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Analysis of External Debt Dynamics in ECOWAS Economies

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Abstract

This paper recognised the importance of identifying the core determinants of external debt dynamics in ECOWAS economies. Using a panel dynamic generalised least squares procedure, the study sought to identify the core determinants of external debt dynamics in 12 ECOWAS economies from 1970 to 2009. Overall, the findings revealed six core determinants of external debt in ECOWAS economies. Inflation, external reserves, per capita income and real oil prices were inversely related with external debt ratio; while, GDP gap and real effective exchange rate depreciation directly affected external debt. Significant dissimilarities were observed in the influence of government size and inflation within the WAEMU and the WAMZ subsamples, implying that a synchronisation of debt and fiscal policies for the two regions might yield different outcomes. Further, the results suggested that there was a wide deviation in the initial conditions in Guinea-Bissau and Burkina Faso from the other economies in the region.

Keywords: External debt, ECOWAS, panel data analysis

JEL Classification: H63, FO2, F21, C33

I. Introduction

Since the beginning of the global debt crisis in the early 1980s, African countries especially those in West Africa have had a chequered history of unsustainable debt patterns (see Figure 1). This trend has led to serious concerns about fiscal sustainability and their broader economic and political impacts. However, the contemporary issue now relates to the extent to which external debt dynamics are likely to have an adverse effect on the transition to and sustenance of the proposed monetary and currency union in the West African region. This concern is particularly justifiable when considering the evolving sovereign debt crisis facing the Euro zone, especially because the proposed unified monetary and currency union in West Africa is to a great extent modelled after the pattern of the European Monetary Union (EMU). The Economic Community of West African States (ECOWAS) is in the process of a transition towards a monetary union, and has proposed to launch a common currency for the union, with the proposed inception date being 2020. ECOWAS is a

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regional group of 15 West African countries[1] which already includes a monetary union of the former French colonies known as West African Economic and Monetary Union (WAEMU)[2]. In April 2000, ECOWAS adopted a strategy of a two-track approach to the adoption of a common currency in the whole region. As a first track, the non-WAEMU members of ECOWAS were to form a second monetary union known as the West African Monetary Zone (WAMZ)[3]. The second track of the strategy is to merge WAEMU and WAMZ regions into a single monetary union with a single currency.

The feasibility of a wider monetary unification in ECOWAS poses several economic and institutional challenges, some of which have been identified and discussed in detail by Tsangarides and Qureshi (2008) and Masson and Pattillo (2005). However, there is yet the external debt component which has not been systematically examined to identify appropriate policy reactions and prerequisites needed for a smooth and sustainable transition to a monetary union in the region. This paper is in response to this vacuum. Hence, it seeks to empirically identify the core set of country characteristics that determine the behaviour of external debt for the ECOWAS economies. In doing so, a model of debt accumulation is developed and estimated using a panel dynamic generalised least squares (DGLS) approach for 12 ECOWAS economies between 1970 and 2009. The paper also seeks to uncover any similarities or dissimilarities in the nature of the relationship between external debt and country economic characteristics in the WAEMU and the WAMZ zones.

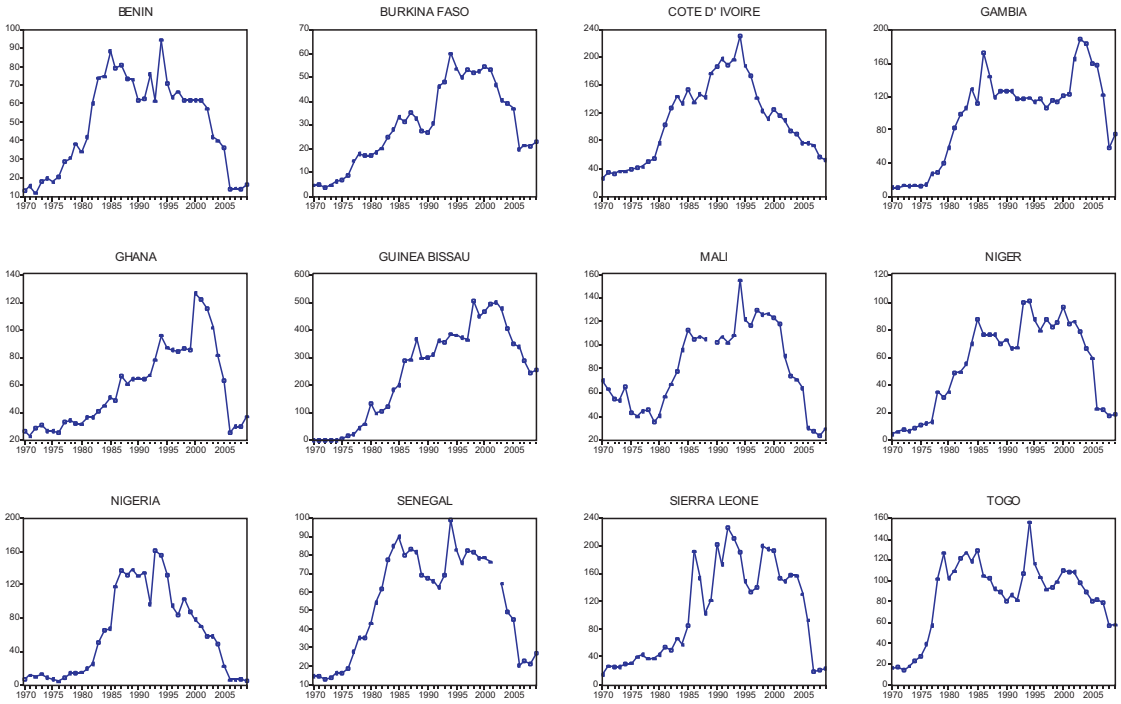
The balance of the paper is structured as follows. Section II provided an overview of the behaviour of external debt of the ECOWAS countries, as well as the factors accounting for this behaviour. Section III reviewed the theoretical and empirical literature. In Section IV, the methodology was described, with the debt accumulation model, data, and *apriori* expectations clearly explained. Section V presented the empirical analysis and discussion of results while Section VI contained the policy implications and conclusion.

