Foreign Capital Inflows and Growth:
An Empirical Analysis of WAMZ Experience

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ABSTRACT : Using the Seemingly Unrelated Regression Estimation (SURE) technique, we examine the implications of four different types of foreign capital inflows, namely; Foreign Direct Investment (FDI), Official Development Assistance (ODA), Foreign Private Investment (FPI) and Remittances (REM) on output growth of the West Africa Monetary Zone (WAMZ) economies over the period 1981-2010. Our results show that there are differences in the growth impact of the various forms of foreign capital inflows in the WAMZ countries. The result also shows that more than one form of capital inflow contributed positively to output growth in Nigeria. Again, we find that ODA positively contributes more to output growth in Sierra Leone and Ghana, whereas, FDI foster more output growth in Nigeria and Gambia. Remittances have the highest contribution in Liberia and finally none of the inflows has positively impacted on Guinea's economic growth. We therefore recommend that WAMZ countries should endeavor to create competitive economic environments that will be attractive to foreign investors since promoting trade and investment through sound economic policies and strengthened institutions are essential in maximizing the benefits from Foreign Capital Inflows in the region.

Keywords: Foreign Capital Inflows; Investment; WAMZ; Economic Growth.
JEL Classifications: B22; C23; O11; O55; F35; F43

1. Introduction

The need for foreign capital to supplement domestic resources is being felt by the developing economies, in view of the growing mismatch between their domestic capital stock and capital requirements. This is evidenced by the attention given to the drive for foreign capital especially in developing countries. Foreign capital inflow has been identified as an important vehicle for augmenting the supply of funds for domestic investment (Fosu and Magnus, 2006). African countries and other emerging economies need substantial inflow of capital to fill their savings and foreign exchange gaps, enhance capital accumulation and growth needed to overcome widespread poverty in these countries. Thus, the relative advantage (s) of foreign capital inflow as a productivity-enhancing package is now widely acknowledged especially since the recent financial crises. Increasingly, economic development literature shows that there is a robust link between foreign capital flow (FCF) and economic growth (Alfaro and Chanda, 2003; Borensztein et al., 1998; Levine, 2001).

FCF – economic growth nexus may be explained in two ways: the direct and indirect channels. Direct channel of foreign capital flow – growth link is transmitted through: transfer of

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technology; lower cost of capital due to better risk allocation; financial sector development of the capital market; and augmentation of domestic savings. The indirect channels' stand on the premise that financial flow promotes specialization; induces better policies and enhances capital inflows by signaling better policies (Prasad et al., 2003). Hence, West Africa Monetary Zone countries have encouraged inflows of capital by dismantling restrictions and controls against capital inflows within the region. However, South Africa attracted the vast majority of the foreign inflows being directed to Africa as a result of its proximity, sophistication and market size which have given it strong comparative advantage in the Sub-Saharan Africa (SSA) region while West African sub-region received a minimal percentage. For instance, South Africa attracted an average of 54.4% of total foreign direct investment (FDI) inflow to Africa in 2005 while an average of about 45.6% was distributed among the other Sub-region and this pattern of distribution has not altered till date.

In view of this, efforts are being made by different national authorities to attract more foreign capital to Africa. One of these efforts is symbolized by successful integration of African countries in large regional blocs such as the Economic Community of West African States (ECOWAS), The Common Market of East and Southern African (COMESA), Bourse Regional De Valeurs Mobilieres (BRVM), South Africa Development Community (SADC), West Africa Economic and Monetary Union (WAEMU) which is the first monetary integration in the ECOWAS sub-region. The consolidation of these regional blocs combined with a relatively conducive investment environment has helped African countries to achieve greater integration with the global economy.

Consequently, the second monetary zone in the sub-region within ECOWAS besides Union Economique et Monetaire Ouest Africaine (UEMOE) was established in 2000, when Gambia, Ghana, Guinea, Liberia, Nigeria and Sierra Leone signed the Accra declaration establishing the West African Monetary Zone (WAMZ). The objective of the WAMZ is to facilitate the monetary integration of the sub-region and to ensure the achievement of ECOWAS monetary cooperation programme through sound management of the economies and the establishment of a single currency for these countries. But, there has been perceptible pattern of inflows to sub- Saharan Africa. The bulk of capital inflows go to South Africa whereas the West Africa sub-region is left with a limited amount of the inflows. Even, among the West Africa sub-region, Nigeria seem to receive substantial part of the inflows of capital against other WAMZ countries. However, even as Nigeria looks more financially viable when compared to other WAMZ countries, its share of inflow is still incomparable to South Africa. To this end, we consider it interesting to undertake this study in order to unravel the cause (s) of this trend, understand what actually determines the attraction of inflows to WAMZ countries, empirically elucidate what type (s) of capital inflows foster more growth in specific WAMZ countries and how WAMZ countries can exploit the benefit of such inflow (s). These issues, among others, are the factors motivating this research.

