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Correspondence

Correspondence regarding the *Economic and Financial Review* and published articles should be addressed to:

Director of Research/Editor-in-Chief
CBN Economic and Financial Review
Central Bank of Nigeria
33 Tafawa Balewa Way
Central Business District
P. M. B. 0187 Garki
Abuja
Nigeria

Email: info@cbn.gov.ng
Website: www.cbn.gov.ng

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Capital Inflows and Sectoral Output in Nigeria: Implications for Achieving Inclusive Growth

Nwosa P. I. [*]

Abstract

This study examined the impact of capital inflows on sectoral output in Nigeria for the period 1970 to 2014, with implication for achieving inclusive growth. Capital inflows was measured by foreign direct investment and foreign aid, while sectoral output consisted of six sectors of the Nigerian economy – agriculture, extractive, manufacturing, building and construction, wholesale and retail, and the social sector. Utilising the Ordinary Least Square technique, the study observed significant positive influence of foreign direct investment on the extractive, building and construction, and wholesale and retail sectors while the effect of foreign direct investment on agriculture, manufacturing and social sectors was insignificant. Also, foreign aid was insignificant in influencing any of the sectors of the Nigerian economy. The study concluded that the impact of capital inflows on sectoral output could not guarantee the attainment of inclusive growth in Nigeria. Based on the differential impacts of capital inflows on sectoral output and the importance of achieving inclusive growth, this study recommended that a-one-for-all capital inflow policy would be inappropriate. Capital inflow policies must be sector-specific in order to realise the greater impact of these sectors on employment.

I.   Introduction

The perceived mismatch between sustained economic growth, on the one hand, and the high incidence of unemployment, poverty and widening income inequality in several developing economies, including Nigeria, has raised global concern among development theorists, policy analysts and researchers. This probably informed the shifting of attention from economic growth to inclusive growth that ensures greater participation of the labour force, accompanied by reduction in poverty rate and income inequality. According to Pedro and Paula (2013), the generation of productive employment and ensuring that the vulnerable in the society are able to access these opportunities are fundamental to fostering inclusive economic growth.

Generating productive employment opportunities involves a wide range of domestic and international policies. One of such policies is how to ensure sustainable investment in various sectors of the economy that would enhance increased employment and output growth of these sectors. However, due to poor income and low savings of many developing economies, capital inflow are used to bridge the gap between required savings and investment to achieve growth objectives. Also, the attraction of foreign capital by developing countries has been hinged on various growth-enhancing incentives, such as access to global market; foreign exchange earnings; adequate and relevant foreign expertise in various sectors; modern and cutting edge productive technology and technology spill over from foreign countries (Grossman and Helpman, 1991; Sethi and Patnaik, 2007). It is expected that the presence of the above incentives will enhance economic growth via investment in various sectors of the economy, which would ultimately generate employment opportunities, leading to the attainment of inclusive growth. Indeed, employment is the main mechanism through which output growth translates into poverty

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[*] *Phillip I. Nwosa is a staff of the Department of Economics, Faculty of Social Sciences, Federal University Oye-Ekiti, Ekiti State, Nigeria. The views expressed in this paper are those of the author and do not necessarily reflect the opinions of the Central Bank of Nigeria.*

reduction (Pedro and Paula, 2013). And it must be noted that the problem of rising employment can only be adequately addressed via sustainable investment in the various sectors of the Nigerian economy.

Despite the sectors being the channel through which foreign capital inflows affect economic growth, previous indigenous studies (such as Akinlo, 2004; Ayanwale, 2007; Osinubi and Amaghionyeodiwe, 2010; Danladi and Akomolafe, 2013) had focused mainly on the relationship between foreign capital inflows and aggregate output (economic growth), neglecting the impact of foreign capital on sectoral output growth. Consequently, policy recommendations that emanated from these studies were aggregate-based rather than sector-specific. This neglect might have hampered the level of investment and growth of some sector, which are capable of generating sustainable productive employment opportunities. For instance, if foreign investments are concentrated in capital-intensive industries, then they are unlikely to generate significant domestic employment – at least directly. Similarly, if these investments do not promote strong backward and forward linkages with local businesses as in the case of agriculture and manufacturing sectors, then the benefits of foreign investment are likely to be limited (UNDESA, 2010).