II. The Behaviour of External Debt in ECOWAS Economies

The external debt ratio of most ECOWAS economies has been significantly volatile in the last four decades. In the 1970s, all the economies had relatively low external debt ratios, most of them maintaining levels below 10 per cent of GDP. The trend, however, escalated in the 1980s and 90s with most of the economies attaining external debt ratios of over 100 per cent of GDP (see Figure 1). One of the reasons identified for this unsustainable patterns of growth, was the unfavourable terms of trade conditions for mostly primary export commodities of these countries.

1. *The list includes: Benin, Burkina Faso, Cape Verde, Cote d'Ivoire, The Gambia, Ghana, Guinea, Guinea-Bissau, Liberia, Mali, Niger, Nigeria, Senegal, Sierra Leone and Togo.*
2. *Members of WAEMU include Benin, Burkina Faso, Cote d'ivoire, Guinea-Bissau, Mali, Niger, Senegal and Togo.*
3. *WAMZ countries include The Gambia, Guinea, Ghana, Nigeria and Sierra Leone.*

Figure 1: External debt/GDP ratio in ECOWAS economies



In the case of Nigeria, Ajayi (1991, 2000) found that the oil glut in the international market and the fall of Nigeria's exports by about 13.0 per cent and increase in import by about 64.0 per cent were responsible. Additionally, spending on 'white elephant' developmental projects was a significant contributor to external debt build-up during the 1980s and 90s. Particularly, these economies engaged in inefficient and suboptimal spending on telecommunications, transport and power infrastructure.

However, in the early years of the millennium, we observed sharp reductions in the external debt ratio for all the economies. This reversal in the trend was mostly due to the joint IMF-World Bank debt relief campaign under the Heavily Indebted Poor Countries (HIPC) initiative launched in 1996 and reinforced in 1999. Almost all the economies in the region have benefited and are still benefiting from this initiative. Recently (in 2010), Guinea-Bissau and Togo got 1.2 and 1.8 billion US dollars debt relieve through this window (IMF, 2011). In addition to this, some of these countries have complemented their efforts to obtain debt relief by entering into bi-lateral negotiations with the Paris Club and other creditors to write-off their debt. One outstanding success story was the

60.0 per cent debt relief obtained by Nigeria from the Paris Club valued at over 20.0 billion US dollars during the same period.

Incidentally, the observations for the most recent two years in our sample (i.e. 2008 and 2009) seemed to suggest that the external debt pattern of these economies had resumed upward direction. This might be as a result of the difficulties that had been faced by most economies due to the global financial crises that started in 2007. However, fiscal restrains might be necessary to ensure that the ratios do not rise to unsustainable patterns again, thereby undermining the processes of the transition and sustenance of a monetary union.

III. Literature Review

External debt dynamics has important ramifications over an economy both in the short- and long run. The conventional argument is that external debt (reflecting deficit financing) can simulate aggregate demand and output in the short-run (assuming no non-Keynesian effects), but crowds out capital and reduces output in the long-run (Kumar and Woo, 2010; Elmendorf and Mankiw, 1999). The question, however, was to identify the factors that led to the build-up of external debt stocks. The most emphasised determinant of external debt dynamics in the literature was income. Solomon et al., (1977) argued that a decrease in output was detrimental to debt servicing and led to a widening gap between savings and investments. Similarly, Craigwell et al., (1988) suggested that authorities might resort to borrowing when real gross domestic product (GDP) unexpectedly falls below its full employment level.

