, Ghana-Nigeria, Guinea-Nigeria and Nigeria-Sierra Leone

	Gambia-Nigeria				Ghana-Nigeria				Guinea-Nigeria				Nigeria-Sierra Leone			
	BILATERAL		WORLD		BILATERAL		WORLD		BILATERAL		WORLD		BILATERAL		WORLD	
Dep. Variable	LOG(BTEIJ)		LOG(TTEIJ)		LOG(BTEIJ)		LOG(TTEIJ)		LOG(BTEIJ)		LOG(TTEIJ)		LOG(BTEIJ)		LOG(TTEIJ)	
Indepent Variable	Coef.	t-Stat.	Coef.	t-Stat.	Coef.	t-Stat.	Coef.	t-Stat.	Coef.	t-Stat.	Coef.	t-Stat.	Coef.	t-Stat.	Coef.	t-Stat.
C	40.5		6.26		-12.8		3.82		-23.7		2.42		14.4		-2.45	
LOG(EXi?)			-0.05	-0.907			-0	-0.045			0.27	1.645			-0.13	-6.098
LOG(EXj?)			-0.03	-1.042			0.01	0.324			-0.06	-2.437			-0.16	-2.458
LOG(EXij?)	0.03	0.304			0.15	4.446			-0.87	-4.511			0.86	4.592		
LOG(GDPi?)	-21.6	-16.04	2.15	3.478	-17.7	-16.71	-0.35	-0.253	19.1	8.136	0.42	0.865	-11.5	-8.31	3.71	9.678
LOG(GDPj?)	13.1	13.9	-1.67	-3.88	22.4	17.85	1.4	1.018	-16	-12.02	0.52	2.163	7.04	12.87	-0.9	-9.739
LOG(PMEi?)	5.56	4.536	-0.51	-1.97	-2.21	-6.992	-0.28	-1.17	-1.87	-0.979	-0.77	-3.001	3.53	9.053	-1.23	-28.08
LOG(PMEj?)	-0.21	-1.059	-1.03	-22.87	0.41	7.578	-0.9	-17.87	-3.76	-10.94	-1.05	-20.48	-11.9	-5.73	-1.09	-5.026
Weighted Statistics																
R-squared	0.78		0.84		0.56		0.83		0.39		0.84		0.76		0.88	
Adjusted R-squared	0.76		0.83		0.54		0.83		0.37		0.84		0.75		0.87	
S.E. of regression	0.56		0.14		0.18		0.13		0.97		0.13		1.06		0.12	
Log likelihood	-192		205		114		231		-437		225		-465		256	
Durbin-Watson stat	1.13		0.7		1.32		0.62		1.02		0.78		1.28		1.07	
Mean dependent var		-2.252		8.447		4.675		8.537		0.429		8.481		-1.1		8.449
S.D. dependent var		1.145		0.337		0.266		0.313		1.22		0.328		2.14		0.339
Sum squared resid		69.69		6.737		11.16		5.83		287.5		6.032		343.4		5.094
F-statistic		56.17		116.2		31.46		115		14.18		124.1		70.89		163.1
Prob(F-statistic)		0		0		0		0		0		0		0		0

equations are positive, but only two are significant: Ghana-Nigeria and Nigeria-Sierra Leone, while that of Gambia-Nigeria is insignificant. Perhaps, the distance between the Gambia and Nigeria may explain the non-significance of this variable in this model. Of particular interest, however, is the reason for the positive effects of this variable in these models. This can be deduced from the negative signs of the coefficients of the individual exchange rate variable of their world exports model, suggesting that though current trends

in exchange rates hurts their collective exports to the world, it is most likely to augur well for their bilateral exports. This may arise if they avoid the negative spillovers of their trade relations with the rest of the world.

