Determinants of West African Monetary Zone (WAMZ)countries global export trade: do foreign reserves and independent exchange rates matter?

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DETERMINANTS OF WEST AFRICAN MONETARY ZONE (WAMZ) COUNTRIES GLOBAL EXPORT TRADE: DO FOREIGN RESERVES AND INDEPENDENT EXCHANGE RATES MATTER?

By

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Abstract

*This study examines the effect of independent exchange rate pursuits and reserve holdings, relative to other determinants, on global export performance of WAMZ countries. The regression results show that exports originating from the Zone to the rest of the world are influenced positively by domestic output, export prices and exchange rate devaluations, but negatively by import price and economic performance of the major global trading partner, proxied by the US GDP. This result is not universal as the Gambia, Ghana and Guinea total exports functions show that exchange rate policy penalized exports contrary to the Nigerian case in which the coefficient estimate is significant and positive. The study infers that these results are consistent with theoretical expectation given the ironical divergence in export basket. Although they are all primary commodity exporters, Nigeria's exports is mainly crude oil, and **a priori** expectation is that rapid economic growth or booms in the US should lead to increased demand for energy (healthy competitions). In conclusion, the study infers that since independent flexible exchange rate policy pursuits and reserve holdings makes no difference to the Zonal export performance **ex ante**, but have great potential for global exports collectively, they could explore an OCA to enhance both intra- and global inter-regional export trade.*

1. Introduction

Traditionally, export supply functions have been studied in a large number of theoretical and empirical papers globally, with the sole objective of establishing price elasticity and response to policy initiatives. Among the key policy responses often investigated are terms-of-trade gains from tariff liberalization, exchange rate devaluation and foreign reserves performance. Indeed, the universal agreement in the literature is that a free trade policy supported by exchange rate liberalization and buoyant reserves position serves as a veritable instrument for export promotion and import demand curtailment. This perhaps would explain why foreign exchange reserves and stable exchange rates requirement are part of the macroeconomic stabilization and balance of payment credibility pre-condition for monetary unionization. For instance, while the maintenance of a reserve

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level capable of supporting 3 months of import is imposed as a primary criterion, there is also the insistence that intending members of WAMZ must keep exchange rate volatility within a band of ± 15 percent as a secondary criterion.

Although there seem to be no ambiguity about the desirability of these conditions and their likely effect on 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. 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 export flows. Although a number of studies have pointed to the likelihood that exchange rate volatility and destabilizing changes in foreign reserve 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 questions that this study seeks to answer is: does foreign reserves and independent exchange rates pursuits matter as instruments for stimulating global export trade of WAMZ countries to warrant its independent maintenance? The objective of this test is to assess the effect of independent exchange rate policy pursuits and reserve position on export trade performance of 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 global trade given that they are a small country in international economic sense.

2.   Literature Review

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. The central issues in the fixed-flexible exchange rate

debate relates to provision of "domestic policy discipline" effects and the desirability that both exchange rates and reserves serve as instrument for stimulating growth via trade in good and services, capital inflows as well as forestall destabilizing speculations in foreign exchange markets (Appleyard & Field 1998). In order to situate this study within an appropriate theoretical and analytical framework, a number of related literatures are reviewed.

A number of recent empirical studies assess the direct and indirect effects of exchange rates and reserve movements on export performance (Egert, et. al. 2005; Berka 2005; Duane, Lane & McIndoe 2006). In particular 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.

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, et. al. (2006) investigated the impact of currency unions (OCA exchange rates arrangements) on Irish trade patterns and finds that contrary to most of the multi-country panel studies of the impact of EMU on trade, exchange rates volatility have insignificant effects. 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 and foreign reserves 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.   *The Model*

The underlying assumption of this model is that if exchange rate devaluation and/or volatility do not significantly influence the individual and collective trade flows of any group of countries to the rest of the world, then these countries would be better off by eliminating the incidental foreign exchange transactions costs through a fixed exchange rate arrangements among themselves.   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 functions estimated by Egert et. al. (2005) in nominal and real terms took the form of equations (1) and (2) as follows:

$$X_t^N = \oint\left(Y_t^N, Y_t^{N*}, P_t, P_t^*, E_t, FDI_t^N, VOL_t^E\right) \quad \cdots \quad \cdots \quad \cdots \quad (1)$$

$$X_t^R = \oint\left(Y_t^R, Y_t^{R*}, Q_t, FDI_t^R, VOL_t^R\right) \quad \cdots \quad \cdots \quad \cdots \quad \cdots \quad (2)$$

