

**TRADE FLOWS, MACROECONOMIC POLICY AND BUSINESS CYCLES  
SYNCHRONISATION IN WEST AFRICA**

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**ABSTRACT**

*Business cycles for individual countries under Economic Community of West African States (ECOWAS), using GDP within 1980-2015, detrended by Hodrick–Prescott filters was first computed. A covariance analysis on the computed z-scores to examine the level of synchronisation of the regional business cycles, the level of symmetry of regional macroeconomic policies and the level of symmetry of regional trade flows was then employed. It was evident that business cycles synchronisation and symmetry in macroeconomic policies were on the whole increasing among ECOWAS region, but with higher intensity within West African Economic and Monetary Union (WAEMU) than within West African Monetary Zone (WAMZ). The flow of trade however within ECOWAS region was highly asymmetric indicating that these economies rely more on transaction with other developed economies. The empirical results provided clear support for the need for West African countries to look more inward especially by optimizing her macroeconomic policies and intensifying production through domestic investments. This would stimulate the flow of trade within ECOWAS region and further intensify business cycles synchronization. As a result, we advocate for the formation of a monetary union for WAMZ but with the various currencies still in existence at least for the interim and also advocate for the formation of monetary union for ECOWAS region for the latter. This would properly monitor incentives for optimal macroeconomic policies, trade flows and business cycles synchronisation.*

**Keywords:** Trade flows, Business cycles, Macroeconomic policy

**JEL Classification Codes:** F18, E32, E63

**1.1 Introduction**

The benefits of establishing a monetary union is renowned. It stimulates bilateral trade, increases the credibility of the monetary policies and ensures price stability and hence, guarantees rise in investment, financial development and economic growth (Frankel & Rose, 2002). On the basis of this, since 2003 the Economic Community of West African States (ECOWAS) which was established on 28th May, 1975 with the mission to promote co-operation, integration and a balanced development of the region, has as her task the creation of the currency union. Consequently, the West African Monetary Zone (WAMZ) has long aspired to merge with West

African Economic and Monetary Union (WAEMU) in order to create a single stable currency. As a result WAMZ was formed in 2000 and it is mostly made up of Anglophone members of Economic Community of West African States (ECOWAS), namely, Gambia, Liberia, Nigeria, Sierra Leone, Ghana, and Guinea, a Francophone country. The West African Economic and Monetary Union (WAEMU) which also exists under ECOWAS was created in 1994 and is comprised of Benin, Burkina Faso, Cote d'Ivoire, Guinea Bissau, Mali, Niger, Senegal and Togo. Apart from Guinea Bissau which is a Portuguese colony, all WAEMU countries are French speakers. WAEMU is part of the CFA zone which has the CFA Franc as the common currency and their external exchange rate is pegged to the euro and is guaranteed by the French Treasury. 2005 was initially due to be the commencement date of the monetary unification but it has never been effective as a result of the inability of members' state to meet the convergence criteria (see appendix A). Despite four consecutive postponements, the effective date now stands at 2020.

However, issues on whether or not the proposed currency union of the ECOWAS countries would be beneficial for the member countries has been debated from many points of view. But then, as timely as the need for a single currency and common monetary union in West Africa, the synchronisation of business cycles of the participant countries and the attainment of optimal macroeconomic policy has become an issue of concern (Tirelli, 2010; Crespo-Cuaresma, Pfaffermayr, Amador & Keppel, 2011). According to Fliess (2005):

*... if the business cycles are similar and shocks are common, then a coordination of macro policies can become desirable, with a common currency as the ultimate form of policy coordination. On the other hand, if shocks are predominantly country-specific, then the ability to conduct independent monetary and fiscal policy is usually seen as important in helping an economy adjust to a new equilibrium.*

Also, given that the European Commission (1990) also hold the view that closer integration leads to less frequent asymmetric shocks and to more synchronised business cycles between countries, the feasibility of establishing a monetary union could be evaluated on the grounds of sufficiency given that a sufficient degree of business cycles synchronization, trade and macroeconomic symmetry is a prerequisite for the formation of a Monetary Union (Mundell, 1961; McKinnon, 1963; Artis & Zhang, 1999; Calderon, Chong & Stein, 2002; Shin & Wang, 2004).