The regression result of the bilateral export trade between Guinea and Nigeria is very interesting. The coefficient of the bilateral cross rates was negative and significant, suggesting a net adverse effect on their bilateral exports. This is likely to be so, since the estimate of coefficient of the Guinean exchange rate variable in their exports to the world model (which is positive but insignificant) appeared to be overwhelmed by the negative signs of the Nigerian exchange rate variable. This suggests that the pursuit of a relatively fixed exchange rate by Guinea in the face of relatively flexible exchange rate by Nigeria culminated in a net adverse effect. This may not be far from being correct, since ***a priori*** information indicated that at a time when exchange rates were devalued in Nigeria, Guinea kept her exchange rate fixed to the French Franc. This has the salutary effects of cheapening Nigerian exports to the Guinea (Guinean imports from Nigeria), which stimulated it further.

It can thus be concluded without any equivocation that exchange rates do not influence these countries bilateral trade, since actual trade takes place between them through a third party convertible currency. Instead, the microeconomic costs of currency conversions incidental upon bilateral trade between them may actually act as an impediment to trade.

Unfortunately, the parameter estimate of the coefficient of the terms of trade (which are significant in either or both bilateral export functions) exhibited negative signs, suggesting that its deterioration may be instrumental to the decline in both bilateral and world exports of these countries. This is indicative of an adverse trade-off despite the fact that Nigeria supposedly face a better terms of trade than the others. This is more likely to

be so given the structure of trade between the two countries. Indeed, trade between them is dominated by oil exports from Nigeria whose price is determined by the world market developments as well as interventionist activities of OPEC (an export cartel), independent of bilateral market fundamentals and exchange rates developments.

Although separated by longer distance compared to the rest, Nigeria's exports to the Gambia and Sierra Leone was responsive to the cross-over rates, largely for the same reasons adduced for the Nigeria-Guinea case. However, the major difference with regards to the Sierra Leone's case is that most of the exports were a support for reconstruction, as it coincided with the period when their economy was disrupted by civil disturbances and war.

Exchange Rate and Ghana's Exports to the Gambia, Guinea and Sierra Leone

The regression result of the bilateral exports of Ghana to other members of WAMZ (excluding Nigeria) is presented in Table 3. Unlike the case of Nigeria (an oil exporter), the export supply functions relates to non-oil exporters who face the same terms of trade wither in their bilateral intra- and world inter-WAMZ trade. Indeed, the coefficient of the cross rate variable in the model has a positive sign and significant in the case of Ghana-Guinea and Ghana-Sierra Leone bilateral exports. This suggests that bilateral exchange rates have a net positive effect on their bilateral exports. This result is consistent with that of their collective export to the world model whose parameter estimates were significant but exhibited negative signs. A close look at the table shows that the parameter estimate of the bilateral cross over exchange rates variable is significant in each of the cross-sectional bilateral equations estimated. However, while the sign of the exchange rate coefficient is positive in the case of Ghana-Gambia export supply functions, they are

Table 3: Regression Results of Exchange Rates and Exports of Gambia-Ghana, Ghana-Guinea and Ghana-Sierra Leone												
	Gambia-Ghana				Ghana-Guinea				Ghana-Sierra Leone			
	BILATERAL		WORLD		BILATERAL		WORLD		BILATERAL		WORLD	
Dep. Variable	LOG(BTEIJ)		LOG(TTEIJ)		LOG(BTEIJ)		LOG(TTEIJ)		LOG(BTEIJ)		LOG(TTEIJ)	
Indepent Variable	Coef.	t-Stat.	Coef.	t-Stat.	Coef.	t-Stat.	Coef.	t-Stat.	Coef.	t-Stat.	Coef.	t-Stat.
C	-7.59		-1.46		-51.7		5.44		-19.1		1.21	
LOG(EXi?)			0.24	5.1			-0.13	-4.53			-0.28	-8.8
LOG(EXj?)			-0.43	-15.4			-0.11	-1.18			0.41	7.2
LOG(EXij?)	0.09	1.4			2.1	7.9			0.19	11.2		
LOG(GDPi?)	16.7	12.1	-1.31	-2.7	6.97	7.4	2.33	15.3	3.24	52.5	0.31	0.9
LOG(GDPj?)	-15.6	-9.5	3.5	6.0	3.56	2.8	-1.65	-7.7	0.06	2.0	0.55	8.4
LOG(PMEi?)	-1.27	-2.5	1.42	7.9	2.82	2.2	0.79	5.3	1.05	7.9	1.23	7.4
LOG(PMEj?)												
Weighted Statistics												
R-squared	0.759		0.613		0.27		0.64		0.96		0.69	
Adjusted R-squared	0.750		0.597		0.24		0.63		0.95		0.68	
S.E. of regression	0.29		0.1		0.76		0.08		0.08		0.10	
Log likelihood	-61.0		321.6		-407		389		421		340.7	
Durbin-Watson stat	1.93		2.13		0.64		2.12		1.08		2.00	
Mean dependent var		-1.6		6.1		-2.5		6.4		-3.399		6.1
S.D. dependent var		0.6		0.2		0.9		0.137		0.355		0.170
Sum squared resid		29.6		3.5		202.0		2.4		2.0		3.2
F-statistic		84.0		39.0		9.7		43.8		565.5		55.5
Prob(F-statistic)		0.0		0.0		0.0		0.0		0.0		0.0