One of the first empirical studies to examine the determinants of external debt was Barro (1979), who reported that losses in output and large government expenditure were significant factors in the growth of the US external public debt since the World War I. In a related study, Greenidge et al., (2010) used a panel dynamic OLS procedure to examine the determinants of external debt in 12 Caribbean Community (CARICOM) economies. The paper found that output gap, real cost of foreign borrowing, real effective exchange rate and exports were inversely related to the level of indebtedness, while the current deviation of government expenditure from its trend was positively associated. Within a panel estimation framework, Forslund et al., (2011) investigated the determinants of the composition of public debt in developing and emerging market economies. After controlling for a large set of country characteristics, they found among other factors that inflation, GDP, level of financial development, current account ratio, exchange rate misalignment and trade

openness had significant influences on domestic debt composition, although some differences were noticed among their sub samples.

For Pacific Island Countries (PIC), Jayaraman and Lau (2009) tried to answer the question; does external debt lead to economic growth in Pacific Island Countries? Their empirical findings indicated that there was a short-run causal linkage running from external debt, budget deficit and exports to output. Therefore, they concluded that external borrowing contributed to growth in the short-run. Consequently, higher growth resulted in further rise in external debt levels. For the Latin American economies, Pastor (1988) conducted a survey and regression based analysis of the internal and external causes of debt accumulation in that region and found that poor fiscal and exchange rate policies as well as external factors, such as reduction in the growth rate of the U.S economy, adverse terms of trade, high interest rates and oil price hikes are the main determinants.

In the sub-Saharan Africa, Ajayi and Khan (2000) argued that the build-up of external debt in the region had been mainly due to excessive government size and expenditure. Other regional and country specific studies for Africa, like Iyoha (2000), Ajayi (1991, 1995, and 2000) and Barungi and Atingi (2000), all identified factors like worsening terms of trade, access or lack of access to petrodollars, high interest rates, variability in export revenue and the real effective exchange rate as the chief variables impacting on the regions high foreign indebtedness. Political factors had also been identified as major determinants of external debt dynamics. Craigwell et al., (1988) observed that government in some countries engaged in excessive spending prior to an election to gain the favour of the electorate. Also, misalignments in government incentives might exacerbate external debt levels. Along these lines, Alesina and Tabellini (1988) argued that a government in power knew that when its term was over, a new government would be responsible for the debt previously incurred. Hence, it did not fully internalise the cost of borrowing and would as a result tend to over borrow (Greenidge et al. 2010).

IV. Methodology

IV.1 Model and Estimation Procedure

To identify the factors that determine external debt dynamics in the ECOWAS economies, dynamic generalised least squares (DGLS) approach was used to examine the impact of external debt on a set of country characteristics within a panel data framework. The external debt function is presented:

$$ED_{it} = \alpha_{it} + x'_{it}\beta_i + \varepsilon_{it} \quad (1)$$

and x'_{it} is a vector of country specific characteristics denoted as: $[INF_{it}, GSZ_{it}, CAR_{it}, EXCH_{it}, EXRE_{it}, OGAP_{it}, GDPPC_{it}, MS_{it}, OPN_{it}, FDIN_{it},, INT_{it}, ROP_{it}]$ with the *i* subscripts representing the *i*th country and *t* the time period for the respective variables. β_i represented the regression coefficients and the *i* subscript implied that the coefficients were the same for all the economies. ε_{it} was the error term, and it was assumed to be independently and identically distributed with zero mean and constant variance. The vector of variables x'_{it} contained a set of country characteristics which were assumed ex-ante to be determinants of external debt dynamics in the ECOWAS economies.

The set of country characteristics in x'_{it} were classified into four categories to determine external debt dynamics in the ECOWAS economies. These were: macroeconomic variables; country size and level of development variables; openness variables and external shock variables. The first category included inflation (*INF*), government size (*GSZ*), current account ratio (*CAR*), real effective exchange rate (*EXCH*) and external reserves (*EXRE*). The second category was real GDP gap (*OGAP*), GDP per capita (*GDPPC*) and level of financial development (*M2/GDP*). Variables that measured the openness of the economies included trade to GDP ratio (OPN) and foreign direct investment inflows (*FDIN*). Finally, measures of external shocks were real global interest rate (*INT*) and oil prices (*ROP*).

Equation 1 was estimated using both the random and fixed effects model as well as the Hausman test to judge the reliability of the estimate. The differences across the groups of countries were tested by splitting the sample into WAEMU and WAMZ regions. The estimation proceeded in three steps. First, a battery of panel unit root tests was applied to the data in other to determine their levels of integration. The unit root tests undertaken in the paper was for confirmatory evidence. Some of the tests undertaken included that by Levin et al., (2002) and Breitung (2002) which had a common unit root process as null hypothesis. Other unit root tests employed included the Im et al., (2003) test, ADF Fisher Chi-square test (Dickey and Fuller, 1979) and Phillips-Perron (PP) Fisher Chi-square (Phillips and Perron, 1988).

