Alternative reconsideration of output growth differential for West African Monetary Zone

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1. Introduction

One of the conditionality for the commencement of WAMZ draws extensively from the convergence hypothesis which postulates that costs associated with unionization can be minimized if the differences in spatial distribution of income and opportunities between intending members at the international and national levels can be narrowed down or eliminated. Barro & Sala-i-Martin (2004) gave a two-fold definition of such convergence: firstly, they defined economic convergence as the narrowing of output gap between less developed and developed economies which accompanies international trade. The neoclassical growth model describes this as absolute or conditional β convergence if the economies have similar tastes and technologies, thereby converging to the same or their own steady state. Benos & Karagianis (2008) notes that a second form of economic convergence occurs if the dispersion of the cross-sectional distribution of a variable such as per capita income (measured, for example, by its standard deviation across a group of countries/regions) declines over time (σ convergence). Although Corsetti (2008) acknowledges the desirability of economic heterogeneity (especially one generated by sustainable policy pursuits), he argues that such could be inconsequential if independent national policy pursuits interfere adversely with regional macroeconomic stabilization around desired growth path.

The observation, since the commencement of WAMZ in 2000 is that this primary condition has been the most difficult to fulfill. Not only has there been persistent divergence in output growth rates among these countries, the prospect for attaining its convergence has also been weak thereby deeming commencement prospect also. If progress is to be made towards convergence, there is therefore the need to understand what generates the differentials growth path among these countries. In particular, there is the need to ascertain the role of nominal exchange rates volatility (appreciation/depreciation), under independent floating exchange rate regime as well as the independent monetary policy stance in stimulating growth in these countries. The objective of this study therefore is to ascertain the determinants or factors giving rise to these differences in the light of historical differences in independent monetary policy pursuits.

2. Related literatures

Several studies examine regional income convergence and its determinants globally from a macroeconomic perspective. At the policy level, regional convergence has been an objective of most governments all over the world and particularly in Europe since its inception as the European Economic Union (EEC) in 1957. Proponents of the European common markets

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argued that lower regional inequality is necessary in order for European Monetary Union (EMU) to be successful. However, the international evidence is mixed. For example, Barro & Sala-i-Martin (1991) have documented convergence at an approximate annual rate of 2% in the US states/regions for 1880–1988 and 73 EU regions for 1950–1985. In a recent study they found very weak evidence to support the theoretical assertion that migration from poor to rich economies fosters convergence (Barro & Sala-i-Martin, 2004). Furthermore, Chessire-Carbonaro (1995) reported mixed results for 122 urban EU regions. Recently, J.R Cuadrado-Roura (2001) found that after a period of regional convergence from 1960 to the mid-1970s, the process stopped and stabilized until 1996 in the EU regions. Benos & Karagianis (2008) notes that economic convergence occurs if the dispersion of the cross-sectional distribution of a variable such as per capita income (measured, for example, by its standard deviation across a group of countries/regions) declines over time (σ convergence).

Several new empirical literatures also emerged on the subject of output supply shocks especially in the late 1980s and early 1990s when the debate on similarities of shocks – i.e. the extent by which partner countries intending to adopt a single currency endure symmetric versus asymmetric shocks – acquired great prominence. This was the result of advancements in econometric techniques by Blanchard and Quah (1989) and other authors. The main underlying argument posits that if the incidence of supply and demand shocks and the speed with which the economy adjusts – taking into consideration also the policy responses to shocks – are similar across partner countries, then the need for policy autonomy is reduced and the net benefits from adopting a single currency might be higher. Hence, the similarity of shocks, and policy responses to shocks was perceived as a "catch all" property capturing the interaction between several Optimum Currecny Areas (OCA) properties (Masson and Pattillo, 2004).

Among the studies that examine the incidences of supply shocks are: Blanchard and Quah (1989), Bayoumi and Eichengreen (1992, and 1993). These studies estimate vector auto-regressions (VAR) for output and prices; restricting demand disturbances to effect on only prices in the long run while allowing supply disturbances to have long-run effects on both prices and output. In particular, they find positive correlations between the fundamental shocks in Austria, Germany, Denmark, France, the Benelux countries and Switzerland, while the correlation between these countries and the southern countries is weaker.

At the continental level, Buigut, and Valev (2004) estimated a two variable VAR model to identify supply and demand shocks for East African (EA) countries in order to determine if they are good candidates for a monetary union. Their analysis shows that contemporaneous shocks among the EA countries are mostly asymmetric with the exception of Kenya and Burundi that was positive and significantly correlated.