The theory of the two-gap model had acknowledged that capital inflow was needed to provide the required growth that would make economic take-off possible in developing countries (Chenery & Strout, 1966). This implies that the development of emerging economies is imbedded in their ability to embrace the global production web through capital inflow which brings increase productivity, technology transfer, effective competition and economic growth. Hence, over the decades, private capital inflow had taken off, driven by a number of domestic and external factors that contributed towards enhancing the regions (ECOWAS) attractiveness for foreign investors. In April 2000, the WAMZ countries agreed to move towards monetary integration. Such proposal has been argued to provide much needed exchange rate and price stability in the WAMZ region. Above all, the agenda is expected to stimulate capital flows and investment that enhances growth and development in the WAMZ economies.

In spite of the possible benefits of the foreign capital in the host economy, it is worrisome that Africa sub-region has not attracted sufficient dose of it that will launch them into economic development. Table 1 shows that only 1.6% on the average of the total capital inflow was directed to Africa between 1970 and 1990. 21.8% to other developing countries, whereas 77.2% was flowed to developed world.

Table 1. Average capital inflows for the world and selected regions 1970-1990 and 1991-2010. (As a percentage share of world inflows).

REGIONS	1970-1990	1991-2010
All developed countries	77.2	66.5
Al Developing countries	21.8	30.6
Africa	1.6	2.8

Source: World Investment Report (2011)

From table 2, it is glaring that ODA still dominate most WAMZ capital inflows. ODA comes in as a result of sympathy by the west which is followed by a lot of conditionality. Remittances are basically used for the upkeep and consumption of the family members; has no much impact on yielding dividend of growth especially when they are not productively invested (Adams and Page, 2005). However, Private capital flows depends on macroeconomic fundamentals and it has been very low in the WAMZ nations with exception of Nigeria. This is as a result of poor macroeconomic fundamentals in the region. For example, WAMZ stock markets are still in their developmental phase. There is very low correlation between WAMZ stock markets and the major stock markets.

Table 2. Average proportion of FCI to WAMZ regions from 2004 to 2010 (As a percentage share of the total WAMZ inflows).

Countries	Remittances	ODA	FDI
Gambia	30.7	37.6	31.3
Ghana	5.2	63.6	31.2
Guinea	14.3	51.7	34.0
Liberia	9.6	67.6	22.8
Nigeria	41.5	22.5	36.0
S/Leone	5.0	80.6	14.4

Source: World Bank's Development Indicators (WDI), 2012 and authors' computation

It is therefore, important to understand the underlying factors, which are significantly linked with net capital inflows to guide policy and regional reforms and their effective implementation in the WAMZ region. Especially now the WAMZ nations are taking important steps to improve their investment climate, governance style, institutions and structures, human capital and infrastructure and overall macroeconomic investment (UNECA and AUC, 2011). It is in the light of the afore-mentioned issues that this study seeks to address the following research questions: What has been the trend of FCI in the WAMZ countries over the years? What is the composition of foreign capital inflows in the WAMZ countries over the years? Which of the FCI foster more growth across the WAMZ countries? What are the growth implications of the various types of FCI across the WAMZ region? The argument here is; how do we make and encourage the productivity of financial inflows which foster higher growth given a specific WAMZ country? In the WAMZ countries, each country has its peculiar policies, rules and regulations and its level of development, determining the specific cross border capital flow that is highly productive will help to determine if domestic policy or otherwise has an influence and to what extent it supports the performance of such capital inflow. Knowing the driving factor (s) of specific capital inflows will help to formulate and implement suitable policy framework that will enhance its productiveness in each country and the region at large. Having stated the research problem, the main objective of this study is to determine if capital inflow foster economic growth in Anglophone West Africa. Specifically, this study intends to find out the following: To unravel the trend of FCI in the WAMZ countries over the years, examine the composition of foreign capital inflows in the WAMZ countries over the years, investigate the specific type of FCF that foster more growth in the various WAMZ countries and critically analyze the growth implications of the various types of FCI across the WAMZ region.

2. Literature Review
2.1 Theoretical Literature
2.1.1 The Two-Gap Model
The two-gap model is an extension of the Harrod-Domar growth model in which growth is driven by physical capital formation. In the Harrod-Domar Model, output depends upon the investment rate and the productivity of investment. A savings gap exists if domestic savings alone are insufficient to finance the investment required to attain a target rate of growth. In addition to the savings gap, there is also a trade or foreign exchange gap which is based on the assumption that not all investment goods can be produced domestically. These two gaps are combined to form the two-gap model. More closely related to the two-gap model is the recent concern over the third "Fiscal" gap between government revenue and expenditures, as illustrated by the three-gap models by Bacha (1990) and Taylor (1990).

2.1.2   Push- Factor and Pull- Factor Theories
The direction of international capital flows is explained by two classes of theories, namely; push- factor and pull- factor theories (Calvo et al, 1993). Thus, push- factor theories attribute direction of capital flows to what happens on the international front such as falling international interest rates, business cycles in industrial countries and the rising trend toward international diversification (Calvo et al, 1996; Calvo and Reinhart, 1998). Pull- factor theories, on the other hand, trace the causes of capital flows to such domestic factors as autonomous increases in the domestic money demand function, increases in the domestic productivity of capital, and increasing integration of domestic capital markets with global capital markets (Agenor and Montiel, 1999).

