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## Macroeconomic Convergence and Growth in ECOWAS Countries

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### Abstract

*This study theoretically examined the convergence of macroeconomic policies on growth among ECOWAS countries. The model used in the study was tested based on endogenous growth theory. The study found fiscal divergence and monetary convergence among the sampled countries in ECOWAS. We therefore concluded that the converged countries could form Monetary and Economic Union in order to foster economic growth.*

**Key words:** Convergence, Growth, Monetary Policy, Fiscal Policy

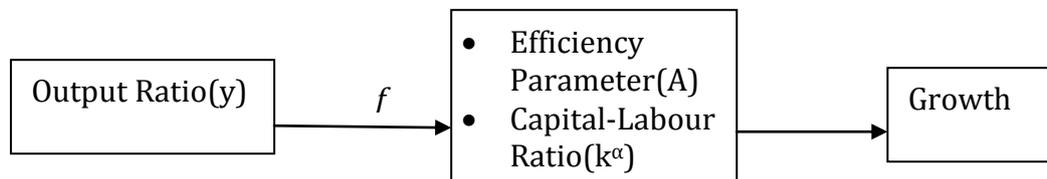
### Introduction

The phenomenon of economic convergence between countries has been widely and empirically studied. “Convergence” as explained by Barro and Sala-i-Martin (1992) in the context of macroeconomic growth theory is the process by which developing countries “catch up” with developed countries. The idea underlying the concept of convergence is that, given the existence of

decreasing returns in the use of capital and assuming equality of preferences and technology, those countries that begin with lower levels of income per capita will tend to grow more quickly (Barro, 1982). This study attempts to examine the convergence of macro-economic policy variables among Economic Community of West African Countries (ECOWAS); examines the nature of convergence of macroeconomic policy variables among ECOWAS countries and analyze the impact of convergence in policy mix on growth in ECOWAS countries. This was in view of examining policy mix, convergence and growth in ECOWAS countries using endogenous growth framework of Solow-Swan (1956) as modified by Ramsey using the Cobb Douglas production function for both the convergence equation and growth equation. The study employed Panel Ordinary Least Square method on panel annual time-series data and analyzed with fixed-effect since a common attribute is expected from the selected countries.

### Theoretical Framework

This study used endogenous growth model based on Solow-Swan (1956) modification using Cobb-Douglas Production Function has shown in the diagram below:



Thus, two concepts of convergence appear in the literature of economic growth across countries or regions. In one view, convergence applies if a poor economy tends to grow faster than a rich one, so that the country tends to catch up to the rich one in terms of levels of per capita income or product. This is called  $\beta$ -convergence. The second concepts is concerned with cross-sectional dispersion, where convergence occurs if the dispersion measured by standard deviation of the logarithm of the per capita across a group of countries or regions declines over time. This is called  $\sigma$ -convergence, (see Barro and Sala-i- Martins (1992).

### Convergence Equation

This study employed this equation to examine the convergence in macroeconomic policies in ECOWAS countries:

$$\Delta \ln P_{it} = \delta_{NT} + \beta \ln P_{it-1} + \mu C_{it} + e_{it} \quad 1$$

Where  $M$  is the relevant macroeconomic policy variables which are fiscal deficit for fiscal policy and inflation rate for monetary policy,  $\alpha$  and  $\beta$  are parameters and  $\varepsilon$  is a classical error term. The parameter  $\beta$  captures convergence ( $\beta < 0$ ) from short-run disequilibrium towards the steady-state,  $x_t$  captures control/explanatory variables.

### Growth Equation

The growth equation can be specified as follows:

$$\ln y_{it} = a_{i0} + a_{i1} \Delta fis_{it} + a_{i2} \Delta inf_{it} + b_{it} C_{it} + e_{i1} \quad 2$$

Where  $y_{it}$  is the real growth rate of GDP for the selected countries at time  $t$ ,  $inf_{it}$  is the monetary policy variable,  $fis_{it}$  is the fiscal policy variable,  $\beta$ 's the estimated parameters that explains whether convergence leads to growth or not. A positive sign of  $\beta$  shows that convergence leads to growth but the negative sign implies that convergence does not lead to growth.  $X_{it}$  represents control variables.