Second, tests for the existence of cointegration in equation 1 were conducted. Two statistics for the existence of cointegrating relationships among the variables were employed. One was Pedroni (2004), who developed several within dimension and between dimension tests which had no cointegration as their null hypothesis and the other is that by Kao and Chiang (2000).

Third, the Dynamic Generalised Least Squares (DGLS) method proposed by Kao and Chiang (2000) was utilised, primarily because this methodology allowed for the derivation of estimates among variables of different orders of integration. This method involved augmenting equation 1 with lags of the first difference of the variables, which were *I*(1) stationary. This augmentation corrected for endogeneity and possible autocorrelation. The paper also used the lags of all other variables to ensure that the explanatory variables were predetermined. The augmentation was:

$$ED_{it} = \alpha_{it} + x'_{it}\beta_i + \sum_{j=1}^{K} \lambda_j \Delta x_{it-j}^{I(1)} + \xi_{it} \qquad (2)$$

Where $x^{I(1)}$ denoted the subset of *I*(1) variables in the set $[x']$of country characteristics. *K* was the order of the lag length, λ_i was the vector of long-run coefficients, while the introduction of $\Delta x_{it-j}^{I(1)}$ accounted for possible endogeneity of the explanatory variables (Forslund et al., 2001; Greenidge et al., 2010; Muhanji and Ojah, 2011).

IV.2 Data and Theoretical Expectations

The data sources, description and construction for all the variables as well as their theoretical expectations are explained as follows. The following components (public, publicly guaranteed, private nonguaranteed long-term debt, use of IMF credit, and short-term debt) as a ratio of GDP were used to measure of external debt. The series were retrieved from the World Development Indicators (WDI) database. Within the sub-set of country characteristics representing macroeconomic variables, inflation (*INF*) was a main measure of macroeconomic instability and it was retrieved from the IMF International Financial Statistics (IFS-CD ROM, 2010). A positive relationship between inflation and external debt ratio was expected. The reason was because a government with a history of high inflation might need to obtain more foreign currency debt in order to credibly signal its commitment to pursuing a strong and stable monetary policy (Calvo, 1988). There were also exceptional mechanism like the valuation effect (Forslund et al. 2011) which might lead to a negative correlation between inflation and external debt.

Government size (*GSZ*) proxied by a ratio of government expenditure to GDP was used to measure the level of government involvement in the economy. It was expected to be positive since increase in government total expenditure was usually financed with external debt. The current account balance as a ratio of GDP (*CAR*) was expected to have a negative coefficient, simply because countries running current account surpluses need not borrow from abroad. Whereas countries with

deficits need to borrow in other to balance off. Real effective exchange rates (*EXCH*) were obtained from IMF-IFS and its theoretical relationship with external debt was ambiguous. A real depreciation of the domestic currency would lead to the reduction of the stock of external debt provided there was a subsequent increase in export earnings substantial enough to enable the government to service its external debts (Greenidge et al. 2010). Otherwise, the increase in *EXCH* would result in a rise in external indebtedness. External reserves (*EXRE*) were expected to have a negative relationship with external debt ratio because countries with higher reserves are more likely to deplete their reserves before opting for debt.

Variables measuring country size and level of development were obtained from WDI. Real GDP gap (*OGAP*) measured as the deviation in the trend of real GDP was modeled using the Hodrick and Prescott (1997) filter. The coefficient of this variable was expected to be positively signed as countries were likely to resort to borrowing when output was low or below expected levels. A similar argument for the relationship held for per capita GDP (*GDPPC*) and size of the financial system (*M2/GDP*). There were no clear expectations about the relationship between external debt ratio and the two measures of openness (trade and financial). With respect to trade openness (*OPN*), more open economies might suffer less from balance sheet effects associated with external borrowing (Calvo, 2003) and a negative relationship between trade openness and external debt ratio was expected. Financial openness measured by FDI inflows as a ratio of GDP (*FDIN*), had the tendency to foster demand for external borrowing, thereby promoting a positive relationship between financial openness and external borrowing (Reinhert et al., 2011).

The effects of external shocks on external debt were uncertain and depended on the structure of the economy in question. For an oil-exporting economy like Nigeria, an external shock in terms of increases in global oil prices was likely to affect the external debt ratio inversely, while the same relationship might not be expected in non-oil exporting economies in the ECOWAS. The impact of the real cost of foreign borrowing (*INT*) measured by the long-term interest rate of US bonds was uncertain. A rise in the interest rate could slow down the accumulation of external debt by discouraging borrowing, or it could increase the stock of debts when loans were contracted at variable rates (Greenidge et al., 2010). This variable was retrieved from the Statistical Bulletin of the National Bureau of Economic Research (NBER).