2.1.3 Theories of International Financial Puzzle
Finally, five views regarding finance-growth nexus debate have been identified by Levine(1997): firstly, the views attributable to Hamilton, Bagehot and Schumpeter, which argues that finance ignites growth; a second view traceable to Adam Smith opines that finance hurts growth ; a third view due to Robinson is that finance is growth led; a fourth view credited to Lucas avers that growth is finance neutral ;and a fifth view, mainly canvassed by World bank and IMF emphasize that finance matter because there is financial crisis. Finally, we conclude by deducing that if finance matters, then Foreign Capital Inflows (FCI) being a part of the financial flows, needed to finance investments, equally matters.

2.2 Empirical Literature
The understanding of the growth impact of specific categories of capital inflows has important policy implications but so far in empirical literature, studies in this area have received limited attention in the WAMZ region. However, we have had such studies devoted to other economies with diverse results (see for example, Gürsoy and Kalyoncu, 2012; Gursoy et al. 2013; Ayouni et al, 2014; Gouidar and Nouira, 2014; Hussain and Anjum, 2014). Below are some of the empirical findings of growth implications of various inflows in different economies (Table 3).

Table 3. An overview and summary of the earlier empirical studies of the growth implications of various capital inflows

Author	Location	Nature of Study	Nature of Data	Methodology	Findings
Reisen and Soto (2001)	44 developing countries 1986-1997	Independent growth effect of bonds and equity flows on economic growth	Panel data	Generalized Method of Moments (GMM)	Portfolio equity flows exert a significant impact on economic growth. Bonds do not have any significant effect on economic growth.
Levine and Carkovic (2002)	72 developed and developing countries 1960-1995	The relationship between FDI and economic growth	Cross section and panel data	Ordinary least square (OLS) as well as GMM	FDI inflows do not exert a robust, independent influence on economic growth
Durham (2003)	88 OECD countries 1977-2000	The effect of bonds foreign portfolio investment (BFPI) and long-term bank lending on economic growth	Cross section	Dynamic panel model	Short and long term bank lending is found to negatively affect economic growth in the recipient county, except when local banks are sufficiently capitalized. Bonds have no effect on economic

					growth.
Adams and Page (2005)	71 less developed countries	Impact of international migration and remittances on poverty in developing world	Time series	Panel estimation	Remittances significantly reduce the level, depth and severity of poverty in developing world.
Chimhowu et al. (2005)	Sub-saharan Africa	Nature and role of remittances in household income and its impact on economic growth	Time series	OLS	Remittances contribute directly to raising household incomes, while broadening the opportunities to increase income. Remittances generate a multiplier effect in the local economy, spurring new economic and social infrastructure and services particularly where effective structure and institutions have been set up and encouraged.
McGillivray et al. (2005)	Sub-Saharan Africa	It works: it doesn't: it can but that depends … 50 years of controversy over the macroeconomic impact of development Aid	Time series data	Panel OLS	The paper concludes that policy regime of each country, such as inflation and trade openness, influence the amount of aid received.
World Bank (2006)	United states of American	International remittances, their economic consequences and how policies can increase their role in reducing poverty	Panel data	Poverty Simulation Model	Remittances do reduce poverty – although the evidence of their effect on inequality is mixed. It also indirectly affects poverty in the recipient country through their effect on inflation, exchange rate and access to capital
Quattara (2006)	Senegal	The effect of aid flows on key fiscal aggregate in Senegal: interaction between aid and debt.	Time series data		The impact of aid flows on domestic expenditures is statistically insignificant. Debt servicing has a significant negative effect on domestic expenditure.
De-vita and Kyaw (2009)	126 developing countries	Impact of portfolio investment flows on the economic growth of low, lower middle and upper middle income countries	Panel data	SUR technique	They find that only developing countries that have reached a minimum level of economic development and absorptive capacity are able to capture the growth enhancing effect of the investment flows.
Source: Authors' Compilation Based on Literature Reviewed					

3. Methodology
3.1 Theoretical Framework and The Model

The argument for foreign capital is usually founded on the need to augment the level of domestic savings that can supply the needed resources (financial, technical and managerial) for domestic economic growth. This follows the widely acknowledged theory of two-gap model as propounded by Chenery and Strout, and following Harrod-Domar (H-D) growth model. The basic argument of the two-gap model is that most developing countries face either a shortage of domestic savings to match investment opportunities or a shortage of foreign exchange to finance needed imports of capital and intermediate goods (Chenery and Strout, 1966). Hence, external finance can play a vital role in supplementing domestic resources in order to relieve savings and foreign exchange bottlenecks.

From the basic knowledge of the H-D model, output growth is a function of additions to the stock of capital (Investment):

$$\dot{Y} = f(\Delta K) = f(I) \qquad (1)$$

where $\dot{Y}$ is the growth of output, K is capital stock and I is investment.
But we know from the standard macro-economic national income identity that

$$E = C + I + G + (X - M) \qquad (2)$$
$$Y = C + S + T \qquad (3)$$

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where E is aggregate expenditure, Y is aggregate income, S is private saving, G is government expenditure, T is tax, X is exports and M is imports

Following the two-gap model:

$$E - Y = (I - S) + (G - T) + (X - M) \qquad (4)$$

In order for the economy to be at equilibrium in (4) above, E-Y must equal zero. Then,

$$(I - S) + (G - T) = (M - X) \equiv F \qquad (5)$$

where F is the foreign capital inflow. If we omit the fiscal balance (G-T) in (5) above, then:

$$I = F + S = F + sY \qquad (6)$$

where s is the economy's propensity to save.