Furthermore, as noted, asymmetry in trade flows may affect macroeconomic policies (e.g., exchange rate, fiscal, and monetary policies) and hinder business cycles of some countries (Shin & Wang, 2004). Likewise, while many economists agree that trade can play a crucial role in linking economies and transmitting disturbances, the impact of trade flows on the degree of business cycle synchronisation is quite vague in West Africa, and the position of Baxter and Kouparitsas (2005) that trade may act as a channel for the transmission of shocks that affect all industries, which, in turn, reinforces the links among economies and correlations among business cycles is yet to be established in West Africa. Therefore, this study aims at examining trade flows, macroeconomic policy and business cycles synchronisation in West Africa. The specific objectives are as follows:

- (1) To ascertain the extent to which business cycles within West African States have synchronised;
- (2) To ascertain the extent to which trade flows and macroeconomic policies (i.e., fiscal and monetary policies) are symmetric in West African States;

## **2.1 Literature review**

Several research works expounds the effects of trade-integration/bilateral-trade/trade-intensity and macroeconomic policy on business cycles synchronisation in Europe, Asia and America. Most of the findings resulted from different methodologies such as the HP filters, the BP filters, the Generalised Method of Moment, the VAR, SVAR, FAVAR and DSGE models as the case may be. Most of the studies came to a conclusion that increase in trade-integration/bilateral-trade/tradeintensity increases business cycles synchronisation (Frankel & Rose, 2002; Bordo & Helbling, 2003; De Haan, et al., 2005; Akin, 2006; Jules-Armand, 2007; Chang, 2011; Pundit, 2011; Juvenal & Montiero, 2012, etc.). In the same vein, Calderon, Chong and Stein (2002) were of the view that a positive relationship between trade intensity and cycle correlation could potentially be due to both variables being explained by a third factor, namely, the formation of a currency union. And that the impact of trade intensity on cycle correlation is smaller the greater the production structure asymmetries between countries. However, for Artis and Zhang (1999), increased monetary integration was positively related to business cycles synchronisation, while Krugman (1993) opined that integration was likely to support specialisation according to the comparative advantage.

Jules-Armand (2007) argued that the impact of African bilateral trade on BCS was positive and robust. He tested for the 53 African countries over the 1975-2004 periods the hypothesis suggesting that monetary integration adds force to bilateral trade intensity which in turn, improves conditions for the practice of common monetary policy throughout business cycles synchronisation. In addition to macroeconomic convergence criteria, the promotion of bilateral trade by dropping tariff, non-tariff and infrastructures barriers would accelerate the synchronisation of African business cycles and facilitate the African monetary integration. More trade thus brings African business cycles closer together and could add force to various projects of monetary integration in progress. Finally, he opined that those results did not take into account other possible controls mentioned in recent papers such as similarity of trade and of productive structure, and that such data were very difficult to collect for African countries. He provided some insights on the fact that African MUs could be self-validating through bilateral trade but the aspect of regional symmetry in trade flows, macroeconomic policies, that is, monetary and fiscal policies and business cycles synchronization were not taken into consideration.

Coleman (2011) contributed to the discussion on the long term sustainability of the embryonic second monetary union in Africa, the West African Monetary Zone (WAMZ). He analysed the level of economic and monetary integration in West Africa by analysing the degree of growth cycle synchronisation between the five candidate countries over the past thirty years. His empirical approach improves on the standard Pearson Correlation between trend and cyclical components of GDP by analyzing a measure of co-movement at higher frequencies between computed  $z$ -scores for all possible pairings of the candidate countries. His results indicated a lack of a consistent pattern of synchronized growth cycles, which raises concerns about the economic sustainability of the WAMZ, as it implies that members may face significant stabilisation costs. No investigation was made on issues on trade flows and macroeconomic policies.

On the effect of macroeconomic policies, most research works reviewed revealed that the convergence of macroeconomic policies such as fiscal and monetary policies were systematically linked to business cycles synchronisation (Crespo-Cuaresma & Fernández-Amador, 2010).

However, of all the works reviewed, none emphasized or addressed the issue of incentives through monetary unions to stimulate investment and production for trade flows and business cycles synchronization, neither did they adopted a covariance analysis in examining trade flows,

macroeconomic policy and business cycles synchronisation in WAMZ, WAEMU and ECOWAS regions separately.