negative in the Ghana-Guinea and Ghana-Sierra Leone estimations. It may be inferred therefore that in the case of Ghana-Gambia bilateral export functions, disproportionate co-variability to a third-party currency of their independent exchange rates, and which amounts to a net depreciation in the value of the implicit cross-over rate, stimulates bilateral exports. This cannot be said of Ghana's bilateral exports to Guinea and Sierra Leone as the signs of the parameter estimate of the coefficient of the implicit cross-over exchange rate suggests that depreciation hurts it significantly. Perhaps the only reason this might be so could be that Ghana's exports compete with those from these countries. This is most likely to be so, as these countries (Ghana inclusive) are known to be exporters of similar primary agricultural and mineral products. This suggests that a net devaluation may induce exports of these countries to a third-party while indeed depressing her bilateral trade. This can be the case if transaction costs incidental upon trade, especially those associated with transportation, microeconomic costs of currency conversion and other barriers makes such bilateral trade unattractive.

Bilateral Exports Functions of Gambia-Guinea, Gambia-Sierra Leone and Guinea-Sierra Leone

The regression results of these countries bilateral export functions are presented on Table 4. It is interesting to note that the estimates of the coefficient of the implicit crossover exchange rates in each of the estimated equation are significant but negatively signed. This suggests that erstwhile net bilateral exchange rates harm bilateral exports of these countries. This is similar to the Ghana's case, as the countries are also known to export similar products. It can be inferred that eliminating exchange rates costs could minimize the adverse impact on bilateral trade.

Table 4: Regression Results of Exchange Rates and Exports of Gambia-Guinea, Gambia-Sierra Leone and Guinea-Sierra Leone

	Gambia-Guinea				Gambia-Sierra Leone				Guinea-Sierra Leone			
	BILATERAL		WORLD		BILATERAL		WORLD		BILATERAL		WORLD	
Dep. Variable	LOG(BTEIJ)		LOG(TTEIJ)		LOG(BTEIJ)		LOG(TTEIJ)		LOG(BTEIJ)		LOG(TTEIJ)	
Indepent Variable	Coef.	t-Stat.	Coef.	t-Stat.	Coef.	t-Stat.	Coef.	t-Stat.	Coef.	t-Stat.	Coef.	t-Stat.
C	34.76		11.32		18.31		-3.5		-72.5		3.09	
LOG(EXi?)			0.559	5.3			1.24	2.4			0.24	1.6
LOG(EXj?)			0.007	0.042			-1.2	-4.3			-0.05	-0.9
LOG(EXij?)	2.939	5.259			0.205	1.0			1.753	5.7		
LOG(GDPi?)	8.341	4.545	-1.25	-2.5	-7.66	-16.7	2.751	1.9	13.5	14.5	-0.44	-0.8
LOG(GDPj?)	-18.2	-6.234	-0.35	-0.7	2.809	9.3	-0.25	-0.5	0.574	2.4	0.6	8.5
LOG(PMEi?)	-6.18	-3.891	0.625	2.4	2.287	3.9	6.16	6.6	2.937	2.1	0.43	1.6
LOG(PMEj?)												
Weighted Statistics												
R-squared	0.282		0.287		0.564		0.628		0.690		0.5	
Adjusted R-squared	0.255		0.258		0.543		0.613		0.678		0.48	
S.E. of regression	0.973		0.150		0.337		0.556		0.788		0.15	
Log likelihood	-494		180.2		-86		-292		-418		177	
Durbin-Watson stat	0.606		1.657		1.345		1.388		0.559		1.62	
Mean dependent var		-3.101		5.108		-4.424		2.905		-1.761		5.2
S.D. dependent var		1.127		0.174		0.499		0.894		1.39		0.2
Sum squared resid		327.4		7.7		30.3		106.7		214.9		7.9
F-statistic		10.5		9.9		26.5		41.6		59.2		24.6
Prob(F-statistic)		0.0		0.0		0.0		0.0		0.0		0.0