V. Results and discussion

V.1 Panel unit root, cointegration and effect specification tests

In Table 1, the results for six types of panel unit root test conducted were presented. The

Table 1: Panel Unit Root Test Results

Variable	LLC	Breitung	IPS	ADFFC	PPFC	Hadri
ED	-0.87 (0.19)	3.49 (0.99)	0.13 (0.55)	16.88 (0.85)	16.7 (0.86)	8.02 (0.00)***
∆ED	-7.01 (0.00)***	-8.65 (0.00)***	-8.20(0.00)***	113.8(0.00)***	248.9(0.00)***	4.08(0.00)***
INF	0.44(0.67)	-3.21(0.00)***	-4.33(0.00)***	73.89(0.00)***	134.43(0.00)***	6.01(0.00)***
GSZ	-2.91(0.00)***	-2.91(0.00)***	-3.44(0.00)***	52.81(0.00)***	74.88(0.00)***	5.83(0.00)***
CAR	-2.14(0.01)**	-5.05(0.00)***	-3.22(0.00)***	61.65(0.00)***	87.89(0.00)***	7.67(0.00)***
EXCH	2.09(0.98)	0.21(0.58)	3.61(0.99)	8.08(0.99)	9.61(0.99)	11.55(0.00)***
?EXCH	-7.08(0.00)***	-10.08(0.00)***	-9.22(0.00)***	129.49(0.00)***	248.8(0.00)***	9.65(0.00)***
EXRE	1.39(0.91)	2.11(0.98)	2.21(0.98)	26.21(0.34)	21.52(0.61)	2.58(0.00)***
?EXRE	-5.77(0.00)***	-5.83(0.00)***	-8.92(0.00)***	130.9(0.00)***	237.6(0.00)***	2.07(0.01)**
LOGAP	3.02(0.99)	-1.61(0.05)*	6.29(1.00)	5.22(1.00)	6.93(0.99)	13.31(0.00)***
?*LOGAP*	-6.99(0.00)***	-8.87(0.00)***	-11.19(0.00)***	165.1(0.00)***	273.5(0.00)***	1.22(0.11)
*L*GDPPC	0.62(0.73)	1.04(0.85)	1.44(0.92)	25.24(0.39)	31.86(0.13)	8.19(0.00)***
?*L*GDPPC	-6.96(0.00)***	-3.42(0.00)	-10.01(0.00)***	140.2(0.00)***	200.35(0.00)***	3.44(0.00)***
M2GDP	1.16(0.87)	-4.38(0.00)***	0.81(0.79)	20.32(0.67)	18.30(0.78)	6.27(0.00)***
?M2GDP	-8.27(0.00)***	10.64(0.00)***	-9.77(0.00)***	141.4(0.00)***	190.83(0.00)***	0.03(0.48)
OPN	-2.10(0.01)**	-0.77(0.21)	-2.42(0.00)***	40.07(0.02)**	48.01(0.00)***	7.19(0.00)***
FDIN	0.57(0.71)	-3.98(0.00)***	-1.46(0.07)*	47.12(0.00)***	92.74(0.00)***	5.34(0.00)***
INT	-1.97(0.02)**	-1.79(0.03)**	-3.00(0.00)***	47.10(0.00)***	72.53(0.00)***	5.52(0.00)***
*L*ROP	-1.97(0.02)**	0.7(0.75)	0.44(0.67)	26.05(0.35)	33.81(0.08)*	5.68(0.00)***
?*L*ROP	-6.77(0.00)***	5.5(0.00)***	-7.83(0.00)***	113.3(0.00)***	249.3(0.00)***	1.91(0.02)**

Keys: LLC- Levin, Lin and Chu test; Breitung t-stat; IPS- Im, Pesaran and Shin W-stat; ADFFC-Augmented Dickey Fuller Fisher Chi-square test; PPFC-Philips and Perron Fisher Chi-square test. *, ** and *** represents 10, 5 and 1% levels of significance.

overall analysis from the panel unit root test results indicated that 7 of the 13 variables were *I*(1) stationary, while the other 6 variables were stationary at levels. Since the variables had different orders of integration, the Pedroni (1999) statistics was used to determine the existence of unique cointegration relationship among the variables. The results for the cointegration test were reported in Table 2.

Two categories of tests for the existence of cointegrating relationships were conducted. The first had to do with within-dimension statistics and the second was between-dimension statistics. The two categories of test were conducted with different test specifications, including: with no intercept and no trend; with intercept and no trend; and with intercept and trend. Overall conclusion from the analysis presented in Table 2 below indicated that there was at least one cointegrating relationship.

Table 2 : Pedroni panel cointegration test results

	Within dimension (panel statistics)			Between dimension (group statistics)		
Specification	No intercept no trend	Intercept no trend	Intercept and trend	No intercept no trend	Intercept no trend	Intercept and trend
v	10.12(0.00)***	-2.56(0.01)**	-2.29(0.00)***			
rho	2.59(0.01)**	2.82(0.00)***	4.85(0.00)***	3.26(0.00)***	3.42(0.00)***	3.72(0.00)***
PP	-16.61(0.00)***	3.13(0.00)***	5.65(0.00)***	0.31(0.50)	-6.21(0.00)***	0.67(0.24)
ADF	- 7.84(0.00)***	-2.05(0.04)**	5.54(0.00)***	- 0.35(0.38)	-3.41(0.00)***	0.34(0.37)

Note: the test statistics are reported above along with their probability values. *, ** and *** represents 10%, 5% and 1% levels of significance, respectively.