## **2.2 Optimum Currency Area (OCA) theory**

Optimum Currency Area (OCA) theory originates from two seminal articles in the early 1960s by the economists Mundell (1961) and McKinnon (1963). These articles drew on contemporary debates about fixed versus flexible exchange rates, treating a common currency as the extreme case of a fixed exchange rate. The theory of optimum currency areas argues that the optimal area for a system of fixed exchange rates, or a common currency, is one that is highly economically integrated. Economic integration means: free flows of goods and services (i.e., trade flows); free flows of financial capital (assets) and physical capital; and free flows of workers/labour (immigration and emigration).

However, given that the Optimum Currency Area theory specifies that the decision to join a currency area involves the abandonment of an independent national monetary policy to follow a unified one or the fixity of the national mutual exchange rate (Cohen, 1992), if the countries specific monetary policies are highly correlated, it would be less costly to delegate a monetary policy to one central bank (through a monetary union). But where each country forfeits her national monetary policy to join a currency union, each member country may use the stabilisation tool of fiscal policy (such as income tax) to achieve macroeconomic stabilisation (McKinnon, 1963).

All economies experience fluctuations in economic activity, and these fluctuations may persist for periods of several quarters to several years. There is an uncertain tendency for the business cycles of ECOWAS economies to move together. When economic fluctuations in two or more countries are symmetric, the need for stabilisation policy is also symmetric (Buti & Sapir, 1998). On the other hand, when cycle is not synchronised, the needs for stabilisation policies will differ. If economic fluctuations in countries within a monetary union are asynchronous, the member states will have little incentive to adopt common policies and to cooperate in the operation of the union. (Funke, 1997).

## **3.2 Method of data analysis**

### **3.2.1 Measure of business cycles**

This procedure was to first and foremost calculate the trend of the GDP for West African regions over the period 1980-2015. Trend GDP is calculated with the Hodrick-Prescott filter (= 100 since annual frequencies in the data was used) Hodrick and Prescott (1997), henceforth HP filter. For the individual countries in West Africa it was easy to calculate the trend since they were individually filtered and thus trend GDP. On the other hand the procedure for group of countries such as ECOWAS, WAMZ and WAEMU was to calculate the trend GDP for every country that fell in the corresponding group. The next step was to produce the output gap of each country. According to Walti (2010), Output gaps represent business cycles for a country. The Output gap = (nominal GDP-trend GDP)/trend GDP.

### **3.2.2 Covariance analysis**

Here, we measure the degree of synchronisation of business cycles, symmetry in trade flows and macroeconomic policies by following Yetman (2011) who highlighted the Pearson Correlation's inability to adequately describe co-movement at higher frequencies and proposed an improvement, based on a z-score, which addresses this limitation. When an entire distribution of X values is transformed into z-scores, the resulting distribution of z-scores will always have a mean of zero

and a standard deviation of one. The transformation does not change the shape of the original distribution and it does not change the location of any individual score relative to others in the distribution.

The advantage of standardizing distributions is that two (or more) different distributions can be made the same. In the case of WAMZ and WAEMU given that the various countries are different in terms of size, structure and volume of trade, etc., they were first standardized before the averages were computed for covariaces. Because z-score distributions all have the same mean and standard deviation, individual scores from different distributions can be directly compared as well. The definition of a z-score is the same for either a sample or a population, and the formulas are also the same except that the sample mean and standard deviation are used in place of the population mean and standard deviation. Using z-scores to standardize a sample also has the same effect as standardizing a population.

The z-score of country *z*'s business cycles, trade flows or macroeconomic policies at time *t* may be written as:

$$z_{it} = \frac{(\Delta y_{it} - \Delta \bar{y}_i)}{\sqrt{\frac{1}{T-1} \sum_{t=1}^T (\Delta y_{it} - \Delta \bar{y}_i)^2}} \dots \dots \dots (3.1)$$

The proposed measure, which for a pair of countries/regions is simply the product of the z-score computed for each country/region (say *i* and *j*) may be written as:

$$\rho_t^{ij} = \frac{(\Delta y_{it} - \Delta \bar{y}_i)}{\sqrt{\frac{1}{T-1} \sum_{t=1}^T (\Delta y_{it} - \Delta \bar{y}_i)^2}} \cdot \frac{(\Delta y_{jt} - \Delta \bar{y}_j)}{\sqrt{\frac{1}{T-1} \sum_{t=1}^T (\Delta y_{jt} - \Delta \bar{y}_j)^2}} \dots \dots \dots (3.2)$$

At this point, we construct a covariance  $\rho_t^{ij}$  for each pair under ECOWAS and then analyze the behaviour over time for the average standardized z-scores between WAMZ and WAEMU.