Equation (6) simply shows that the total investible resources (I) required for the growth of an economy is the sum of the private savings (S) and foreign capital inflow (F). Substituting the obtained fact in (6) into (1):

$$\dot{Y} = f(I) = f(F, S) \qquad (7)$$

This is the foundational functional form of our study analysis. For the purpose of this study, the foreign capital inflow (F) shall consist of foreign direct investment (FDI), foreign portfolio investment (FPI), official development assistance (ODA) and workers' remittances (REM).

Therefore, in econometric form, we can express this as;

$$ln(RGDP)_t = \beta_0 + \beta_1 ln(FDI)_t + \beta_2 ln(FPI)_t + \beta_3 ln(ODA)_t + \beta_4 ln(REM)_t + \beta_5 ln(PDS)_t + \beta_6 REXR_t + \beta_7 RINT_t + u_t \qquad (8)$$

where, *ln* is natural log, RGDP is real Gross Domestic Product, PDS is private domestic savings (which at equilibrium equals domestic investment in Harrod-Domar Model), REXR is real exchange rate, RINT is real interest rate and u is the disturbance term, while others are as defined earlier.

Meanwhile, since the aim of this study is to analyze and examine the growth impact of foreign capital inflows into the WAMZ region, one may think of estimating (8) above for each of the member-country independently using ordinary least square (OLS). This method is known as equation-by-equation method, and it is depicted below:

$$ln(RGDP)_t^{GM} = \beta_{10} + \beta_{11} ln(FDI)_t^{GM} + \beta_{12} ln(FPI)_t^{GM} + \beta_{13} ln(ODA)_t^{GM} + \beta_{14} ln(REM)_t^{GM} \\ + \beta_{15} ln(PDS)_t^{GM} + \beta_{16} REXR_t^{GM} + \beta_{17} RINT_t^{GM} + u_{1t}$$

$$ln(RGDP)_t^{GH} = \beta_{20} + \beta_{21} ln(FDI)_t^{GH} + \beta_{22} ln(FPI)_t^{GH} + \beta_{23} ln(ODA)_t^{GH} + \beta_{24} ln(REM)_t^{GH} \\ + \beta_{25} ln(PDS)_t^{GH} + \beta_{26} REXR_t^{GH} + \beta_{27} RINT_t^{GH} + u_{2t}$$

$$ln(RGDP)_t^{GN} = \beta_{30} + \beta_{31} ln(FDI)_t^{GN} + \beta_{32} ln(FPI)_t^{GN} + \beta_{33} ln(ODA)_t^{GN} + \beta_{34} ln(REM)_t^{GN} \\ + \beta_{35} ln(PDS)_t^{GN} + \beta_{36} REXR_t^{GN} + \beta_{37} RINT_t^{GN} + u_{3t}$$

$$ln(RGDP)_t^{LB} = \beta_{40} + \beta_{41} ln(FDI)_t^{LB} + \beta_{42} ln(FPI)_t^{LB} + \beta_{43} ln(ODA)_t^{LB} + \beta_{44} ln(REM)_t^{LB} \\ + \beta_{45} ln(PDS)_t^{LB} + \beta_{46} REXR_t^{LB} + \beta_{47} RINT_t^{LB} + u_{4t}$$

$$ln(RGDP)_t^{NG} = \beta_{50} + \beta_{51} ln(FDI)_t^{NG} + \beta_{52} ln(FPI)_t^{NG} + \beta_{53} ln(ODA)_t^{NG} + \beta_{54} ln(REM)_t^{NG} \\ + \beta_{55} ln(PDS)_t^{NG} + \beta_{56} REXR_t^{NG} + \beta_{57} RINT_t^{NG} + u_{5t}$$

$$ln(RGDP)_t^{SL} = \beta_{60} + \beta_{61} ln(FDI)_t^{SL} + \beta_{62} ln(FPI)_t^{SL} + \beta_{63} ln(ODA)_t^{SL} + \beta_{64} ln(REM)_t^{SL} \\ + \beta_{65} ln(PDS)_t^{SL} + \beta_{66} REXR_t^{SL} + \beta_{67} RINT_t^{SL} + u_{6t}$$

where, the equations superscript ^{GM}, ^{GH}, ^{GN}, ^{LB}, ^{NG}, and ^{SL} are for Gambia, Ghana, Guinea, Liberia, Nigeria and Sierra Leone respectively.

The underlying assumptions in the independent equation-by-equation OLS estimation of the system equations above include serial independence of disturbances and zero-correlation of the right-hand side variables to the disturbances. However, these two assumptions may fail to hold in our analysis of WAMZ region. This is because, not only do the member-countries share some similar features (e.g. level of development, trade pattern, institutions, language and colonial system etc.) but they also interact among themselves. In fact, capital inflows into one of the member-country include outflow of capital from other member-countries. Although, the application of OLS to individual system equations may yield unbiased and efficient estimators, however, the estimators are less efficient. Hence, a system estimation of the entire model would be methodologically more acceptable and preferable to equation-by-equation estimation.