Whereby X_t^N and X_t^R denotes nominal and real exports, Y_t^N, Y_t^{N*}, Y_t^R and Y_t^{R*} denotes the domestic and foreign nominal and real income, P_t and P_t^* were defined as export prices in the domestic economy to import prices in the foreign economy, the nominal

exchange rate (E_t) for nominal exports, the real exchange rate Q_t ($Q_t = E_t * P_t^* / P_t$) for real exports, FDI_t^N and FDI_t^R denotes nominal and real foreign direct investment and a volatility measure of the nominal and the real exchange rates, denoted by VOL_t^E and VOL_t^Q respectively.

The basic model adapted for estimation by this study is similar to equation (1) above, but modified to exclude the foreign direct investment and exchange rate volatility measure and to include foreign exchange reserves holdings as an explanatory variable. The exclusion of FDI is informed by the lack of data and the low level of its net global inflow into these countries while that of exchange rate volatility is guided by the fact that these countries possesses non-traded currencies, but participate in trade via third-parties convertible currencies. The inclusion of the foreign reserves variable is consistent with the literatures which identifies it as one of the important determinant of trade globally. The global export supply functions to be estimated can be rendered as follows:

$$XT_t^N = \oint \left(Y_t^D, Y_t^F, P_t^D, P_t^F, ER_t, FR_t^N \right) \quad \cdots \quad \cdots \quad \cdots \quad (3)$$

Whereby XT_t^N denotes nominal exports, Y_t^D and Y_t^F denotes the domestic and foreign nominal income, P_t^D and P_t^F were defined as import and export prices in the domestic economy, the nominal exchange rate (ER_t) for nominal exports FR_t^N denotes nominal value of foreign exchange reserve holdings of each of the WAMZ countries.

Given that WAMZ is made up of 5 countries, the logical method to be adopted for estimation of equations (3) would be pooled or panel data regressions. Therefore, a total of six (6) equations would be estimated and analyzed based on this equation. The first equation is the WAMZ-wide export supply functions while the remaining five (5) relates to cross-section of the panel. The data series for this study span the period 1985Q1 to 2007Q4 and are mainly in nominal terms. The major source of data for this analysis is IMF International Financial Statistics (2008), Direction of Trade Statistics (2008), World Trade Organization (WTO) and Economic Community of West African States (ECOWAS) websites.

4. Empirical Results

The pooled regression result of the total export supply functions for the WAMZ participating countries is as shown in Table 1. Although the model specification reflected the influence of market fundamentals by including income and prices, the variable of interest is the exchange rate and foreign reserve holdings. The question which we seek to answer is to what extent do exchange rate policy matter to the export trade of participating countries in WAMZ, in spite of the fact that they are price takers in the world market?

A preliminary interpretation of the regression result displayed in Table 1 shows that on the aggregate, the regional export supply of these countries to the rest of the world is influenced positively by all the explanatory variables of the equation, except the foreign country GDP. This is consistent with theoretical expectation. The negative sign of the parameter estimate of the foreign country GDP (reflected in our model by that of the United State of America, a major trading partner of these countries) suggests that an inverse relationship exists between WAMZ exports and US economic performance. One may therefore be tempted to conclude (perhaps erroneously) that WAMZ production (which ironically is dominated by primary sectors – mainly agriculture and mining) competes with the US production (which is dominated by secondary and tertiary economic activities). However, the regression results of The Gambia, Ghana and Guinea total exports shown in Tables 2 and 3 reveals that the signs of the parameter estimates of the US output with respect to these countries global exports supply is consistent with this WAMZ export function, suggesting a substitution effects (especially so with the advents of synthetics and alternatives to primary raw