At the ECOWAS regional level, Fielding and Shields (2001) estimated an output and price shocks for CFA franc countries using a 4-variable (output growth, inflation, money growth and foreign inflation) VAR model to confirm a high degree of correlation between inflation shocks across countries. Fielding and Shields (2003) extend this study to WAMZ using a 3-variable (output growth, real exchange rate and money growth) VAR model and the terms of trade as an exogenous variable. The results suggest less real exchange rate volatilities for WAMZ countries and negative output shocks correlation, although the latter result is not significant. Houssa and Leuven (2004) analyzed the costs of a monetary union in West Africa by means of asymmetric aggregate demand and aggregate supply shocks but departed from previous studies that estimated the shocks with the VAR model. Instead, they discussed the limitations of the VAR model approach and apply a new technique based on the dynamic factor model. The results suggest the presence of economic costs for a monetary union in West Africa because aggregate supply shocks are poorly correlated or asymmetric across these countries. Although their studies also show that aggregate demand shocks are correlated between West African countries, their analysis also returned a verdict that it would not be an optimal policy choice to commence a monetary union for the region.

Also, Masson and Pattillo (2004) applied an "Augmented OCA Model with Fiscal Distortions" to evaluate the feasibility of a monetary union for Africa. It is based on the optimum currency area literature, which focuses on asymmetries of shocks, but further identifies another important asymmetry: fiscal distortions, under the assumption that the regional central bank is assumed not to be fully independent, but sets monetary policy to reflect *average* conditions (including fiscal deficits) in the region. As a result, countries that were very different with respect to fiscal distortion would be unattractive partners for a monetary union, because the central bank would produce undesirable outcomes for one or both of them. In this particular study, Nigeria was identified as an unattractive partner for the WAMZ monetary union, while suggesting selective accession to existing monetary union by intending members of this union to the WAEMU.

The major criticisms of the shocking studies are that the test results are ambiguous (Tavlas, 1994), and often in conflict (with no concurrence on its theoretical underpinning, e.g., on the relationship between exchange rate variability, trade and investment); De Grauwe (1990) observed the difficulty in constructing measures of future shocks. Mongelli (2002) noted that the shocking measures does not take into account the Lucas critique and the changes in structures due to changes in policy regimes, such as a "disciplining effect" on policy-makers as well as the effects of market liberalization. These studies also lead to the drawing of narrower borders for monetary integration, i.e., the "core group", than other type of studies. Due to the need for relatively long time series for econometric tests, these studies cannot reflect a progress under some properties, such as a change in policy preferences accompanying a fall in inflation differentials, in the more recent part of the sample period.

A recent study by Corsetti (2008), therefore suggest a reconsideration of output shocks criteria from the perspective of new Keynesians monetary theory that indeed, output shocks divergence under inefficient independent monetary policy should actually signaled the need for putting in place an overriding supra-national monetary policy controls that can remove the autonomy from national monetary authorities. While he acknowledges the desirability of economic heterogeneity (especially one generated by sustainable policy pursuits), he argues that such could be inconsequential if independent national policy pursuits interfere adversely with regional macroeconomic stabilization around desired growth path.

3. Theoretical framework and analytical model

For the purpose of this study, I lean towards Corsetti (2008) that analyzed monetary stabilization policies from a Neo-Keynesian perspective. Corsetti (2008) uses a new micro-founded model of the costs of adopting common currency, relative to an ideal benchmark in which domestic monetary authorities pursue country specific efficient stabilizations that encompass both demand and supply stabilization. The analytical framework is premised on the assumption of a closed economy populated by identical households, who derive utility from consumption of goods and leisure, i.e. their utility is decreasing in labour effort. In the tradition of macroeconomic models, especially as in many modern contributions to monetary theory, he posits that aggregate demand coincides with consumption expenditure, i.e. abstract from investment and government spending. From the demand side, Corsetti (2008) argues that if C denote aggregate consumption, and P its price (or CPI), then nominal aggregate demand is thus given by PC, and real domestic output YH coincides with real consumption expenditure, i.e. C = YH. Corsetti (2008) therefore related aggregate demand PC to a variable μ, which indexes the stance of monetary policy: a higher μ means that monetary authorities pursue expansionary policies, raising aggregate demand and thus nominal consumption. Corsetti (2008) therefore hypothesize that the dynamic aggregate demand in nominal terms which reflects optimal consumption and savings decisions by households can be written as follows:

$$\mu_t = \frac{1}{\beta(1+i)} \frac{1}{E\left(\frac{1}{\mu_t + 1}\right)} \tag{1}$$

Where β is the discount factor reflecting consumers' impatience, E denotes expectations of future variables and the equation makes it clear that, for given expectations of future prices and future real demand, current spending (corresponding to the current monetary stance) μ is decreasing in the nominal interest.