There are various methods of estimating system equations which involves heterogeneous units. This include panel data analysis (which appropriate when the number of units, N, is large but the number of observations, T, is small), Panel VAR (which assumes that all variables in the system are endogenous) and Seemingly Unrelated Regression (SUR) model (which takes right-hand side

variables as exogenous and is appropriate when N is small but T is infinite, or large). Based on the nature of the system equation involved here, where we have six (6) distinct heterogeneous units (6 equations) and forty (40) observations, this study shall employ the SUR model. The choice of the SUR model for analysis of this study is based on the fact that it succinctly takes into consideration the contemporaneous cross-equation error correlation, and it is more appropriate for our study because of small heterogeneous unit N and Large sample observation T.

3.2 Empirical Model: Seemingly Unrelated Regression

A set of equations that has contemporaneous cross-equation error correlation (i.e. the error terms in the regression equations are correlated) is called a seemingly unrelated regression (SUR) system. At first look, the equations seem unrelated, but the equations are related through the correlation in the errors. The Seemingly Unrelated Regression (SUR) system estimator was developed by Zellner (1962). It is appropriate when all the right-hand side regressors are assumed to be exogenous and the errors are heteroscedasticity and contemporaneously correlated. The SUR method estimates the parameters of all equations simultaneously, so that the parameters of each single equation also take the information provided by the other equation into consideration. This result has greater efficiency of the parameter estimates because additional information is used to describe the system. This efficiency gains increase with increasing correlation among the error term of different equations (Judge et al, 1998, Yahya et al, 2008).

In the case of analyzing the composition of FCI into WAMZ and its effects on the economic growth, the SUR method can be used to estimate all parameters of all equations simultaneously whilst the correlations among the cross sectional countries are taken into account. Given the fact that the WAMZ member-nations are related, hence the correlation of their regressions' error terms, a system of M seemingly unrelated regression equations can be written in matrix format as follows:

$$Y_1 = X_1\beta_1 + \varepsilon_1$$
$$Y_2 = X_2\beta_2 + \varepsilon_2$$
$$Y_3 = X_3\beta_3 + \varepsilon_3$$
$$Y_M = X_M\beta_M + \varepsilon_M$$

Using a more concise equation, this system of M-equations can be written as:

$$Y_i = X_i\beta_i + \varepsilon_i \qquad for\ i = 1, 2, \dots, M \tag{9}$$

Where Y_i is an Nx1 column vector of observations on the ith dependent variable; X_i is a NxK matrix of observations for the K-1 explanatory variables and a column vector of 1's for the ith equation (i.e., the data matrix for the ith equation); β_i is the Kx1 column vector of parameters for the ith equation; and ε_i is the Nx1 column vector of disturbances for the ith equation.

In line with Davidson and MacKinnon (1999), this system of M-equations can be combined into a single large equation, which can easily be estimated, by vertically stacking the vectors and matrices thus:

$$\begin{bmatrix} Y_1 \\ Y_2 \\ \vdots \\ Y_M \end{bmatrix} = \begin{bmatrix} X_1 & 0 & \cdots & 0 \\ 0 & X_2 & \cdots & 0 \\ \vdots & \vdots & \ddots & 0 \\ 0 & 0 & \cdots & X_M \end{bmatrix} \begin{bmatrix} \beta_1 \\ \beta_2 \\ \vdots \\ \beta_M \end{bmatrix} + \begin{bmatrix} \varepsilon_1 \\ \varepsilon_2 \\ \vdots \\ \varepsilon_M \end{bmatrix} \tag{10}$$

The single compact equation from the stacked model can be written thus;

$$Y = X\beta + \varepsilon \tag{11}$$

Where y is an (M•N)x1 column vector of observations on the dependent variables for the M-equations; X is an (M•N)x(M•K) matrix of observations on the explanatory variables; with the columns of 1's, for the M-equations; β is an (M•K)x1 column vector of parameters for the M-equations; and ε is a (M•N)x1 column vector of disturbances for the M-equations.

This specification of the SUR model is defined on the assumption that:

- The functional form of the compact equation is linear in parameter i.e. β is linear
- The error term of the compact equation has a zero-mean i.e. E(ε)=0
- The disturbance terms in the compact equation are non-spherical, thereby satisfying the assumptions of homoscedasticity, no autocorrelation and contemporaneously correlation of disturbances for different individual equations
- The error term of the compact equation is normally distributed i.e. $\varepsilon \sim N(0, 1)$ and

- The error term and explanatory variables of the compact equation are uncorrelated i.e. $Cov(\varepsilon, X) = 0$

3.3. Data Source

The data to be used in this study were sourced from different agencies like the Central Bank of Nigeria (CBN) and National Bureau of Statistics (NBS), which are both located in Abuja, Nigeria. We also used data from World Bank Publications, IMF statistical data, United Nations common data base, etc. All data series are annual and span the period 1981-2010.