Table 1: Pooled Regression Results for WAMZ Export Supply Functions			
Dependent Variable: LOG(XT?)			
Method: Pooled EGLS (Cross-section SUR)			
Sample: 1985Q1 2007Q4			
Included observations: 92			
Cross-sections included: 5			
Total pool (balanced) observations: 460			
Linear estimation after one-step weighting matrix			
Variable	Coeff.	t-Stat.	Prob.
C	0.56	0.4	0.67
$LOG(Y^D)$	1.47	8.3	0.00
$LOG(Y^F)$	-2.71	-6.0	0.00
$LOG(P^D)$	0.85	4.6	0.00
$LOG(P^F)$	0.86	5.8	0.00
$LOG(FR^N)$	0.11	3.8	0.00
LOG(ER)	0.22	5.9	0.00
Fixed Effects (Cross)			
_GAM--C	-1.888		
_GHA--C	0.353		
_GUI--C	0.117		
_NIG--C	3.698		
_SLN--C	-2.279		
Weighted Statistics			
R-squared	0.958		
Adjusted R-squared	0.957		
S.E. of regression	0.955		
F-statistic	1019.5		
Prob(F-statistic)	0		
Mean dependent var			10.87
S.D. dependent var			14.83
Sum squared resid			409.42
Durbin-Watson stat			0.59

materials as major input to US industrial production system), that of Nigeria and Sierra Leone (see Table 4) suggest a complementary relationship between her exports and US economic growth. This findings could be correct also since the major exports of Nigeria to the US is mainly crude petroleum, and *a priori* expectation is that rapid growth or booms in the US economy leads to increased derived demand for crude oil to power her industries, as well as augment her domestic consumption of energy.

Interestingly, the sign and magnitude of the coefficient of the parameter estimate of exchange rate variable's effect on WAMZ export is positive and significant but inelastic suggesting that it is limitedly responsive to exchange rates devaluation. This is partially correct with respect to nominal exports and the reverse may be the situation if we consider the analysis in terms of real exports. This is because of the fact that as a group of primary commodities exporters and price takers in the world market, the short to medium term impact of devaluation is felt mainly through the realized income of the export sectors of the national economy. *A priori* information on the export sector performance of these economies showed that they suffered stagnation and attrition due to intense structural rigidities and internal economic distortions which limited their capacity to respond to price incentives. The expenditure switching effects (that normally accompanies devaluation with respect to export supply under a competitive market conditions) is therefore non-existent or absent in these economies. Rather than elicit the desired supply response, it translated into increased cost of production arising from import of needed capital goods and raw materials. This, in turn, necessitated the adoption of stringent demand management policies that, in effect, counteracted the little gains arising there from.

This problem was accentuated during the pre- structural adjustment programme (SAP) eras when in addition to over valued exchange rates, domestic prices of exports were implicitly taxed as major source of government revenue and in post SAP through export and excise duties. It was also quite common that these countries individually adopted and intervened with free trade through the implementation of several non-tariff barriers as major instruments of trade policy. This tended to limit further the gains realized from foreign exchange earnings that accrued from export trade. Among them are exports licensing procedures, export bans, foreign exchange controls, regulated foreign exchange markets, rules with regard to foreign exchange realization and operations of domiciliary accounts and a host of others. In the light of these constraints, the net effect of the pursuit of trade and exchange rate policies for the WAMZ countries is felt solely within the domestic economy through realized domestic value of exports in the short to medium term

as well as the administrative prices paid to the exports (depending on the individual countries export tax structure and non-tariff barriers) as well as marketing arrangements.

Ironically, the magnitude of the gains from exchange rates devaluation depended to a large extent on the foreign resource content of the exports. For primary agricultural exports emanating from existing plantations, especially in the case of cocoa, coffee and palm kernel that have high domestic resource content, devaluation enhanced their nominal export values. However, for grains and livestock production, which requires imported raw materials and feeds, devaluation helps to increase production costs and make the enterprise less competitive. It is quite apparent that devaluation helps to accentuate the implicit bias in protection against these sectors with low export potential but requiring very high foreign resource content for sustainability. This problem is more apparent for protected import substitution industries in these countries that were largely the appendage of multi-national corporations. Devaluation translated into increased cost of production, and the national appendages became quite uneconomical to operate. Most of them closed shops, and the anticipated gains from technological transfer foreclosed, primarily because of increased costs of production which followed devaluation.