From the supply side, Corsetti (2008) assumes that output is produced in many varieties by specialized small firms with monopoly power and characterized by production function such that: $Y_H = Z_H \ell$, where Z_H denotes the level of productivity, identical across firms, ℓ denotes employment under the assumption that Z_H vary randomly at business cycle frequency. He further assumes that if firms face demand for output that is constant price elastic and preset prices which maximizes their market value, such that it results from charging the equilibrium markup over expected marginal costs, the following equilibrium conditions obtains:

$$P_H = mkp * E[MC_H] = mkp * E\left[\frac{wage}{Z_H}\right] \tag{2}$$

Where the marginal costs MC_H, the nominal wage divide by productivity and the equilibrium markup *mkp* is a decreasing function of the elasticity of substitution. As the price is fixed over the production period, the (ex-post) realized markup will vary inversely with marginal costs. Corsetti (2008) assumes that labour market is competitive and varies proportionally with the monetary stance μ and linking both

$$MC_H = \left[\frac{wage}{Z_H}\right] = \left(\frac{\overbrace{\mu}^{monetatr\ policy\ stance}}{\underbrace{Z_H}_{productivity}}\right) \tag{3}$$

Abstracting from Eq. 7, Corsetti (2008) characterized the natural rate of employment (output) if all prices were flexible (i.e. in the absence of nominal rigidities) by assuming that each firm would maximize current profit by charging the equilibrium markup over current marginal costs:

$$P_H^{flex} = mkp.MC_H = mkp.\frac{\mu}{Z_H} \tag{4}$$

Substituting the definition of μ, the production function $Y_H = Z_H \ell$, and re-arranging, yields the result that the natural level of employment (output), ℓ^{nr}, is constant:

$$\ell^{nr} = \frac{1}{mkp} \tag{5}$$

In the long run, ℓ^{nr} is a decreasing function given the monopoly of domestic firms and as goods become better substitutes, or regulation and competition policy reduces the average markups in the economy, the natural rate of employment and output rise. At business cycle frequencies, the natural rate of output fluctuates with productivity, i. e. $Y_H^{nr} = Z_H \ell^{nr}$.

For an efficient monetary stabilization, Corsetti (2008) examined the macroeconomic implications of random fluctuations in current and future productivity, and optimal policy response to stabilize the economy (demand shocks). He therefore argued that holding monetary stance μ (hence nominal wages) fixed, a positive productivity shock (an increase in Z_H) lowers marginal cost ***ex post***. But if prices are preset, firms cannot take advantage of higher productivity to lower prices and raise output: a fixed μ implies that aggregate demand is also fixed in nominal and real terms. As a result firms satisfy current demand using less productive inputs, while the positive productivity shocks opens a positive output gap: employment and output fall short of their natural rate, i.e., their equilibrium value in a flexible price allocation.

In response to an unexpected increase in productivity, monetary authorities can improve welfare by expanding aggregate demand via expansionary stance (in the case of positive shocks (and contracting it in response to a negative shock, as to rule out over-heating and excess employment). This it can do by setting monetary policy such that nominal marginal costs are constant during the period:

$$MC = \frac{\mu}{Z_H} = \tau \tag{6}$$

If the above holds, i.e. if private agents expect the central bank to credibly pursue rules such that $\mu = Z_H \tau$, optimal prices would remain constant in nominal terms also in the absence of nominal rigidities as there would be no difference between the Eq. 7 and Eq. 9. Thus, a monetary rule that satisfies this condition make nominal rigidities inconsequential, in that the sticky price allocation coincides with the flex-price allocation and the economy operates at a natural rate. Corsetti (2008) observed that Eq. 11 requires a central bank to commit to (a) align aggregate demand and (b) keep the price level along the predetermined path, indexed by τ.