Additional, studies by Vu and Noy, 2009; Martins, Serieux and McKinley 2009) have observed that components of capital inflows influence various sectors of the economy differently. For instance, while foreign direct investment, which is profit-driven is observed to flow more to the production sectors (such as oil, industrial, agriculture, and building and construction sectors), foreign aid is assumed to flow more into the social sectors. In this regard, UNCTAD (2008) observed that the share of foreign aid to productive sectors in Less-Developed Countries (LDCs) declined from 48 per cent during the period 1992 to 1994 to 25 per cent in 2006 while foreign aid was claimed to have increasingly concentrated on social sectors, such as health and education.

Although many studies (see Adeleke et. al., 2014; Otto and Ukpere, 2014; Babalola et. al., 2012; Umoh et. al., 2012), have examined the impact of capital inflow on economic growth in Nigeria, they, nevertheless, did not consider the contributions of these inflow on the various sectors of the Nigerian economy. Furthermore, previous studies failed to address the issue of whether foreign direct investment (FDI) affects the productive sectors more than the social sectors or vice versa. Besides, an examination of the relationship between capital inflow and sectoral output has the prospect of identifying sectors of higher tendency to grow and hence increase employment, if the much needed capital is deployed. Also, examining the impact of capital inflow at the sectoral level is important because responses of sectors to capital inflow are different (Vu and Noy, 2009). Hence policies should not be applied generally across all sectors, but sector-specific in order to realise greater outcome of the impact on employment.

In the light of the above, there is the need to approach the issue of capital inflow-output growth relationship from the sectoral perspective. The outcome of this will provide policymakers with appropriate policy recommendations on the channelling of future capital inflow to the sectors that are capable of integrating larger percentage of the population in the growth process. It will also help policymakers concentrate their effort on attracting the types and forms of FDI that will suit specific sectoral needs and capacities (Martins et al., 2009). For instance, targeting productive foreign investments in employment-intensive sectors – through tailored incentives and the design of adequate capital account regulations – is likely to improve the impact of FDI on host economies and help reduce unemployment and poverty rates (Pedro and Puala, 2013). On this note, a number of

concerns and questions are raised: (i) what is the impact of capital inflow on sectoral output in Nigeria? (ii) What is the implication of the above findings in achieving inclusive growth in Nigeria?

To address the above questions, the study seeks to:

(i)   examine the effect of capital inflow on sectoral output in Nigeria; and
(ii)   evaluate the implications of objective one in achieving inclusive growth in Nigeria.

This study has five sections. Section one presents the introduction; Section two discusses the literature review, while the research methodology is discussed in Section three. Data analysis and interpretation is discussed in Section four, while Section five concludes and proffer policy recommendation based on the findings of the study.

II.   Literature Review

Ebekozien, et. al. (2015) analysed the impact of foreign direct investment on the construction sector in Nigeria for the period 1989 to 2008 with a view to identifying the pattern of flow and assessing the effect on the industry. The study employed the Duncan Multiple Range Test, Granger causality Test and the Ordinary Least Square technique. The Duncan Multiple Test revealed insignificant effect of FDI on the construction sector, compared with other sectors of the economy. The Granger causality test showed a bi-directional causality between the variables, while the regression estimate indicated a significant relationship between foreign direct investment and the construction sector. Based on the results, the study recommended the need for massive investment in infrastructure and the creation of an enabling environment through policies and the enforcement of existing laws to attract investors. All this is expected to encourage foreign investors and ultimately attract the much needed FDI to boost the nation's construction sector.

Gui-Diby and Renard (2015) analysed the relationship between inward foreign direct investment (FDI) and industrialisation process in Africa. The study covered a panel data of 49 countries over the period, 1980 to 2009. The results of the study showed that FDI had insignificant impact on the industrialisation process of sampled countries, while the size of the market, the financial sector, and international trade impacted significantly on the industrialisation process. The study concluded that the role of FDI in the transformation agenda currently discussed in Africa should be carefully analysed to maximise the potential of these inflows.

Saibu and Keke (2014) examined the impact of foreign private investment on economic growth, using annual time series data from Nigeria. The study employed co-integration and error correction mechanism (ecm). The findings showed that in the long-run, foreign private investment had an insignificant impact on economic growth, while in the short-run it had significant and positive effect. The study concluded that there is high prospect for foreign private investment to boost economic growth if conducive environment, such as political and macroeconomic stability are provided in Nigeria. Almfraji and Almsafir (2013) reviewed the literature on the effect of foreign direct investment (FDI) on economic growth over the period 1994 to 2012. The study observed that FDI-Economic Growth relation is significantly positive, but in some cases it was negative or even null. Also, the study observed several

factors influencing the relationship, such as adequate levels of human capital, well-developed financial markets, complementarity between domestic and foreign investment, and the open trade regimes.