4. Empirical Results and Discussions

In the table 4 below, the results of six independent equations were estimated simultaneously so that each equation took the information provided by the other equation into account. GDP, FDI, ODA, Remittances, domestic investment, exchange rate and lending rate data are available for all the WAMZ. It is common knowledge that the error terms are contemporaneously correlated as it is likely to occur in cross sectional studies. Hence, the estimated OLS standard error will be biased and inconsistent. Therefore, we adopted the SUR estimation that accounts for such weaknesses of OLS.

Table 4. Seemingly Unrelated Regression Estimates of Impact of Capital Flows on Output Growth

	lgdpsira	Lgdpnig	lgdpgui	Lgdpgam	Lgdpgha	Lgdplib
Lfdi	0.0170	0.208[*]	-0.0428	0.170[***]	-0.0229	0.0409
	(0.364)	(0.013)	(0.228)	(0.000)	(0.272)	(0.397)
Loda	0.202[***]	0.108[*]	-0.521[***]	-0.0534	0.0386[**]	0.205
	(0.000)	(0.025)	(0.000)	(0.603)	(0.004)	(0.182)
Lrem	-0.00800	-0.0590[*]	0.00613	0.0880	0.00575	0.232[***]
	(0.672)	(0.030)	(0.855)	(0.115)	(0.712)	(0.000)
Lrint	-0.00461	-0.0274[**]	0.0238	-0.0167	0.126[*]	-0.0841[**]
	(0.132)	(0.002)	(0.172)	(0.233)	(0.013)	(0.007)
Rexch	-0.0000976	-0.00983[***]	-0.000205	0.00604	0.290	0.00268
	(0.859)	(0.000)	(0.637)	(0.478)	(0.143)	(0.364)
Dinv	0.0295[***]	0.0000503[***]	-0.0109	-0.00202	-0.128	-0.0409
	(0.000)	(0.000)	(0.519)	(0.873)	(0.111)	(0.082)
Constant	16.53[***]	18.92[***]	32.47[***]	16.82[***]	16.65[***]	10.48[***]
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Observations	24	24	24	24	24	24
R^2	0.689	0.928	0.486	0.771	0.738	0.684

p-values in parentheses
[*] $p < 0.05$, [**] $p < 0.01$, [***] $p < 0.001$
Dependent variable: log of GDP, all the cross country include a constant,
, * and * denote the significance at 1, 5, and 10 % percent respectively.

The result showed that the estimation was free from all forms of specification and estimation errors, thus, indicating consistency and reliability of the results. Consequently, the estimated coefficients reflect the true (efficient and unbiased) relationship in the model. Furthermore, to test for multicollinearity which is a major estimation problem in a panel analysis, we used correlation matrix of residual as shown in table 5.

Table 5. Correlation matrix of residuals

	lgdpsira	lgdpnig	lgdpgui	lgdpgam	lgdpgha	lgdplib
lgdpsira	1.0000					
lgdpnig	0.3203	1.0000				
lgdpgui	0.5654	0.3487	1.0000			
lgdpgam	0.3540	0.1719	0.2260	1.0000		
lgdpgha	0.6512	0.4143	0.3293	0.3301	1.0000	
lgdplib	0.2244	-0.0533	-0.1587	0.2289	0.2301	1.0000

The test shows that there is no collinearity within the heterogeneity of these countries. The result shows vividly that several of these pair-wise correlations are quite small (of less than 0.5). This suggests that there is no or little multicollinearity among the variables. This strongly supports the efficiency of using SUR model in this estimation.

BREUSCH-PAGAN (BP) TEST

The breusch-pagan test of independent equations rejects its null hypothesis that the equations are independent even at 1 % level of significance. This suggests that there is a gain in efficiency in using the SURE model instead of the OLS. Since the BP test of independence reject its null hypothesis that the equations are independent as can be seen in table 6. It implies that there is presence of serial correlations among the error terms in the equations. Hence, the SURE coefficients become the BEST LINEAR UNBIASED ESTIMATORS.

The BP empirical result shows the insignificance of all the capital inflows to Nigeria yet it is assumed that Nigeria attracted the highest percentage of FCI to WAMZ. From the result, capital inflows contributed about 93% of the total output growth in Nigeria considering the R^2. This is a robust result if it is to be considered but yet none of the inflows was statistically significant. The same problem existed in Sierra Leone and even in Guinea. This proves that OLS by OLS equation will be inefficient and coefficients obtained from such result will be biased.