With regard to interest rates and demand stabilization, Corsetti (2008) noted that traditional models of stabilization would require central banks to pursue interest rates policy corresponding to the optimal stabilization policy by substituting Eq. 11 into the dynamic demand equation, that is:

$$\frac{1}{\tau Z_H} = \beta(1+i)E\left(\frac{1}{\tau_{+1} Z_{H+1}}\right) \tag{7}$$

He then derived the interest rate corresponding to the implementation of the optimal stabilization policy as:

$$i = -\ln\beta + \ln\frac{\tau_{+1}}{\tau} + \ln\frac{1}{Z_H} - \ln E\left(\frac{1}{Z_{H,+1}}\right) \tag{8}$$

Corsetti (2008) concludes from this expression that given the path of price levels τ to which a central bank commits when it defines inflation targets at different horizon, and holding

expectation of future productivity constant, the natural rate of interest falls with current productivity gains – which, in the absence of a contingent optimal reaction by monetary authorities, would open a positive output gap that rises with anticipated productivity growth. He further maintains that the need to promote a non-inflationary growth as in the condition in Eq. 11 would require that monetary authorities not only respond to current productivity shocks, but also to current aggregate demand disturbances.

Against this framework, Corsetti (2008) analyzed and compared the costs of losing monetary autonomy when it translates into insufficient stabilization of national business cycles to the apparent noise generated by subscribing to a common monetary policy rules. He characterized the main inefficiencies from insufficient stabilization in terms of relative price distortions, which translates into suboptimal level of output and consumption. He therefore argued that if the central bank does not stabilize marginal costs completely, demand does not fall optimally when productivity is low. With preset prices, these turn out to be too high relative to factor costs, and firms supply too much relative to the flex-price level of output, and vice versa. He therefore concludes that a highly unstable monetary policy could potentially produce large welfare losses, up to dwarfing the costs of insufficient stabilization.

Corsetti (2008) introduced trade and international interdependence into the model via nominal exchange rates under the assumption that growth rates of marginal utilities are equalized across countries in Purchasing Power Parity. He argues that if the two countries involved in trade are perfectly symmetric ***ex ante***, it means that wealth and consumption are always equalized in nominal terms across countries. This implies that exchange rate depends on both home and foreign monetary stance. He concludes that a commitment to a monetary union (in which the two countries adopt a common currency or irrevocably pegged exchange rates offer a least cost than two national monetary authorities acting independently or even under an international monetary policy coordination but which yields undesirable results.

Analytical model

Since price stabilization around the optimal path is not the only objective of monetary policy of the WAMZ countries in the light of rigidities which inhibits the capacity of factor prices such as interest and exchange rates from performing effectively expenditure switching transmission mechanism, I lean towards Corsetti (2008), that monetary policy stance can also give rise to welfare losses due to insufficient stabilization derived from the case in which domestic productivity shocks are purely idiosyncratic.

I abstract from equation 6:

$$MC = \frac{\mu}{Z_H} = \tau$$

(6)

To note that productivity shocks in the context of its convergence to regional benchmarks would reflect the condition that

$$\mu = Z_H \tau$$

(7 a)

Whereby μ is the productivity shocks, ZH is the expectation that macroeconomic stance would keep prices constant, while τ is a vector of aggregate monetary stabilization stance. This suggests a reformulation of the effect of monetary policy stance on productivity shocks or output gaps as a measure of output dispersion such that:

$$\mu_{it} = \vartheta_t + Z_H \tau + \lambda y_{it-1} + \varepsilon_{it}$$

(8)

Where redefine the vector as: $\tau = [\Delta NER_{it-1}, M_2, CP_{it}, CG_{it}, i_{it}]$ where ΔNER_{it-1} is the lagged change in nominal exchange rate of the national currencies to the US $, their dominant reserve currency; M_2 is money supply, which is an important component of independent monetary policy targets of WAMZ countries, in the light of the use of both reserve and interest rates operating procedures, CP_{it} and CG_{it} represents banking sector credit to private and government sectors respectively, to capture the loose stand of monetary policy with regard to government borrowing and the extent of bias it implies for private sector credit; i_{it} denotes the overall interest rate policy stance of the monetary authorities, represented in this model by the monetary policy rate or minimum rediscount rates and finally yet the initial level of output growth. This gives us the following empirical specification:

$$\mu_{it} = \vartheta_t + \alpha_1 \Delta NER_{it-1} + \alpha_2 \pi_{it} + \alpha_3 CP_{it} + \alpha_4 CG_{it} + \alpha_5 M_2 + \alpha_6 i_{it} + \lambda y_{it-1} + \varepsilon_{it}$$

(9)

Where both the dependent and explanatory variables are as defined earlier, while ϑ_t refers to the fixed effects constants of the pooled regression equation. All the αs are the coefficients of the explanatory variables of the model, while λ represents the coefficient of the lagged value of output gap.