5. Summary of Findings and Concluding Remarks

This study examines the effect of exchange rate policy on the bi-lateral intra-WAMZ and global inter-WAMZ export to the rest of the world with a view to gauging its relative veracity among other determinants. Four key findings emanates from this study:

i. The implicit bilateral exchange rate (variable of interest in this study) was not significant in explaining the changes in the bilateral intra-WAMZ exports. This is

not the case with the world inter-WAMZ regression results in which one of the partner's exchange rate is significant and positively influences the collective exports of these countries to the rest of the world. This result is considered interesting as it tends to validate the assertion that exchange rates does not matter much to intra-WAMZ exports to warrant its use as an instrument of bilateral trade stimulation, but can potentially be useful as a common tool of balance of payment adjustment against the rest of the world (third parties).

ii. Real economic growth and changes in terms of trade of one of the countries in the bilateral intra-WAMZ equations are negative, suggesting that they have adverse effect on bilateral exports contrary to theoretical expectations. This is, however, contrary to the results for the global inter-WAMZ exports functions which exhibited positive signs, thereby suggesting that a common policy stance which stimulates growth and improves their terms of trade augurs well for their collective global export performance.

iii. The gains from either an independent or collective policy stance can be severely limited given the sharp differences in their terms of trade, despite the similarity in the structure of exports. The difference stems from the fact that while four of the countries – Gambia, Ghana, Guinea and Sierra Leone – face the same terms of trade as the rest non-oil exporting countries which seemed to have deteriorated during the period, Nigeria had faced better terms of trade as a result of rise in crude oil prices in the international market during the same period.

iv. Another interesting feature of the regression results is the fixed effects which are captured by the bilateral exports constants parameter estimates. It is apparent that the two countries with the highest bilateral trade intensity is Nigeria-Ghana followed by Nigeria-Guinea. Incidentally, these are also the dominant economies

of the sub-region with Nigeria alone accounting for more than 50 per cent of the population, GDP and exports of the region.

In concluding the study inferred that the maintenance of independent flexible exchange rate policy by either party to the bilateral trade makes no difference in terms of export performance, and may indeed constitute an impediment to free trade within the WAMZ region. Among the impediments identified are the microeconomic costs of foreign exchange conversion and high incident of trade diversion associated with it.

Perhaps, one may be inclined to infer and agree with the "per capita income ***ex post*** convergence" theorists who maintain that regional integration especially the one advanced by creating a monetary union, may lead to convergence of income levels by stimulating growth in the poorer countries through increased trade (Masson and Pattillo (2004)). This is also consistent with the assertion by Jenkins and Thomas (1996) that "there is a growing consensus that 'convergence clubs' exist, where countries with a lower GNP per capita grow more rapidly because they are members of a trade group, or because domestic policy gains credibility by being tied to the domestic policy of a country with a better economic reputation". This leads us to conclude that although the net effect of bilateral exchange rates is currently insignificant, the real GDP and terms of trade variables suggest that an ***ex post*** economic convergence club, driven by both Nigeria and Ghana can emerge among the group, provided there exist the political will among members to act collectively.