A worrisome development which accompanied exchange rates policies of these countries was the adverse consequence of meeting the foreign exchange commitments which accompanied foreign direct investments and external borrowing for the support of these industries. A good example is the case of multilateral borrowings and outstanding trade arrears that were financially profitable and economically viable at the ruling exchange rates at the time of contractual arrangement but became bad investments with devaluation. Evidence abounds in these countries which showed that many of the beneficiaries of such foreign export credit and guarantees not only became bankrupt following devaluation, but also their intermediating specialized financial institutions which packaged the loans on their behalf. Indeed, the exchange rates variation risks became so enormous to the extent that debt burdens which were mere amounts in national currencies became unserviceable huge and bad debts.

The pooled equation coefficient estimate of the foreign reserve holding variable is significant but relatively inelastic; suggesting that the maintenance of adequate pooled reserves by WAMZ countries can potentially have positive effects on the regional export supply to the rest of the world. This result is interesting, as the performance of this variable in country specific export supply functions show the contrary, i.e. foreign reserves

holdings variable exhibited significant negative relationship to export supply by all participating countries in WAMZ.

On the aggregate therefore, it does appear that erstwhile exchange rate policies, especially the high degree of devaluations which accompanied the implementation of SAPs by these countries did more harm to their export sector. Given the structure of their economies, they would have been better off to fix their exchange rates to that of their major trading partner while exploiting other demand management strategies to contend with the adverse balance of payments situation which they faced. However, there are a number of significant differences when we examine the subject from the perspective of each participating country in the WAMZ.

The Gambia and Nigeria: Exchange Rate and Total Export Supply Function

For ease of discussion, the regression results of The Gambia and Nigeria is presented in Table 2. The discussion of the two countries export functions together is informed by the contrast in the sign of the parameter estimates of the coefficient of the exchange rate (the main variable of interest in this study). Whereas the exchange rate variable exacted significant, positive and very elastic relationship and effects on the Gambian global export supply, its impact is significant, negative and relatively inelastic in the case of Nigeria. However, the parameter estimates of foreign reserves, import and export prices variables exhibited similar properties in the two countries. It is also worthy to note that there are significant differences between the two countries export supply functions given the differences in the signs of the coefficient of the parameter estimates of each country's domestic and international output variables. Whereas the international output variable bear negative signs indicating that there is an inverse relationship between Gambian exports and international economic growth (indicative of unhealthy competition), they bear a positive sign in the case of Nigeria, suggesting that domestic and international economic booms augur well for her exports sector (very healthy competition and complementary relationship). Another major difference is that whereas The Gambian exports function exhibited highly responsive elastic relationship to export and import price variables that of Nigeria was relatively inelastic. This could also be a reflection of the major differences in the structure of export baskets of the two countries: while Nigeria is a major crude oil exporter, the Gambia depended solely on agricultural and minerals exports. As a crude oil exporter, Nigeria is able to protect her exports from the vagaries of international market through her membership of OPEC, an export cartel that has been

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Table 2:Regression Results for The Gambia and Nigeria Export Supply Functions						
Dependent Variable: LOG(XT)						
Method: Pooled Least Squares						
Sample: 1985Q1 2007Q4						
Included observations: 91						
Cross-sections included: 5						
Total pool (balanced) observations: 460						
Linear estimation after one-step weighting matrix						
Country	Nigeria			Gambia		
Variable	Coeff.	t-Stat.	Prob.	Coeff.	t-Stat.	Prob.
C	-5.84	-5.8	0.00	11.9	4.5	0.0
$LOG(Y^D)$	0.32	1.0	0.30	0.6	0.6	0.6
$LOG(Y^F)$	3.08	6.9	0.00	-11.2	-12.5	0.0
$LOG(P^D)$	-0.87	-4.3	0.00	-9.0	-10.5	0.0
$LOG(P^F)$	0.81	9.6	0.00	16.6	11.8	0.0
$LOG(FR^N)$	-0.05	-2.1	0.04	-0.2	-3.1	0.0
LOG(ER)	-0.13	-3.7	0.00	1.6	7.6	0.0
Weighted Statistics						
R-squared		0.87			0.60	
Adjusted R-squared		0.87			0.59	
S.E. of regression		0.24			0.57	
Sum squared resid		24.80			145.3	
Log likelihood		16.29			-387.6	
F-statistic		309.19			67.72	
Prob(F-statistic)		0.00			0.00	
Mean dependent var		8.24			2.34	
S.D. dependent var		0.66			0.89	
Akaike info criterion		-0.02			1.73	
Schwarz criterion		0.08			1.83	
Hannan-Quinn criter.		0.02			1.77	
Durbin-Watson stat		0.64			1.06	