The expectation of the coefficient of nominal exchange rate in Eq. 9 α_1 is neutral since a home nominal depreciation following a home monetary expansion has no expenditure switching effects, but can potentially worsen terms of trade in favour of the foreign partner in trade. It can be potentially harmful if the foreign exchange content of domestic production is very high. On the other hand, α_2 is expected to be negative, since higher widening gap of inflation from desired level could lead to higher costs of production and consequently lower output. α_3 is likely to be positive, as expansion in credit to the private sector is expected to lead to output expansion (a positive shock) and therefore contributes to higher growth in output. α_4 is likely to be negative, if the potential goal of macroeconomic stabilization is to reduce the gap between consumption and its efficient level, which may vary with time depending on the state of the economy. Credit to government and especially monetary authorities borrowing from the public through public debt instruments as part of monetary control measures can critically stifle credit to the private sector, with a crowding out effect and adverse effect on output. α_5 is likely to be negative if an expansionary monetary stance originates from fiscal indiscipline, weak monetary authorities that lacks autonomy to restrain fiscal authorities or from inability of the monetary authority to adopt an appropriate monetary framework in the face of deep internal economic distortions. This would generally have adverse effects on output. α_6 is expected to be negative, in line with Corsetti's (2008) argument that given the path which monetary authorities commit when it defines inflation targets at different horizon, and holding expectation of future productivity constant, the natural rate of interest falls with current productivity gains. This could potentially open a positive output gap in the absence of a contingent optimal reaction by the monetary authorities, which rises with anticipated productivity growth. The sign of λ is expected to be negative as lower past values of output level is likely to be associated with higher output gap.

4. Empirical results

The regression results of Equation 9 which is the estimates of the partial effects of national monetary and exchange rate policy stance on production shocks asymmetry among participating countries in WAMZ is presented in Table 1.

Table 1

Pooled single equation regression results for the partial effects of monetary and exchange rate policy on WAMZ output

Equation 3.14

Dep. Variable: Real GDP, y_{it}
Method: Pooled EGLS (Cross-section SUR)
Linear estimation after one-step weighting matrix