REFERENCE

Anderson, James and Eric van Wincoop (2004). "Trade costs," *Journal of Economic Perspec-tives* 52, 691-751.

Andrews, D. 1993. Test for Parameter Instability and Structural Change with Unknown Change Point. In: Econometrica 61. 821—856.

Andriamananjara, S. (1999), On the size and number of regional integration arrangements: a political economy model, World Bank Policy Research Working Paper No.2117.

Antonin Aviat and Nicolas Coeurdacier(2006,) "The Geography of Trade in Goods and Asset Holdings" *ESSEC, Centre de rechercheDR 06012, www.* RESEARCH.CENTER@ESSEC.FR

Aristotelous, K. 2001. Exchange-Rate Volatility, Exchange-Rate Regime and Trade Volume: Evidence from the UK-US Export Function. 1889—1999. In: Economics Letters 72. 87—94.

Babetskaia-Kukharchuk, O. and M. Maurel. 2004. Russia's accession to the WTO: the potential for trade increase. In: Journal of Comparative Economics 32(4). 680—699.

Baldwin, R., 2006, *In or Out: Does it Matter? An Evidence –Based Analysis of the Euro's Trade Effects*. Centre for Economic Policy Research, London.

Baltagi, B.H., P. Egger and M. Pfaffermayr (2003) A generalized design for bilateral trade flow models, Economics Letters 80, 391-397.

Banerjee, A., M. Marcellino and C. Osbat. 2004. Some Cautions on the Use of Panel Methods for Integrated Series of Macroeconomic Data. In: Econometrics Journal 7(2). 322—340.

Baxter, M. And King, R., Measuring Business Cycles: Approximate band-pass filters for economica time series. *The Review of Economics and Statistics*, 81(4), pp 575-593, 1999.

Bayoumi, T.; Eichengreen, B. Shocking Aspects of European Monetary Integration, In: Torres, F.,Giavazzi, F. *Adjustment and Growth in the European Monetary Union*, New York: Cambridge University Press, 1993, pp. 193–229.

Bayoumi, Tamim (1998). "Estimating trade equations from aggregate bilateral data," *Interna-tional Monetary Fund Working Paper*, June.

Behrens, K., A.R. Lamorgese, G.I.P. Ottaviano and T. Tabuchi (2005) Testing the 'home market effect' in a multi-country world. CORE Discussion Paper #2005/55.

Behrens, K., Cem Ertur & Wilfried Koch, (2007) "'Dual' gravity: Using spatial econometrics to control for multilateral resistance"

Berger, H. and V. Nitsch, 2006, "Zooming Out: The Trade Effect of the Euro in Historical Perspective," *mimeo*, Free University Berlin.

Betts, Caroline and Timothy Kehoe (2001). "Tradability of goods and real exchange rate fluc-tuations," *Federal Reserve Bank of Minneapolis Working Paper*

Bini-Smaghi, L. 1991. Exchange Rate Variability and Trade: Why Is It So Difficult to Find Any Relationship? In: Applied Economics 23. 927—936.

Blanchard, O.; Quah, D. The Dynamics Effects of Aggregate Demand and Supply Disturbances, *American Economic Review*, Q1 4 (79), 1989, pp. 655–673.

Blanes, J. (2005): Does Immigration Help to Explain Intra-Industry Trade? Evidence for Spain, Review of World Economics,, 141(2), 244-70.

Blanes, J.V.,and C. Martin (2000): The Nature and Causes of Intra-Industry Trade: Back to the Comparative Advantage Explanation? The Case of Spain, Review of World Economics, 136(3), 423-441.

Bond, E.W. and Syropoulos, C. (1996) The size of trading blocs, market power and world welfare effects, *Journal of International Economics*, **40**, 411--437.

Bussière, M., J. Fidrmuc and B. Schnatz (2005). "Trade integration of Central and Eastern European countries: Lessons from a gravity model". *European Central Bank Working Paper,* 545.