Since the variables showed varying levels of integration, it would be appropriate to determine the long-run relationship by using the DGLS method proposed by Kao and Chiang (2000). However, it was important to determine the appropriate panel regression specification to use, whether it was the fixed effects model (FEM) or the random effect model (REM). The Hausman test was applied to determine which should be the appropriate model. The null hypothesis underlying the Hausman test was that the FEM and REM do not differ substantially (Gujarati and Porter, 2009). If the null hypothesis was rejected, the conclusion was that the REM was not appropriate because the random effects were probably correlated with one or more regressors. In this case, FEM would be preferred to REM.

The test reported an asymptotic Chi-square statistic (with eight degrees of freedom) of 23.33 with a 0.00 probability. Hence, the Hausman test clearly rejected the null hypothesis. As a result, the REM is rejected in favour of the FEM.

V.2 Discussion of Fixed effects

To ensure robustness and in order to obtain confirmatory evidence, the estimation of the FEM was carried out with two alternative specifications: cross section fixed effect specification only, and cross section and period dummy fixed effect specification. The estimation was done for all ECOWAS economies, and then with sub-samples of WAEMU and WAMZ economies. Table 3 contained the result of the estimation with the cross section fixed effect specification.

Focusing on the first category of country characteristics i.e., macroeconomic imbalances, it was discover that inflation had a negative coefficient in the total ECOWAS and WAEMU sub-samples, hence the hypothesis that governments with a history of high inflation might need to obtain more foreign currency debt to credibly signal its commitment to pursuing a strong and stable monetary policy might not be generally valid for the ECOWAS economies. This might be an indication of the existence and operation of the valuation effect in the region. The relationship for the WAMZ sub-sample was however different. This relationship contrasts with what had been discovered by Forslund et al., (2011) and Burger and Warnock (2006) in other developed and developing economies. One possible explanation could be because the WAEMU economies already had a union and a common monetary policy, hence there was cap on these economies potential to borrow uncontrollably given that they do not have monetary autonomy.

Table 3: Cross Section Fixed Effect Specification

	(1)	(2)	(3)	(4)	(5)	(6)
	All ECOWAS		WAEMU		WAMZ	
Variable	Coefficient	Std. Error	Coefficient	Std. Error	Coefficient	Std. Error
INF_{t-1}	-0.363*	0.201	-0.333*	0.189	0.221	0.189
GSZ_{t-1}	0.296	0.490	-0.710	0.448	2.694***	0.810
CAR_{t-1}	-0.001	0.483	0.538	0.433	-0.673	0.424
$?EXCH_{t-1}$	0.024***	0.009	0.013	0.010	0.004	0.010
$?EXRE_{t-1}$	-0.228***	0.029	-0.629***	0.112	-0.182***	0.037
$?LOGAP_{t-1}$	4.096***	1.165	-19.748***	4.165	1.216	5.49
$?LGDPPC_{t-1}$	-5.339*	3.214	-21.018***	4.200	-1.488	5.60
$?M2GDP_{t-1}$	-0.855	0.478	-0.138	0.548	-1.419**	0.538
OPN_{t-1}	0.009	0.155	-0.477**	0.204	-0.035	0.179
$FDIN_{t-1}$	0.473	0.876	-1.861	1.589	0.737	0.876
INT_{t-1}	-0.154	0.237	-0.339	0.257	0.667	0.518
$?LROP_{t-1}$	0.004***	0.002	-0.002	0.002	0.007***	0.001
Constant	69.816	51.091	175.877***	51.609	-192.38**	90.334
R2		0.84		0.92		0.71
S.E of Reg.		268578.9		25.75206		30.169
No. of Obs.		289		193		96
N. Countries		12		8		4

Where *, ** and *** represents the 10%, 5% and 1% levels of significance respectively. Weighting: cross section standard errors.

As expected, there was a positive relationship between government size and external debt stock. This relationship was particularly significant for the WAMZ region but negative in the WAEMU economies. The implication was that increases in government size led to external debt accumulation to finance this debt especially in the WAMZ region. The overall implication for the ECOWAS economies implied that a one per cent increase in the size of government expenditure, would lead to an average of 0.3 per cent increase in external debt stock to GDP ratio. The coefficient of current account ratio was negatively signed as expected, indicating that countries with current account surpluses did not need to borrow abroad.