Table 6. OLS Estimates of Impact of Capital Inflows to WAMZ

	lgdpsira	Igdpnig	lgdpgui	Lgdpgam	lgdpgha	Lgdplib
Lfdi	0.0104	0.238	-0.0685	0.147***	0.227***	0.0694
	(0.713)	(0.087)	(0.158)	(0.000)	(0.001)	(0.219)
Loda	0.144	0.127	-0.609**	-0.0457	0.375*	0.113
	(0.053)	(0.054)	(0.002)	(0.692)	(0.020)	(0.438)
Lrem	0.0125	-0.0401	0.0187	0.0850	0.0661	0.253***
	(0.454)	(0.218)	(0.728)	(0.193)	(0.401)	(0.000)
Lrint	-0.00465	-0.0322**	0.0216	-0.0231	-0.0139	0.0607*
	(0.187)	(0.009)	(0.441)	(0.191)	(0.117)	(0.031)
Rexch	-0.000145	0.00848***	0.0000338	0.00654	-0.00697	0.00221
	(0.808)	(0.000)	(0.539)	(0.467)	(0.969)	(0.515)
Dinv	0.0458**	0.0000508***	0.0212	0.0116	-0.0524***	-0.0289
	(0.006)	(0.000)	(0.479)	(0.397)	(0.001)	(0.137)
Constant	17.30***	17.73***	33.73***	17.00***	11.22***	11.63***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Observations	25	28	29	29	29	29
R^2	0.712	0.935	0.511	0.781	0.773	0.697

p-values in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

SIERRA LEONE

The result in table 4 shows that ODA exerted positive and significant impact on the output growth in Sierra Leone. As total ODA in Sierra Leone increased by 1%, on the average, the total output increased by 0.20%. This suggests that ODA led to appreciation of economic growth in Sierra Leone. This confirms why Sierra Leone depends largely on ODA especially from the USA. The channel through which ODA transmit into output growth is via domestic investment, this is as a result of the statistical significance of domestic investment. It implies that ODA had been greatly used productively in building social and economic infrastructure in Sierra Leone. Output over the period '1981-2010' increased at an annual rate of 2.95 percent as a result of a unit increase on the average in the domestic investment. This suggests that the country had made substantial progress in transforming from a post conflict nation to a developing democracy that made notably economic gain domestically. While ODA induced growth, FDI did not enhance growth. This may be because of the ill performance of the macroeconomic variables which discouraged FDI inflows. A major trend in the empirical result was the negative impact of remittances which showed that the recipients were using it for consumption

purposes and as such encouraged laziness in the recipients. It could also be that the recipients of these remittances were using it to take care of their aging parents and children who add nothing to the GDP.

NIGERIA

The empirical result for Nigeria suggests that FDI and ODA had positive and significant effects on economic growth of Nigeria during the period under investigation. A percentage increase in the inflow of FDI and ODA led to appreciation of output growth by 0.21 percent and 0.11 percent respectively in Nigeria economy. The positive impact of FDI is attributed to the vast natural resources in Nigeria, especially oil. Activities in the oil sector through FDI have made the country to reap billions of petrodollars over the decades (Ogunleye, 2008). FDI had impacted positively on Nigeria via creating employment for the teaming Nigerian populace, improving the technological know-how and also broadening the tax base of the Nigerian economy. The channel upon which ODA could affect output growth is through enhancement of infrastructural base such as power and development of human capital as most of the developmental partners (donors) continue to award scholarship to their host country. Interestingly, it was observed that Nigeria had used the proceeds from FDI and ODA to build her domestic savings. As the result shows, one dollar increase in the domestic investment on the average will increase output in Nigeria by 0.005 percent. This could be an evidence of successful financial reforms in Nigeria which comprises of privatization and deregulation exercise. In addition to the factors that led to increase in investment rate in Nigeria, are also, the great political will shown by the present administration towards developing stronger public-private partnership, transparency and fiscal discipline. The fight against corruption by the EFCC and ICPC had also helped to channel the resources productively in Nigeria. It is also believed that domestic savings will appreciate the more (Orji, 2012). It therefore goes that banking reforms in the country has started to achieve its objective by making credit accessible and affordable for the private investors. The empirical result shows an inverse relationship between lending rate and output growth in Nigeria. It was significant from the result that a percentage increase in interest rate on the average will reduce output growth via investment by about 2.77 percent. Hence, this conforms to the a priori, that when interest rate increases, ceteris-paribus, investment rate decreases (Orji et al 2014, Agu et al, 2014).

GUINEA

Assessment of growth implications of various capital inflows to Guinea was found to be statistically significant for ODA but with negative impact. This is in line with the work of (Wolf and Spoden, 2000) which opined that small countries with economic importance are likely to be subjected to the standard set by donor community. In Guinea, It implied that these standards tend to benefit the donors rather than the recipient country. Hence, ODA was negatively affecting economic growth in Guinea. Furthermore, there is an increasing evidence that aid is given to the country with higher debt profile to enable them service their debt. Guinea is a high indebted nation and it could be that the bulk of ODA inflows were channeled into servicing her debt with the accruing interest rather than investing productively in the domestic economy. The inflows of FDI and Remittances did not produce any significant positive result in Guinea economic growth. The negative impact of the FDI in Guinean economy could be linked with few multinational corporations there, which source their labour from their home countries at the expense of their host country's labour as a result of gap between their training and the multinational needs. The dominance of the resource seeking FDI and ODA also explained why Guineans domestic investment was not significant. In addition with political instability, exchange rate volatility and high inflation rate, all contributed to the insignificance of domestic investment. The result showed that a unit increase in the domestic investment reduces GDP growth by about 1.09 percent. This is as a result of interest rate ineffectiveness in the economy. Lending rate had the wrong sign and insignificant in the Guinea economy. A unit increase in real exchange rate will lead to about 0.002 percent reduction in GDP. This may be partly due to inappropriate monetary policy in the economy. In Guinea, the three inflows considered; none was significant during the period under investigation.