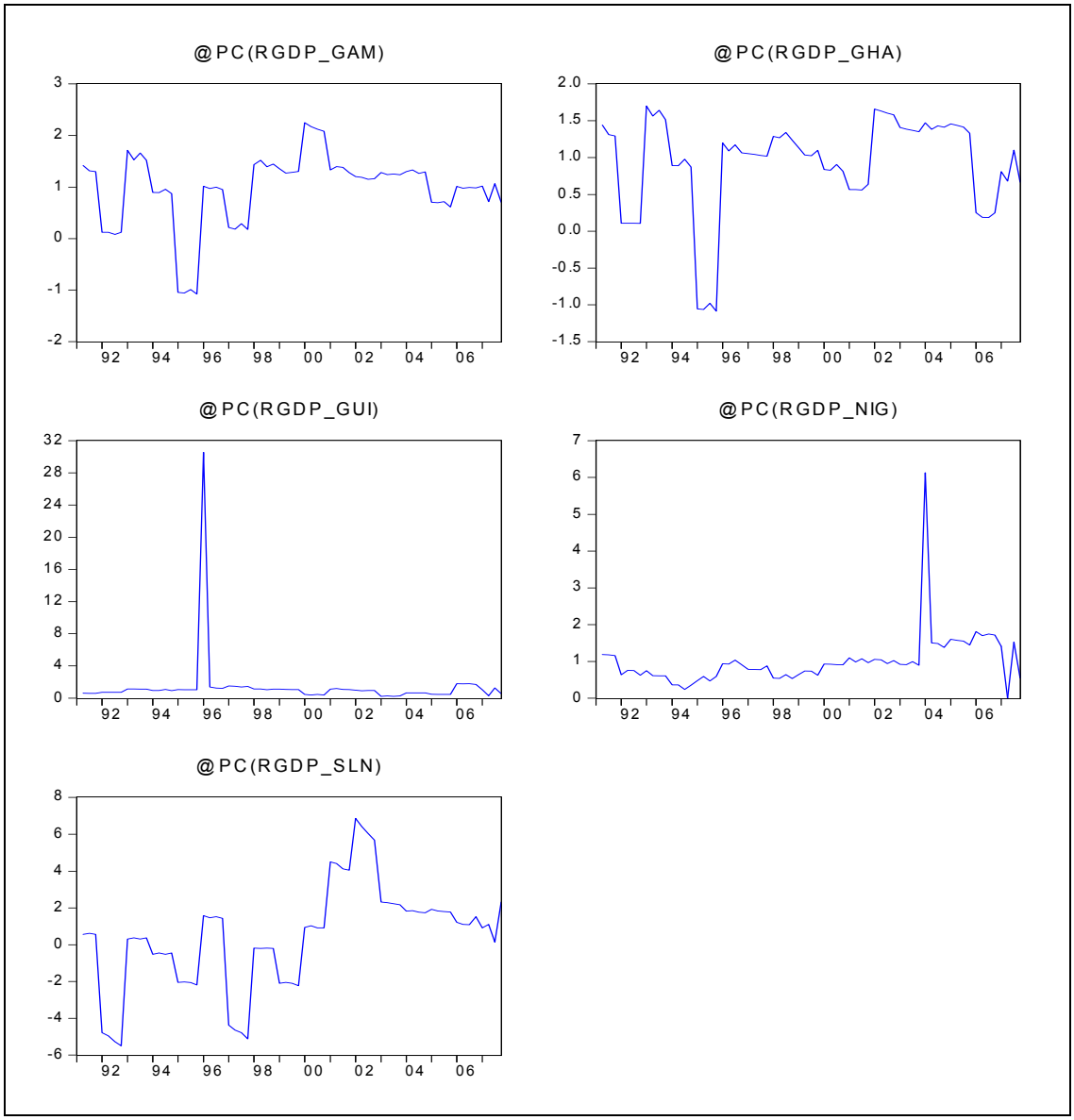
Dep. Variables			a. *μit*			b. y_{it}		
Independent Variables			Coeff.	Statistics		Coeff.	Statistics	
Name	Symbol	Coeff.	Value	t-Stat.	Prob	Value	t-Stat.	Prob
Constant	ϑ_t	ϑ_t	3.47	1.2	0.24	426.8	0.5	0.65
Nom.ER App/Dep.	ΔNER_{it-1}	α_1	–0.00093	–0.4	0.66	–4.7	–1.9	0.06
Inflation Divergence	π_{it}	α_2	–0.0296	–3.3	0.00	–7.6	–1.4	0.16
Credit to Pr. Sect.	$Cp_{it}(-1)$	α_3						
Credit to Govt.	$CG_{it}(-2)$	α_4	6.69E-07	3.8	0.00	–0.0024	-14.8	0.00
Money Supply	$M_2(-1)$	α_5	5.21E-07	4.7	0.00	0.0030	19.5	0.00
Monetary Policy Rate	Log i_{it}	α_6	–0.268	–2.3	-268.6	–268.6	–4.0	0.00
Lagged Aggr. Output (GDP)	$y_{it-1}(-2)$	λ	–0.873	–2.4	1058.3	1058.3	9.9	0.00
Fixed Effects (Cross)								
_GAM–C			–1.72			–5471.1		
_GHA–C			0.92			–3244.0		
_GUI–C			–0.09			–6874.4		
_NIG–C			1.96			20942.2		
_SLN–C			–1.08			–5352.6		
Weighted Statistics								
R-squared			0.157			0.988		
Adjusted R-squared			0.131			0.987		
S.E. of regression			0.987			0.803		
F-statistic			5.954			2568.9		
Prob(F-statistic)			0.000			0		
Mean dependent var				–2.6			5.6	
S.D. dependent var				3.1			4.5	
Sum squared resid				310.5			205.7	
Durbin-Watson stat				1.1			0.3	

Two sets of equations were estimated. The first estimated the effect of monetary policy instruments on output gap, measured by the extent of divergence between the national growth targets and attainment, denoted by μ_t. The second evaluated the relative effectiveness of independent monetary and exchange rates policy on national economic performance, measured by the real Gross Domestic Product denoted by y_t. The adjusted R-squared of the regression results of μ_t dependent equation (see table 1a) is very low, suggesting that independent monetary and exchange rate policy pursuits explained less than 15 per cent of the pervasive output shocks within the WAMZ in the study period. A plot of the growth rates in a stacked graph as shown by Figure 7 suggests very strong business cycles asymmetry. Aggregate economic performance vacillated very widely around stagnation, with a good number of the countries recording declining growths, while most had never attained up to 5 per cent growth rates. The descriptive statistics associated with this graph is as shown in Table 2. The statistics shows that mean average growth rates ranged from as low as 2.2 per cent for Sierra Leone to about 6.6 per cent for Guinea.