Bussière, Matthieu Matthieu and Bernd Schnatz (2006), "Evaluating China's Integration in World Trade with a Gravity Model based Benchmark", ECB WORKING PAPER SERIES NO 693 / NOVEMBER 2006, downloaded from http://www.ecb.int or from the Social Science Research Network electronic library at http://ssrn.com/abstract

Cerra, V. and S. Chaman Saxena (2002). "An Empirical analysis of China's Export Behaviour", *IMF Working Paper,* WP/02/200.

Chang, G. and Q. Shao (2004). "How much is the Chinese currency undervalued? A quantitative estimation". *China Economic Review,* 15, 2004, 366– 371.

Cheng, I-H. and H. J. Wall (2005). "Controlling for heterogeneity in gravity models of trade and integration". *Federal Reserve Bank of St. Louis Review*, 87, 1, 49-63.

Chou,W. L. 2000. Exchange Rate Variability and China's Exports. In: Journal of Comparative Economics 28. 61—79.

Corsetti, G.; Pesenti, P. Self-Validating Optimum Currency Areas, *NBER Working Paper*, no. 8783, 413 February, 2002.

Coudert, V. and C. Couharde (2005). "Real Equilibrium Exchange Rate in China". *CEPII Working Paper* 2005-1.

De Grauwe, P. *The Economics of Monetary Union*, 5th ed., New York: Oxford University Press, 2003.

De Grauwe, P.; Vanhaverbeke, W. Is Europe an Optimum Currency Area? Evidence from regional data, *CEPR Discussion Paper*, no. 555, May, 1991.

Deardorff, A.V. (1995). "Determinants of bilateral trade: does gravity work in a neoclassical world?". *NBER Working Paper*, 5377.

Doroodian, K. 1999. Does Exchange Rate Volatility Deter International Trade in Developing Countries. In: Journal of Asian Economics 10. 465—474.

Duane, C., Philip R. Lane & Tara McIndoe (2006), "Currency Unions and Irish External Trade", Institute for International Integration Studies (IIIS) Discussion Paper No. 189)

European Commission. *One Market, One Money*, New York: Oxford University Press, 1992.

Faruqee, H., 2004, "Measuring the Trade Effects of EMU," IMF Working Paper No. 04/154.

Ferrari and Cribari-Neto, Beta regression for modelling rates and proportions, *Journal of Applied Statistics*, vol. 31, nº 7, 2004.

Fidrmuc, J. and I. Korhonen. 2004. A meta-analysis of business cycle correlation between the euro area and CEECs: What do we know — and who cares? BOFIT Discussion Paper 20.

Fontaigne, L. G. and M. Freudenberg. 1999. Endogenous Symmetry of Shocks in a Monetary Union. In: Open Economies Review 10(3). 263—287.

Fountas, S. and K. Aristotelous. 1999. Has the European Monetary System Led to More Exports? Evidence from Four European Union Countries. In: Economics Letters 62. 357—363.

Frankel, J,; Rose, A. The Endogeneity of Optimum Currency Areas Criteria, *The Economic Journal*, 421 108 (449), July, 1998, pp. 1009–1025.

Frankel, J. and A. Rose. 2002. An Estimate of the Effect of Common Currencies on Trade and Income. In: The Quarterly Journal of Economics 117(2). 437—466.

Frankel, J.; Rose, A. The Endogeneity of Optimum Currency Areas Criteria, *NBER Working Paper*, no 5700, August, 1996.

Frankel, J.A., Stein, E. and Wei, S-J. (1998) Continental trading blocs: are they natural or supernatural?, in *Regionalization of the World Economy* (Ed.) J.A. Frankel, The University of Chicago Press, Chicago, pp.91--113.

Frankel, Jeffrey and David Romer (1999). "Does trade cause growth?" *American Economic Review* 89, 379-399.

Fratianni, M. and Kang, H. (2006) Heterogeneous distance-elasticities in trade gravity models, *Economics Letters*, **90(1)**, 68--71.

Fratianni, Michele and Chang Hoon Oh 2007, "Size of Regional Trade Agreements and Regional Trade Bias" Indiana University and Università Politecnica delle Marche.