The positive and statistically significant coefficient of exchange rate indicated that a rise in real effective exchange rate (depreciation) was generally associated with increases in external debt ratio for the ECOWAS economies. This was an indicator of a

relatively weak export base (primary products) of these economies was unable to meet the increased commodity demands associated with a depreciation, and hence, it was unable to generate earnings that were large enough to offset the losses from depreciation. Our results were similar to the results found by Forslund et al., (2011) for low-income countries and different from the results of Greenidge et al., (2010) for CARICOM economies. The coefficient for external reserves had the expected negative sign and it was statistically significant in all sub-samples. This result was in line with the expected thinking that countries with higher reserves tended to deplete their reserves first before opting for debt.

The set of country characteristics, which had to do with country size and level of development, showed that as GDP gap increases, external debt ratio also increase. This result supported Barro's hypothesis that negative deviations from the optimal level of GDP allowed for faster levels of debt accumulation and it also confirmed Solomon's (1977) thesis that deviations below the optimal level of output widened the gap between domestic savings and desired investment. The relationship was, however, different for the WAEMU economies given the negative and statistically significant parameters obtained.

The other two indicators of level of development - GDP per capita and *M2GDP* - had negative relationships, suggesting that productively and financially developed economies experienced low accumulation of external debt. For the full sample, openness had a positive relationship with external debt ratio. However, for the WAEMU and the WAMZ sub-samples, the relationship was negative, but significant for the WAEMU sub-sample. The relationship between external debt ratio and financial openness (*FDIN*) was positive but not statistically significant.

The results for the last category of characteristics showed that there was an inverse relationship between the real cost of foreign borrowing and the external debt ratio of the ECOWAS economies. That meant that when real interest rates rose, the accumulation of external debt slowed. The results were, however, not statistically significant. The ECOWAS economies were significantly affected by external shocks emanating from changes in real oil prices. The positively observed relationship implied that increase in real oil prices led to increased foreign borrowing to satisfy local demand of petroleum products. Even though this relationship was statistically significant for the total sample and the WAMZ region, the results for the WAEMU region indicated a statistically insignificant negative relationship.

Table 4 Cross section and period dummy fixed effect specification

	(1)	(2)	(3)	(4)	(5)	(6)
	All ECOWAS		WAEMU		WAMZ	
Variable	Coefficient	Std. Error	Coefficient	Std. Error	Coefficient	Std. Error
INF_{t-1}	-0.205	0.228	-0.116	0.194	0.670***	0.161
GSZ_{t-1}	0.642	0.562	-0.032	0.378	1.540*	0.778
CAR_{t-1}	-0.053	0.464	-0.845**	0.377	-1.064***	0.376
$?EXCH_{t-1}$	0.031**	0.013	0.330***	0.046	-0.015	0.009
$?EXRE_{t-1}$	-0.085**	0.034	-0.056	0.124	-0.010	0.055
$?LOGAP_{t-1}$	4.581*	2.621	-13.023***	3.364	9.478*	5.522
$?LGDPPC_{t-1}$	-5.712**	2.646	-13.970***	3.416	8.812	5.615
$?M2GDP_{t-1}$	0.696	0.539	-0.517	0.477	0.426	0.943
OPN_{t-1}	0.150	0.153	0.118	0.200	-0.100	0.184
$FDIN_{t-1}$	1.219	1.061	-1.231	1.315	0.644	0.843
INT_{t-1}	-0.307	0.248	-0.011	0.233	-0.637	0.498
$?LROP_{t-1}$	0.002	0.002	-0.002	0.002	0.005**	0.002
Constant	-14.445	55.322	-117.088**	53.070	-65.211	85.688
R2		0.89		0.96		0.90
S.E of Reg.		27.1865		19.7192		21.464
No. of Obs.		289		193		96
N. Countries		12		8		4

Where *, ** and *** represents the 10%, 5% and 1% levels of significance. Weighting: cross section standard errors.

Table 4 showed the results for the estimation of the same set of equations as in Table 3 that included cross section and period fixed effects. While the estimates in Table 3 could be interpreted as jointly capturing within-country and within-period differences, the estimates in Table 4 accounted for within-country differences. Thus, the estimates in Table 4 should be interpreted as an indication of whether within-country differences in country characteristics were associated with within-country changes in external debt ratio. The two variations of fixed effect specifications yielded similar results especially as it pertained to the signs and magnitudes of the parameters estimates. The main difference, however, was that a fewer number of variables were statistically significant in the period dummy fixed effect specification.

V.3 WAEMU vs. WAMZ

Given the very wide differences in the history and economic configuration of the WAEMU and the WAMZ economies, significant differences were observed in the pattern of relationship between external debt dynamics and country characteristics in the two regions. First, the impacts of inflation on external debt dynamics in the two regions were different. While there was an inverse and statistically significant relationship for the WAEMU subset, the relationship for the WAMZ region was equally positive. This might be an indication that while the WAMZ economies might prefer to signal their commitment to pursue a strong and stable monetary policy by contracting foreign debt, the WAEMU economies had a fiscal monetary policy imposed by virtue of the discipline associated with the existing *de facto* union.