Figure 1

Trends in real GDP growth rates of WAMZ countries

1991–2007



Gambia, Ghana and Sierra Leone had records of minimum growth rates that were negative, while Guinea output was most volatile ranging from a minimum of 0.9 per cent to a maximum of 190.4 percent. In general, these countries are characterized by slow growth rates. Another important source of asymmetry is the relative size of participating countries in the real aggregate demand of the region. Figure 2 shows that Nigeria accounts for a significant proportion of the output WAMZ (approximately 80 per cent).

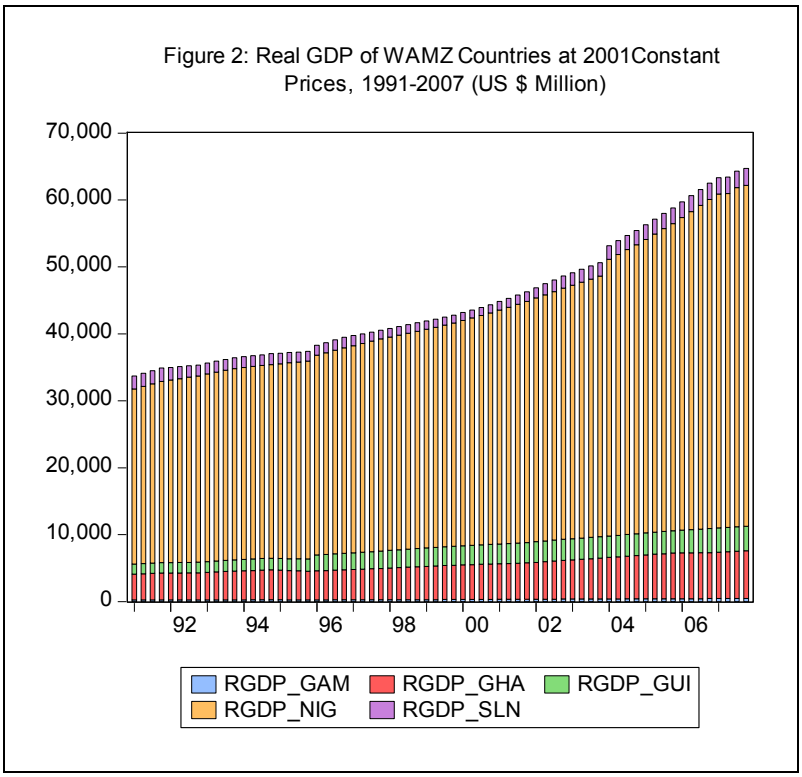
The overall estimate of the fixed effects constant, ϑ_t, for both equations of Table 2 are not significant, but also reflects very significant variation in its value across the participating countries in WAMZ. Whereas, it exhibited a negative spread from the regional average in all the other countries, it posted a positive average for Nigeria. This finding tends to confirm that there is a wide divergence among the participants with regard to the average outcomes of macroeconomic stabilization efforts, with a higher disproportionate weight in favour of Nigeria that is obviously an outlier of the proposed convergence club. This implies that pursuits of a less than optimal macroeconomic stabilization policy could have very negative spillover effects on efforts towards convergence. The trend in National Real GDP displayed in Figure 2 shows the divergent growth path which tended to accentuate these asymmetries.

Table 2: WAMZ Real GDP Growth Descriptive Statistics, 1991Q1 to 2007Q4 %)

	Gambia	Ghana	Guinea	Nigeria	S/Leone
Mean	4.0	3.8	6.6	4.1	2.2
Median	4.7	4.3	4.2	3.7	3.7
Maximum	9.3	7.0	190.4	26.9	30.4
Minimum	-4.2	-4.3	0.9	0.0	-20.3
Std. Dev.	2.9	2.7	22.8	3.3	11.4
Skewness	-1.2	-1.5	7.9	5.1	0.1
Kurtosis	4.8	5.1	64.4	36.5	3.2
Jarque-Bera	24.9	37.2	11217.4	3435.2	0.2
Probability	0.0	0.0	0.0	0.0	0.9
Sum	266.4	251.4	444.5	275.0	147.6
Sum Sq. Dev.	537.2	473.8	34445.1	702.8	8515.2
Observations	67	67	67	67	67