### 3.3 Sources of data

The required secondary data for this study was extracted from the World Development Index (WDI) of the World Bank (2015).

### 3.4 Software package

Eviews 8.0 and STATA 13 econometric software were used for the analysis.

### 4.1 Presentation of result on business cycles

Table 4.1: Covariance analysis of business cycles for ECOWAS countries

Correlation	BEN	BFA	CPV	CIV	GMB	GHA	GIN	GNB	LBR	MLI	NER	NGA	SEN	SLE	TGO
BEN	1														
BFA	0.8172	1													
CPV	0.8241	0.51531	1												
CIV	0.8461	0.77175	0.7296	1											
GMB	0.3287	0.08597	0.5507	0.28467	1										
GHA	0.4788	0.43571	0.5005	0.59895	0.388713	1									
GIN	0.5083	0.33712	0.6355	0.4974	0.59078	0.4996	1								
GNB	0.2556	0.2445	0.1915	-0.1019	0.131419	-0.151	0.107	1							
LBR	-0.293	-0.0214	-0.3757	-0.0801	-0.323277	-0.227	-0.35	-0.38	1						
MLI	0.8156	0.67966	0.748	0.84056	0.346169	0.4952	0.519	0.243	-0.41	1					
NER	0.7144	0.87031	0.5445	0.82572	0.176955	0.4552	0.424	0.227	-0.06	0.781	1				
NGA	0.3201	0.41633	0.195	0.37223	0.367457	0.5082	0.499	0.284	-0.23	0.413	0.501	1			
SEN	0.8568	0.79025	0.7525	0.88314	0.231276	0.4565	0.375	0.228	-0.23	0.925	0.855	0.289	1		
SLE	0.067	0.00861	0.1565	-0.1057	0.080114	-0.02	0.272	0.325	-0.27	-0.01	-0.01	0.124	-0.085	1	
TGO	0.7315	0.84711	0.5559	0.89222	0.274027	0.5012	0.448	0.079	0	0.818	0.939	0.525	0.8568	-0.124	1

Table 4.2: Covariance analysis of the business cycles between WAMZ and WAEMU regions

**4.2 Discussion on findings on business cycles**

However, table 4.1 which shows the combined cross section of all countries within the ECOWAS region is indicative of the fact that the business cycles within WAEMU region are more synchronous than that within the WAMZ region. But on the whole, as shown in table 4.2, the covariance analysis of business cycles between the WAMZ and WAEMU region of 0.56 reveals that business cycles actually synchronises. This implies that the pace of growth within ECOWAS region is about 56 per cent which is really encouraging for the creation of a monetary union. The reason for WAEMU business cycle to be more synchronous than that of WAMZ is because all the WAEMU countries, with the exception of Guinea Bissau, have maintained the common currency inherited at the time of independence, which is the CFA Franc. They have a common monetary policy, which is implemented by the common central bank and the French Treasury guarantees the convertibility of the common currency. Largely reflecting these commonalities, the WAEMU countries have been able to make more progress towards economic integration than the rest of ECOWAS.

**4.3 Presentation of result on trade flows**

Table 4.3: Covariance Analysis of trade flows for ECOWAS countries

Table 4.4: Covariance analysis of trade flows between WAMZ and WAEMU regions

Correlation	BEN	BFA	CPV	CIV	GMB	GHA	GIN	GNB	LBR	MLI	NER	NGA	SEN	SLE	TGO
BEN	1														
BFA	6.74E-01	1													
CPV	0.41689	0.73773	1												
CIV	-0.2433	-0.4842	-0.81014	1											
GMB	6.00E-01	8.62E-01	0.76288	-0.45235	1										
GHA	0.59265	0.87289	0.84141	-0.53592	0.864587	1									
GIN	0.76946	0.35525	0.29524	-0.22789	0.362451	0.365	1								
GNB	5.63E-01	4.25E-01	4.35E-01	-0.32135	0.455905	0.4845	0.546	1							
LBR	0.82519	0.79315	0.69755	-0.51251	0.791073	0.8184	0.748	0.613	1						
MLI	0.70034	0.75543	0.791	-0.56553	0.730505	0.8669	0.518	0.65	0.83	1					
NER	8.43E-01	7.34E-01	6.94E-01	-5.82E-01	0.647719	0.7193	0.698	0.583	0.91	0.838	1				
NGA	-0.5918	-0.4217	-0.48614	0.37975	-0.523791	-0.505	-0.81	-0.51	-0.76	-0.6	-0.68	1			
SEN	0.85888	0.87905	0.6935	-0.44452	0.833089	0.8427	0.675	0.593	0.94	0.845	0.855	-0.682	1		
SLE	5.01E-01	4.45E-01	6.99E-01	-7.03E-01	4.49E-01	0.4546	0.555	0.363	0.66	0.61	0.774	-0.702	0.5997	1	
TGO	0.86436	0.77502	0.67611	-0.51888	0.722533	0.77	0.807	0.652	0.92	0.818	0.877	-0.765	0.9029	0.65	1