Fridmuc, J. *The Endogeneity of Optimum Currency Area Criteria, Intra-Industry Trade and EMU Enlargement*, Bank of Austria, June, 2001.

Glick, Reuben and Andrew Rose (2002). "Does a currency union affect trade? The time series evidence," *European Economic Review* 46 (June), 1125-1151.

Gordon, Robert and Lans Bovenberg (1996). "Why is capital so immobile internationally? Possible explanations and implications for capital income taxation," *American Economic Review* 86, 1057-1075.

Heejoon Kang and Michele Fratianni (2006), "International Trade Efficiency, the Gravity Equation, and the Stochastic Frontier**"** kang@indiana.edu/fratiann@indiana.edu

Helpman, Elhanan (1987). "Imperfect competition and international trade: Evidence from fourteen industrial countries," *Journal of the Japanese and international economies* 1, 62-81.

Hodrick, R.; Prescott, E. Post-war U.S. Business Cycles: An Empirical Investigation, *Journal of Money*, 1980 Credit and Banking, 29 (1), 1980, pp. 1–16.

Hughes Hallett, A.; Piscitelli, L. BEMUin Reality: The Effect of a Common Monetary Policy on Economies with Different Transmission Mechanisms, *CEPR Discussion Paper*, no. 2068, 1999.

Inclan, C. and G. C. Tiao. 1994. Use of Cumulative Sums of Squares for Retrospective Detection of Changes of Variance. In: Journal of American Statistical Association 89. 913—923.

Jenkins, Carolyn, and Lynne Thomas. 1996. "Is Southern Africa Ready for Regional Monetary Integration?" Centre for the Study of African Economies Working Paper 51 (November), published in Lennart Petersson, ed., *Post-Apartheid Southern Africa: Economic* Challenges and Policies for the Future. London, New York: Routledge, 1998, pp. 145-70.

Jhingan, M. L. 2003. *Macroeconomic Theory, 11*th Revised Edition, © M. L. Jhingan, Vrinda Publications, New Delhi, pp. 773-787.

Jhingan, M. L. 2004. *Monetary Economics,* 6th Edition, © M. L. Jhingan, Vrinda Publications,New Delhi.

João Silvestre, António Mendonça and José Passos 2007,The Shrinking Endogeneity of Optimum Currency Areas Criteria: Evidence from the European Monetary Union – a Beta Regression Approach WP 022/2007/DE, WORKING PAPERS ISSN Nº 0874-4548

Kenen, P. B. The Theory of Optimum Currency Areas, In: Mundel, R., Swoboda, A. *Monetary Problems of the International Economy*, Chicago: Chicago University Press, 1969, pp. 4–60.

Kenen, P. Currency Areas, *Policy Domains, and the Institutionalization of Fixed Exchange Rates*, Centre for Economic Performance, Discussion Papers, no. 0467, London School of Economics, 2000.

Klein, M. W. 1990. Sectoral Effects of Exchange Rate Volatility on United States Exports. In: Journal of International Money and Finance 9. 229—308.

Krugman, P. (1991) Is bilateralism bad?, in *International Trade and Trade Policy* (Eds.) E. Helpman and A. Razin, MIT Press, Cambridge, MA, pp.9--23.

Krugman, P. 1993, Regionalism versus multilateralism: analytical notes, in *New Dimensions in Regional Integration* (Eds.) J. de Melo and A. Panagariya, Cambridge U. Press, Cambridge, pp.58--78.

Krugman, P. Lessons of Massachusetts for EMU, In: Torres, F., Giavazzi, F. *Adjustment and Growth in the European Monetary Union*, Cambridge: Cambridge University Press, 1993.

Krugman, P., and Elizondo, R. 1996. Trade Policy and the Third World Metropolis. *Journal of Development Economics* 49: 137-150.

Lucas, R. *Econometric Policy Evaluation: A Critique*, Carneggie-Rochester Conference Series on Public Policy, 1, 1976, pp. 19–46.

McKenzie, M. D. 1999. The Impact of Exchange Rate Volatility on International Trade Flows. In: Journal of Economic Surveys 13. 71—106.