instrumental at sustaining crude oil prices at very high levels. Nigeria's terms of trade have therefore been favorable. This is contrary to the Gambian case in which there has been persistent deterioration in her terms of trade in the face of stiff competitions which their exports face in the world commodity markets.

Ghana and Guinea: Exchange Rate and Total Export Supply Function

The regression results for Ghana and Guinea is being discussed together because of the similarities of the econometric properties of the variables of interest in the estimated equations. The foreign reserves and exchange rate variables coefficient estimates are significant, exhibited similar signs and relatively inelastic in both equations (see Table 3). The Ghana's export supply equation suggests that all the included variables in the model are significant determinants. However, the Guinean export functions exhibited poor response to foreign prices as the parameter estimate is not significant. The adjusted R-Square statistics for both equations also indicated a high and close goodness of fit. It can

therefore be inferred from the two equations that exchange rate adjustments especially the type undertaken since the adoption of the structural adjustment programme by the two countries, did little to elicit the desired export supply-following response. Also, the foreign

Table 3: Regression Results for						
The Ghana and Guinea Export Supply Functions						
Dependent Variable: LOG(XT)						
Method: Pooled Least Squares						
Sample: 1985Q1 2007Q4						
Included observations: 92						
Cross-sections included: 5						
Total pool (balanced) observations: 460						
Linear estimation after one-step weighting matrix						
Country		Ghana			Guinea	
Variable	Coeff.	t-Stat.	Prob.	Coeff.	t-Stat.	Prob.
C	-0.96	-0.72	0.47	-10.8	-16.1	0.00
$LOG(Y^D)$	1.25	2.85	0.00	-0.82	-6.35	0.00
$LOG(Y^F)$	-1.13	-1.80	0.07	2.34	8.56	0.00
$LOG(P^D)$	2.31	7.95	0.00	1.78	9.10	0.00
$LOG(P^F)$	-1.32	-3.93	0.00	0.17	0.63	0.53
$LOG(FR^N)$	-0.06	-2.03	0.04	-0.05	-2.05	0.04
LOG(ER)	0.24	5.44	0.00	0.05	3.15	0.00
Weighted Statistics						
R-squared		0.81			0.83	
Adjusted R-squared		0.81			0.82	
S.E. of regression		0.19			0.15	
Sum squared resid		16.5			9.83	
Log likelihood		104.9			226.9	
F-statistic		189.4			209.3	
Prob(F-statistic)		0.00			0	
Mean dependent var		5.87			5.1	
S.D. dependent var		0.44			0.35	
Akaike info criterion		-0.42			-0.95	
Schwarz criterion		-0.32			-0.85	
Hannan-Quinn criter.		-0.38			-0.91	
Durbin-Watson stat		1.13			1.05	

reserve holdings of both countries have had negative effects on export performance in these countries. It therefore follows that policy reforms that would deny these countries the use of exchange rate as instrument of adjustment would augur well for the countries, since their export supply was relatively indifferent to them *ex ante*, while the aggregate WAMZ equations tends to suggest that they can potentially gain from common reserves policies.