**4.4 Discussion on findings on trade flows**

Table 4.3 shows the combined cross section of trade flows within the ECOWAS region. It is indicative that the flow of trade within the WAEMU region is more symmetric than that within the WAMZ region. But on the whole, as reflected in table 4.4, the covariance analysis of trade flows between the WAMZ and WAEMU region of (-0.91) is strongly asymmetric. Given that trade flows within WAMZ is symmetric and trade flows within WAEMU is also symmetric but with WAEMU being more symmetric, the reason for this could be deduced from the fact that the currency within WAEMU region, the CFA Franc, is tied to the Euro and they already have an established monetary union whereas the reverse is the case in WAMZ with lots of disparities in currencies. But given that the flow of trade between WAMZ and WAEMU is strongly asymmetric it could be as a result of the fact that these regions are developing economies and are also import dependent where their only source of export is raw materials which are exported to developed economies. Also given that the goods produced within ECOWAS region are not competitive enough to satisfy the needs of the region, transactions among ECOWAS is rare.

#### 4.5 Presentation of result on budget balance

Table 4.5: Covariance Analysis of budget balance for ECOWAS countries

Correlation	BEN	BFA	CPV	CIV	GMB	GHA	GIN	GNB	LBR	MLI	NER	NGA	SEN	SLE	TGO
BEN	1														
BFA	1	1													
CPV	-0.2504	-0.2504	1												
CIV	0.9677	0.9677	-0.35777	1											
GMB	-0.318	-0.318	-0.07526	-0.3914	1										
GHA	0.10796	0.10796	0.43825	0.14246	-0.277372	1									
GIN	0.75095	0.75095	-0.27351	0.76077	-0.358782	0.2325	1								
GNB	0.94499	0.94499	-0.40775	0.98988	-0.40027	0.1365	0.764	1							
LBR	-0.7377	-0.7377	0.35882	-0.70201	0.155282	0.2402	-0.63	-0.67	1						
MLI	0.899	0.899	-0.00886	0.77727	-0.139598	0.0676	0.631	0.731	-0.72	1					
NER	0.99141	0.99141	-0.27364	0.96813	-0.314771	0.1133	0.757	0.953	-0.72	0.89	1				
NGA	0.24435	0.24435	0.39108	0.11129	0.16834	0.1175	0.185	0.048	-0.36	0.48	0.226	1			
SEN	0.85935	0.85935	-0.36198	0.94557	-0.401492	0.1902	0.705	0.931	-0.66	0.661	0.874	0.07	1		
SLE	0.94865	0.94865	-0.2855	0.90438	-0.268196	0.0678	0.812	0.902	-0.78	0.862	0.946	0.319	0.7708	1	
TGO	0.91005	0.91005	-0.44814	0.95608	-0.383996	0.1159	0.747	0.983	-0.6	0.682	0.92	-0.005	0.8767	0.889	1

Table 4.6: Covariance analysis of budget balance between WAMZ and WAEMU regions

Correlation	SBBALWAMZ
SBBALWAEMU	
SBBALWAMZ	1.0000
SBBALWAEMU	0.4327
1.0000	

#### 4.6 Discussion on findings on budget balance

Table 4.5 showing a combined cross section of all countries within ECOWAS region reveals that budget balance within the WAEMU region is symmetric while that within the WAMZ region is weakly asymmetric but on the whole, as reflected in table 4.6, the covariance analysis of 0.43 is indicative that budget balance between the WAMZ and WAEMU region is weakly symmetric. The reason for this weak asymmetry in budget balance within WAMZ may be as a result of the fact that the bulk of the revenue generated by the individual countries might have been misappropriated, mismanaged or even channeled into foreign economies as a result of corruption. For WAEMU, given that their currency is tied to the euro makes the regulation of their budgets simpler. But on the whole, strategies must be put in place to check diversification of funds.