McKenzie,M. D. 1998. The Impact of Exchange Rate Volatility on Australian Trade Flows. Journal of International Financial Markets. In: Institutions and Money 8. 21—38.

Midelfart-Knarvik, K., Overman, H., Redding, S., and Venables, A. 2000 The Location of European Industry. The European Commission Directorate General for Economic and Financial Affairs, Economic Papers No.142.

Midelfart-Knarvik, K., Overman, H., Redding, S., and Venables, A. 2002. Integration and Industrial Specialisation in the European Union. *Révue Économique* 53(3): 469-481.

Monfort, P., and Nicolini, R. 2000. Regional Convergence and International Integration. *Journal of Urban Economics* 48: 286-306.

Monfort, P., and van Ypersele, T. 2003. Integration, Regional Agglomeration and International Trade. CEPR Discussion Paper No. 3752.

Mongelli, F. New Views on the Optimum Currency Area Theory: What is EMU Telling Us?, *ECB Working Paper*, no. 138, April, 2002.

Mundell, R. B. The Theory of Optimum Currency Areas, *American Economic Review*, 51 (4), September, 1961, pp. 657–663.

Nitsch, V. 2001. Openness and Urban Concentration in Europe, 1870-1990. HWWA Discussion Paper No. 121.

Panagariya, A. (2000) Preferential trade liberalization: the traditional theory and new developments, *Journal of Economic Literature*, **38**, 287--331.

Pedroni, P. 1999. Critical Values for Cointegration Tests in Heterogeneous Panels with Multiple Regressors. In: Oxford Bulletin of Economics and Statistics 61. 653—670.

Pomfret, R. (2006) Regional trade agreements, in Regional Economic Integration (Ed.) M. Fratianni, Elsevier, Amsterdam, pp.39--54.

Rose, A. 2000. One Money, One Market: Estimating the Effect of Common Currency on Trade. In: Economic Policy 30. 7—45.

Rose, A. Meta-Analysis of the Effect of Common Currencies on International Trade, *NBER Working Paper*, no. 10373, March, 2004.

Rose, A. One Money, One Markey? The Effect of Common Currencies on International Trade, *Economic Policy*, 15 (30), 2000, pp. 7–45.

Rose, A.K. (2000) One money, one market: The effects of common currency on trade, *Economic Policy*, **30**, 9--45.

Silvestre, J.; Mendonça. A. The Endogeneity of Optimum Currency Areas Criteria: Some Evidence from the European Union and Portugal. *International Advances in Economic Research*, 13, pp. 1-18, 2007.

Siregar, R. and R. S. Rajan. 2002. Impact of Exchange Rate Volatility on Indonesia's Trade Performance in the 1990s. Centre for International Economic Studies Discussion Paper 0205.

Taglioni, D. 2002. Exchange Rate Volatility as a Barrier to Trade: New Methodologies and Recent Evidence. In: Economie Internationale 89—90(1). 227—259.

Tenreyro, S. 2003. On the Trade Impact of Nominal Exchange Rate Volatility. Federal Reserve Bank of Boston Working Paper 32.

Wei, S. J. 1998. Currency Hedging and Goods Trade. National Bureau of Economic Research Working Paper 6742.

Zhang, J., A. van Witteloostijn, and C. Zhou (2005): Chinese Bilateral Intra-Industry Trade: A Panel Data Study for 50 Countries in the 1992-2001 Period, Review of World Economics, 141(3), 510-40.

Emmanuel Dele Balogun holds a B.Sc. (Hons), (Agric. Econs), 1979, University of Ibadan, with Second Class Upper; an M.Sc. (Economics), 1982, University of Lagos. Ph.D Candidate and Lecturer at University of Lagos. I have wide experience that span over 25 years in consultancy, the Central Bank of Nigeria, public Service (Edo State Commissioner for Finance, Commerce,& Industry, as well as Agric. and private sector (Director General of Abuja Chamber of Commerce, Industries, Mines and Agriculture. My major area of academic interests are; Development economics, international economics, macroeconomic policy and econometrics.