Source: Estimated with Eviews 6.1 from the Regression Data

The coefficient, α_1, of exchange rate devaluation, ΔNER_{it-1}, is not significant as a determinant of demand/output shocks within WAMZ in equation 1a, but exhibited an inverse relationship to aggregate output at about 6% confidence level. This result tends to suggest that the production and asymmetric shocks experienced by these countries is not caused by exchange rate devaluation. This is expected, since as a group of small countries, with non-tradable currencies, both export and import prices are preset in foreign traded currencies. As such, exchange rates movements do not necessarily perform the expenditure switching stabilization roles envisioned by traditional theory. Instead, exchange rate devaluation translates into higher costs of imported inputs and consumer goods. The magnitude of these costs can be very high if the foreign resource content of domestic production and consumption is also very high, and economic activity is dominated by non-tradable and primary commodities export. This assertion is consistent with regression results of Table 1b, which shows that 1% devaluation can potentially lead to about 4.7% decline in output.



On the other hand, the coefficient, α_2, of inflation divergence variable, π_{it} is negative and significant in the regression results of Table 1a, confirming the expectation that higher widening gap of inflation from desired level could lead to higher costs of production and consequently lower output. Although the t-statistics of 1b results show that inflation is not a significant determinant of aggregate output in WAMZ, it exhibited a negative relationship confirming the earlier assertion.

The performance of credit to the private sector variable, Cp_{it}, in the estimated equations was poor, and had to be eliminated from the regression, while the estimate of the coefficient, α_4, of the credit to government, CG_{it}, is significant and correctly signed but inelastic in both equations. The positive sign of this coefficient in 1a suggests that credit to government, especially through the issue of public debt instruments as part of monetary control measures can critically stifle credit to private sector via a crowding out effect with adverse consequence on output performance.

The coefficient, α_5, of the money supply variable, M_2, is significant, positive but inelastic, in line with New Keynesian stance that expansionary monetary stance can spur limited growth when economies operate at less than full employment capacity. This is most likely the case, given the slow growth rates, and inelastic supply which characterize these countries. However, the inelastic outcome of this coefficient points to the weakness of using reserve control via monetary targets as an instrument for promoting growth.

The coefficient, α_6, of monetary policy rate, i_{it}, is significant and exhibit the correct sign. This is consistent with the literature (Corsetti, 2008) that given the path which monetary authorities commit when it defines inflation targets at different horizon, and holding expectation of future productivity constant, the natural rate of interest falls with current productivity gains. This could potentially open a positive output gap in the absence of a contingent optimal reaction by the monetary authorities, which rises with anticipated productivity growth.

The coefficient estimate, λ, of lagged aggregate output variable, y_{it-2} is significant and have the right signs in both equations. The negative sign of this coefficient in 1a is consistent with theoretical expectation that lower past values of output level is likely to be associated with higher output gap. The finding that past trends in output is the major determinant of current output performance is remarkable. This implies that monetary policy pursuits, in the face of nominal and structural rigidities play insignificant role in demand/output stimulation. Instead, trend in business cycles and output tended to follow the natural rate path which fluctuates with productivity along the production possibility frontiers.

5. Summary and conclusions

This study presents an alternative reconsideration of traditional Optimum Currency Areas (OCA) macroeconomic convergence criteria as options for WAMZ commencement, in the light of recent advancements in monetary theory. It presents micro-founded models, rooted in New Keynesian traditions to show that tests confirming widespread divergence from ideal macroeconomic benchmarks with unsustainable independent monetary and exchange rates pursuits are more appropriate evaluating criterion for WAMZ instead of output convergence.

The results show that substantial macroeconomic costs have been associated with monetary autonomy reflected in the wide divergence of outcomes from set benchmarks, with very little prospect for moving towards macroeconomic convergence in the absence of internationally binding monetary policy coordination framework. Indeed, it was established that given the ***ex ante*** independent fiscal and monetary policy pursuits of each of the participating country, there is the likelihood that not more than two countries can meet output convergence criterion, suggesting that the commencement date could remain indeterminate. This result also shows that alternative empirical tests of OCA can further be explored to lend credence to this new perspective of output shocks implication.

In conclusion, it is desirable to note that the relative ineffectiveness of independent monetary and exchange rates policies stemmed in part from the lack of political autonomy of the national monetary authorities (the central banks, which hitherto led to a compromising stance with respect to its choice of instruments for monetary controls) and partly to inappropriate choice of instruments, with inherent bias against growth, but laying very strong foundation for inflationary spiral. It does appear that under this macroeconomic environment, there is little prospect for improvement except some alternative actions are taken to overcome the overbearing political influence.

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