## Results and Discussion

### *Empirical Analysis of Convergence in Macroeconomic Policy Variables*

In order to examine the convergence of macroeconomic policy variables in ECOWAS countries, this study employed beta convergence. The result of the beta convergence show that there is no convergence in fiscal policy variable among ECOWAS countries since the coefficient of lagged value of fiscal deficit (fiscal policy variable) is positive and statistically significant at 5 percent level. Thus, there exists a divergence in fiscal policy variable in ECOWAS countries. However, the result of monetary variable as proxied by inflation rate indicates that there a convergence in monetary policy variable in ECOWAS countries since the coefficient of the lagged value of inflation rate is negative and statistically significant at 5 percent level as shown in the table 2 below.

Table 1: *Empirical Analysis of Convergence of Macroeconomic Policy Variables*

Variables/Dependent	Fiscal Policy	Monetary Policy
dFIS(-1)	0.257(0.076)	
INFL		-0.365* (0.088)

Note: \* implies that the variables are significant at 5% level.

Source: *Authors' Computation, 2012*

### *Empirical Analysis of nature of Convergence of Macroeconomic Policy Variables*

The study employed stochastic convergence- co-integration technique to examine the nature of convergence of both fiscal and monetary policies variables among ECOWAS countries. Thus, the result of the analysis shows that monetary policy exhibits full convergence while fiscal policy shows no convergence based on the co-integration results as shown in table 2.

Table 2: *Co-integration Results of the Nature of Convergence of Macroeconomic Policy Variables*

Macroeconomic Policy Variables	Number of Co-integrating Equation	Nature of Convergence
Fiscal Policy Variable (FIS)	None	No
Monetary Policy Variable (INFL)	One	Full

Source: *Authors Computation, 2012*

### 3.3 *Empirical Analysis of Macroeconomic Policies, Convergence and Growth in ECOWAS countries*

This study employed simple ordinary least square technique to analyze the empirical relationship between convergence of policy mix and growth in ECOWAS countries because the estimators from this technique is best linear unbiased, efficient and sufficient to explain the real life situation. The table 3 below shows the result of the panel ordinary least square technique employed. The dependent variable is proxied by RGDP while the independent variables are the policy mix variables (Fiscal and Monetary Policies variables)

**Table 3: Empirical Analysis of POLS Result of Macroeconomic Policies, Convergence and Growth**

Variables	Coefficients	Standard Error	t-statistic
C	-0.0501	0.0648	-0.7735
dFIS	2.76E-12	1.59E-12	1.742
INFL	-0.0004	0.0002	-2.4512
Log(GCF)	0.0059	0.0035	1.6648

Source: Authors' Computation, 2012

$R^2 = 0.9092$  Adjusted  $R^2 = 0.8992$  F-statistic = 47113.79

Durbin-Watson d\* Statistic = 1.7083

### Findings

The explanatory power of the model explains approximately 90 percent total variations of the growth in the ECOWAS countries as a result of employing convergence of policy mix. Thus, this result shows that the model has high goodness of fit. The value of F-statistic reveals that the model equation is statistically significant at 5 percent level implying that the model is reliable and can predict the future. The coefficient of convergence in fiscal policy variable (fiscal deficit) is positively signed and statistically insignificant at 5 percent level. This findings show that convergence in fiscal policy variable does not aid growth in ECOWAS countries. The coefficient of monetary policy variable (inflation rate) is negatively signed and statistically significant at 5 percent level, this indicates that convergence in monetary policy variable enhanced the growth rate among ECOWAS countries.

### Conclusion and Recommendation

It is evident from the results of the study that the analysis of convergence in policy mix among ECOWAS countries shows that all the selected countries diverge in their fiscal variables while they converge in monetary policy. These countries are Burkina Faso, Ghana, Nigeria, Togo, Sierra Leone and Ghana. Hence, these countries that converge in their monetary variables could form economic integration in order to foster the pace of economic development in their respective country. The research further recommends that the countries should intensify their efforts towards reduction of external indebtedness that has imposed huge debt service payments on their economy, as this is a major source of government deficits.

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