Another difference in regional characteristics that was worthy of note was the impact of government expenditure/size on external debt dynamics. Tables 3 and 4, showed a direct and statistically significant relationship between government size and external debt ratio in the WAMZ economies, while it was negative and insignificant in the WAEMU region. The implication of this result in the transition to a monetary union was that more stringent fiscal rules and discipline would need to be enacted and enforced for the WAMZ economies. Also, synchronisation of debt and fiscal policies in the two regions were unlikely to yield similar results. These regional idiosyncracies would need to be factored in to ensure that the ECOWAS wide monetary union would be sustainable and free from debt crises.

Table 5 Country Specific Effects

	Cross section fixed effect specification			Cross section and period dummy fixed effect specification		
	ECOWAS	WAEMU	WAMZ	ECOWAS	WAEMU	WAMZ
Benin	-41.45	-47.36		-58.32	-61.98	
Burkina Faso	-72.73	-65.28		-70.50	-80.58	
Cote D' Ivoire	27.80	11.07		20.35	13.33	
Gambia	38.47		35.36	12.50		49.03
Ghana	-34.40		-61.66	-32.60		-63.22
Guinea Bissau	275.43	312.95		246.31	306.18	
Mali	-12.72	-2.95		-23.43	-24.50	
Niger	-51.83	-55.72		-44.91	-60.31	
Nigeria	-7.02		-5.33	-13.59		-23.71
Senegal	-35.01	-40.31		-51.60	-57.27	
Sierra Leone	35.36		43.89	29.79		37.90
Togo	-9.33	8.32		-14.00	-34.87	

Another interesting point to note was the impact of global oil prices on the external debt dynamics of these regions. While the relationship for the WAMZ economies was direct and statistically significant, for the WAEMU economies, it was inverse and not statistically significant. Again, these differences required special policy considerations before the two regions could be successfully merged into one monetary union.

Retrieving the country specific effects for the two variants of fixed effect estimations carried out, Table 5 presented the variation of country-specific intercepts from the mean value. These values provided insight on the initial conditions and economic structures of these economies across board in the region. By concentrating on the left segment of Table 5 which contained the country specific effects for the cross section fixed effect specification, it was observed that the initial conditions or country characteristics of two economies: Guinea-Bissau and Burkina Faso were significantly different. This was inferred from their intercept variation of 275.4 and -72.7, respectively. Among the WAMZ economies, Ghana seemed to have a widely different economic condition from other countries. These factors were likely to increase the challenges towards a successful transition to a monetary union in the region.

VI. Policy Implications and Conclusion

This paper recognised the importance of identifying the core determinants of external debt dynamics in the transition to and sustenance of the proposed ECOWAS monetary and currency union. Using a panel DGLS procedure, the study sought to identify the core determinants of external debt dynamics in 12 ECOWAS economies between 1970 and 2009. Overall, the findings revealed that there were six core determinants of external debt dynamics in ECOWAS economies. Inflation, external reserves, per capita income and oil prices had inverse relationship with external debt ratio, while GDP gap and real effective exchange rate depreciation had direct relationship.

When the sample of the two existing unions, the WAEMU and the WAMZ, were split, the paper observed significant differences in the pattern of relationship between external debt dynamics and country characteristics in the two regions. One of such differences was the impact of inflation on external debt. While the observed relationship in the full ECOWAS sample and the WAEMU sub-sample was inverted, the relationship for the WAMZ region was positive. This implied that the valuation effect of inflation might be pervasive in the WAEMU economies but not in the WAMZ economies. Policy reforms would be required in the WAMZ economies to avoid the use of foreign currency debt to signal commitment to strong and stable monetary policy.

Further, there was a strong direct relationship between government size and external debt dynamics in the WAMZ region unlike the full ECOWAS and the WAEMU samples. This was an indication of the expansionary fiscal policy pattern prevalent in the WAMZ economies, which led to rapid increase in the external debt burdens of these economies, implying that a synchronisation of fiscal policies for the two regions might yield different outcomes for external debt sustenance. Although development was a priority and spending for developmental purposes was equally important. The need for fiscal reforms was particularly pertinent in the WAMZ economies to ensure that external debt stocks did not soar to unsustainable levels. The investigation of country-specific effects revealed that the initial conditions in two of the ECOWAS economies; Guinea Bissau and Burkina Faso were radically different from other economies.

The overall policy recommendation was that efforts should be intensified to improve the performance of productive sectors in other to reduce external indebtedness. Higher outputs would narrow the gap between domestic savings and desired investment and therefore, minimise the need for external borrowing and by extension, reduce the subsequent rate of growth of external debt. Again, raising production levels would allow for greater export growth and less importations. This could generate and save foreign exchange earnings to support debt servicing.

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