#### 4.7 Presentation of result on interest rates

Table 4.7: Covariance Analysis of Interest rates for ECOWAS countries

Correlation	BEN	BFA	CPV	CIV	GMB	GHA	GIN	GNB	LBR	MLI	NER	NGA	SEN	SLE	TGO
BEN	1														
BFA	1	1													
CPV	-0.2504	-0.2504	1												
CIV	0.9677	0.9677	-0.35777	1											
GMB	-0.318	-0.318	-0.07526	-0.3914	1										
GHA	0.10796	0.10796	0.43825	0.14246	-0.277372	1									
GIN	0.75095	0.75095	-0.27351	0.76077	-0.358782	0.2325	1								
GNB	0.94499	0.94499	-0.40775	0.98988	-0.40027	0.1365	0.764	1							
LBR	-0.7377	-0.7377	0.35882	-0.70201	0.155282	0.2402	-0.63	-0.67	1						
MLI	0.899	0.899	-0.00886	0.77727	-0.139598	0.0676	0.631	0.731	-0.72	1					
NER	0.99141	0.99141	-0.27364	0.96813	-0.314771	0.1133	0.757	0.953	-0.72	0.89	1				
NGA	0.24435	0.24435	0.39108	0.11129	0.16834	0.1175	0.185	0.048	-0.36	0.48	0.226	1			
SEN	0.85935	0.85935	-0.36198	0.94557	-0.401492	0.1902	0.705	0.931	-0.66	0.661	0.874	0.07	1		
SLE	0.94865	0.94865	-0.2855	0.90438	-0.268196	0.0678	0.812	0.902	-0.78	0.862	0.946	0.319	0.7708	1	
TGO	0.91005	0.91005	-0.44814	0.95608	-0.383996	0.1159	0.747	0.983	-0.6	0.682	0.92	-0.005	0.8767	0.889	1

Table 4.8: Covariance analysis of Interest rates between WAMZ and WAEMU regions

Correlation SINRWAEMU	SINRWAMZ
SINRWAMZ	1.0000
SINRWAEMU	0.7078
1.0000	

#### 4.8 Discussion on findings on interest rates

On the whole, as shown in table 4.7, the combined cross section of interest rates of ECOWAS region, it is evident that interest rates are strongly symmetric within the WAEMU region than within the WAMZ region. Likewise, table 4.8 reveals that the covariance analysis of 0.71 is an indication that interest rates between the WAMZ and WAEMU region are symmetric. By implication, the convergence, growth and solidarity pact under enforcement has propelled the ECOWAS region to this level of symmetry.

#### 5.1 Conclusion and policy recommendations

This thesis provides a comprehensive analysis of regional symmetry in trade flows, regional symmetry in macroeconomic policies and business cycles synchronisation. From the investigation of trade flows, macroeconomic policies and business cycles synchronization in West Africa it becomes evident that business cycles synchronisation and macroeconomic policies symmetry are on the whole increasing among ECOWAS region, but with higher intensity within WAEMU region than within WAMZ region. The flow of trade however within ECOWAS region has been highly asymmetric indicating that these economies rely more on transaction with other developed economies.

Given that the results are mix, but with more synchronisation and symmetry within the WAEMU region than within the WAMZ region, and given that the WAEMU region already have an established monetary union with greater level of integration and given that higher integration leads to more synchronisation of business cycles, we therefore advocate for the creation of a monetary union within WAMZ but with the intent of retaining her separate currencies at least for the interim and then the creation of monetary union within ECOWAS for the latter. This will aid in proper monitoring of incentives injected on a proportionate basis into the economies in need in order to optimise macroeconomic policies, boost industrialization and enhance trade flows within these regions.

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**Appendix A**

**Convergence Criterion achieved by WAMZ countries within year 2001 to 2009**

<b>Country</b>	2001	2002	2003	2004	2005	2006	2007	2008	2009
The Gambia	2	1	1	3	3	4	4	4	3
Ghana	1	0	2	2	2	2	2	0	0
Guinea	3	2	0	0	2	1	2	2	3
Liberia	NA	NA	NA	NA	NA	NA	NA	NA	4
Nigeria	3	3	2	3	3	4	4	3	3
S. Leone	2	2	0	2	2	2	2	2	2

(Source: WAMI Macroeconomic Convergence Reports)