GAMBIA

An important growth impact came from FDI which had a positive effect on economic growth in Gambia. This result is different from previous findings in the literature like the work of Durham, 2003. This could be explained that a percentage increase in the amount of FDI inflow leads to appreciation of output in Gambia by 0.17%. This explained the extent of openness of Gambian economy especially on tourism which is a major beneficiary of FDI. It confirmed that tourism attracted a lot of investors in

the Gambia's economy and conformed with the literature that tourism alone account for about 20 % to total GDP in Gambia which took the form of sun-seeker and bird watchers. The observed significant influence of FDI on GDP growth in Gambia is as a result of the exchange rate liberalization policy which began progressively as far back as 1986, making the Gambia currency (dalasi) freely convertible and subject to global market factor. In contrast with the positive impact of the FDI, the effect of ODA was negative and insignificant. This could be explained by the level of their development. The fact that most of the multilateral aid coming from international financial institution such as IMF and World Bank have so much conditionalities attached, and those from bilateral sources were mostly tied, hence, ODA in Gambia tends to meet the goal and aspirations of these donors' than helping the Gambians. This retards the productivity of ODA in Gambia. Furthermore, our empirical finding showed that remittances had insignificant positive relationship with output growth. This suggested that remittances did not have any impact on growth.

GHANA

ODA was found to be statistically significant in Ghana. A percentage increase in the inflow of ODA exert about 0.03 percent in the output growth of the economy. The channel through which ODA transmit to economic growth was via financing productive investment and importation of capital inputs to increase production as Ghana is known with the production of gold and cocoa. These natural endowments had attracted developmental partners in order to support Ghanaian economy. The public-private partnership adopted by the government to improve the efficiency and effectiveness of ODA had made a positive impact on the productivity of ODA in the country. These donors had also engaged in human capital formation, which enhanced productivity in the country.

The empirical result suggests that FDI was not statistically significant on the output growth of Ghana. It did not follow the theoretical priory during the period under investigation. Most of the foreign companies in Ghana were resource-seeking firms which operate 'economic islands'. Such natural resource extracting companies tend to have extremely weak linkages with the domestic economy. The dominance of resource seeking corporation and its limited interaction with the domestic economy also prevented the Ghanaian economy from reaping the benefits of FDI like employment. Hence, they siphoned and repatriated all their income thereby, retarding the output growth of the host economy. Remittances did not support economic growth in Ghana. This implies that remittances were growth neutral in Ghana.

LIBERIA

The regression analysis indicated that remittances showed relatively higher rate of growth in comparison with FDI and ODA. Our estimate suggested that a percentage increase in the amount of remittances inflows may lead to about 0.23 percent appreciation in the output growth. The study tested the hypothesis that remittances contributes significantly to the economic growth of Liberia. This result could be explained as a result of prolonged civil war and government mismanagement which destroyed much of the Liberian's economy. This led to massive exodus of the citizens, taking capital and expertise with them. From the empirical result, it implied that these citizens had been remitting funds in their country of origin which was being directed into productive activities. In addition, Liberia being a war revenged economy, remittances stood the chance to be more stable than any other inflow since migrants are less likely than foreign investors to withdraw their investments, even in the presence of economic adversity. In contrast with the positive growth impact of remittances, the effect of FDI and ODA were not significant, but positive.

5.   Conclusion and Policy Recommendations

Using the Seemingly Unrelated Regression Estimation (SURE) technique, we examine the implications of four different types of foreign capital inflows, namely; Foreign Direct Investment (FDI), Official Development Assistance (ODA), Foreign Private Investment (FPI) and Remittances (REM) on output growth of the West Africa Monetary Zone (WAMZ) economies over the period 1981-2010. Our results show that there are differences in the growth impact of the various forms of foreign capital inflows in the WAMZ countries. The result also shows that more than one form of capital inflow contributed positively to output growth in Nigeria. Again, we find that ODA positively contributes more to output growth in Sierra Leone and Ghana, whereas, FDI foster more output growth in Nigeria and Gambia. Remittances have the highest contribution in Liberia and finally none of the inflows has positively impacted on Guinea's economic growth.

The importance of this study is to identify the growth implications of various capital inflows to WAMZ countries. This result will enable individual country to know the effectiveness of each FCI in promoting growth considering the nature of its macroeconomic fundamentals. In a case where a given FCI is unproductive in an economy, proper plan need to be put in place to enhance the efficiency of such inflow before attracting it. That is, each country should undertake a domestic resource assessment with a view to understand the peculiar nature and structure of their economies and appropriate policy for dealing with them. Hence, we recommend that each country across the WAMZ should look inwards, re-strategize and begin to formulate and implement sound economic policies that will be aimed at attracting productive capital inflows into. WAMZ countries should not welcome all types of foreign capital inflows (FCI) especially those that seems unproductive and virile given the economy under consideration. The region as a bloc should also be mindful of the nature of capital flows into the region, hence, focus on technology–inducing and beneficial capital inflows aimed at developing domestic productive capacities in the individual WAMZ countries and into WAMZ as a Bloc.

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