Sierra Leone: Exchange Rate and Total Export Supply Function

The regression result of Sierra Leone's export supply function is singled out for discussion because of the fact that the signs of the parameter estimate of the price and exchange rate explanatory variables defied *a priori* expectations. From the regression results presented

in Table 4, we note that contrary to expectation, the sign of the coefficient of export prices is negative, thereby suggesting an inverse relationship that higher export prices acted as disincentives to exports. The only reasons why higher prices could discourage exports is under an anomalous situations such as adverse economic shocks, to the extent that the structure of export basket becomes biased in favour of 'inferior goods' and prevalence of high level of unrecorded trade and parallel market activities. This is most likely to be the situation in Sierra Leone during the period covered by this study as she was engaged in civil war which disrupted her economic activities. Little wonder also, that contrary to theoretical expectation of an inverse relationship between import prices and exports, the sign of the coefficient estimate of import prices is positive, suggesting that the higher import prices augur well for exports.

Another interesting contradiction in the Sierra Leone's export supply function is the sign and magnitude of the parameter estimate of the exchange rate variable coefficient. It is negative and significant suggesting that currency appreciation stimulates exports. Again, this result seem to be consistent as it corroborates our earlier argument proffered in the case of similar contradictory response of Sierra Leone's exports to export and import prices. The inference that can be drawn from this analysis so far is that exchange rate policy had adverse effects on export performance of Sierra Leone during the period covered by this study. It also appears that exchange rates were sources of major economic distortions since in general the fiscal and monetary authorities lost control over the macroeconomic management due to internecine war and crisis that ravaged it.

Table 4: Regression Results for Sierra Leone Export Supply Functions			
Dependent Variable: LOG(XT) Method: Pooled Least Squares Sample: 1985Q1 2007Q4 Included observations: 92 Cross-sections included: 5 Total pool (balanced) observations: 460 Linear estimation after one-step weighting matrix			
Country	Sierra Leone		
Variable	Coeff.	t-Stat.	Prob.
C	-18.9	-6.7	0.00
$LOG(Y^D)$	4.2	21.1	0.00
$LOG(Y^F)$	-1.1	-2.5	0.01
$LOG(P^D)$	7.5	8.8	0.00
$LOG(P^F)$	-9.3	-7.5	0.00
$LOG(FR^N)$	0.1	1.5	0.15
LOG(ER)	-0.2	-3.7	0.00
Weighted Statistics			
R-squared		0.7	
Adjusted R-squared		0.7	
S.E. of regression		0.6	
Sum squared resid		165.5	
Log likelihood		-415.6	
F-statistic		86.1	
Prob(F-statistic)		0.0	
Mean dependent var		3.1	
S.D. dependent var		1.0	
Akaike info criterion		1.9	
Schwarz criterion		2.0	
Hannan-Quinn criter.		1.9	
Durbin-Watson stat		0.8	

5. Summary of Findings, Policy Implications and Concluding Remarks

The key findings of this study is that aggregate total export supply of WAMZ countries is influenced positively by domestic output and export prices, in line with theoretical expectation. However, foreign country GDP (reflected in this study by that of the United State of America, a major trading partner of these countries) is negative thereby implying an unhealthy competition or substitutions effects. This result is adjudged to be consistent with expectation for Gambia, Ghana and Guinea total exports functions. However, the positive relation of US GDP with Nigeria's exports is also adjudged to be consistent with expectation since her export to the US is mainly crude oil. *A priori* expectation is that rapid US economic growth or booms leads to increase derived demand for energy to power her industries, as well as augment her domestic consumption (healthy competitions). However, exchange rates were relatively ineffective as instruments of export stimulations. This could be deduced by the level of significance and inelastic response of this variable in the individual and pooled export trade equation model, suggesting that these countries may gain more if they enter into a fixed exchange rate arrangements with each other.

In conclusion, it can be inferred that independence over the use of exchange rates policies as instruments of export stimulation have very limited usefulness. This is to be expected, since all the countries involved in the WAMZ project are individually a small country in international economics sense possessing non-convertible currencies. It therefore means that if they must trade with each other, they require a third-party convertible currency. This entails both transactions and other microeconomic costs, which if eliminated could improve its export performance. This can be found in entering into a currency union, with subscription to irrevocable exchange rates among members, while taking a common stand against third parties with regard to external transactions.

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