Olise, et. al. (2013) investigated the impact of domestic investment on foreign direct investment inflow in Nigeria for the period 1970 to 2009. Adopting a decomposed, single-linear econometric model estimated with the OLS methodology, the study observed that domestic investments (private and public), human capital and market size had negative impact on foreign direct investment, while trade openness and natural resource had positive influence on foreign direct investment. Thus, the study recommended the need to: foster qualitative domestic expenditure in upgrading the nation's infrastructure facilities in all sectors; demonstrate quality political and economic administrations, especially in the areas of financial development, internal security, and intensify the fight towards reducing corrupt practices; as well as institute a supportive social system for private sector growth. Adegbite and Ayadi (2010) examined the effect of foreign direct investment (FDI) inflows on economic growth in Nigeria. The study employed the ordinary least squares technique and observed that FDI had positive effect on economic growth in Nigeria. The study concluded that FDI promoted economic growth and recommended the need for improving infrastructural development, ensuring sound macroeconomic environment as well as ensuring human capital development in order to boost FDI inflow.

Ogbanje, et. al. (2010) analysed the impact of foreign direct investment on agricultural output in Nigeria for the period, spanning 1970 to 2007. Using multiple estimation technique, the study observed the following: the Duncan Multiple Range Test showed that agricultural sector had the least average net flow (₦553.6132), while the manufacturing and processing sector had the highest average net flow (₦28,267.00). The Least Square Difference of the Post Hoc Test revealed that the mean differences in net FDI between agricultural sector and manufacturing and processing sector (₦27,713.40), mining and quarrying sector (₦25,754.30), and miscellaneous (₦19,490.80) were significant at 0.01 level of probability. Finally, the One-way ANOVA indicated that the relationship (0.879) between FDI to agricultural sector and agricultural Gross Domestic Product (GDP) was significant at 0.01 level of probability. Thus, the study concluded that net flow of FDI to Nigeria discriminate against the agricultural sector. The study recommended that foreign investors should be encouraged to increase investment in the agricultural sector so as to mitigate capital inadequacy faced by key stakeholders of the sector. This is expected to increase the share of agricultural output in the gross domestic product in Nigeria. The study further recommended that the government and relevant stake holders should intensify effort at making the agricultural sector more attractive for foreign investors.

Vu and Noy (2009) analysed the impact of sectoral foreign direct investment on economic growth for a group of six OECD countries. Employing the feasible generalised least squares (FGLS), the study observed that FDI had positive significant effect on economic growth directly and indirectly through its interaction with labour. Also, the study observed that the effect of FDI seemed to be very different across countries and economic sectors. Ayanwale (2007) examined the relationship between non-extractive foreign direct investment and economic growth in Nigeria; and also examined the determinants of foreign direct investment in Nigeria for the period, 1970 to 2002. Using Ordinary Least Squared (OLS) and two Stages Least Square (2SLS) techniques, the study observed a positive relationship between non-extractive foreign direct investment and economic growth, but cautioned that the overall effect of foreign direct investment on economic growth might not be significant. With respect to components of foreign direct investment, the study observed

that foreign direct investment in communication sector had a positive impact on economic growth, while foreign direct investment on manufacturing had a negative effect on economic growth in Nigeria. On determinants of foreign direct investment in Nigeria, the study found that market size, infrastructure development and stable macroeconomic policy were significant determinants of foreign direct investment in Nigeria, while trade openness and available human capital were not key determinants of foreign direct investment in Nigeria.

Baharumshah and Thanoon (2006) looked at the effect of various types of capital inflow on the growth process of the East Asian countries, China inclusive. Employing dynamic panel data, the study observed that domestic savings had positive-significant effect on long-term economic growth; while, FDI had positive impact on economic growth both in the short-run and long-run. The study further observed that the effect of FDI on growth was more than domestic savings. Also, short-term capital inflow had negative effect on economic growth both in the short-run and long-run and it appeared to be sensitive to long-term capital inflow. Though, long-term debt had positive effect on economic growth, its effect somewhat disappeared in the long-term. The study concluded that countries that were successful in attracting FDI should finance more investments and grow faster than those that deterred FDI.

Li and Liu (2005) investigated the impact of foreign direct investment (FDI) on economic growth for 84 countries over the period, 1970 to 1999. Employing the single equation and simultaneous equation system techniques, the study observed a significant endogenous relationship between FDI and economic growth from the mid-1980s onwards. The study also observed that FDI did not only promote economic growth directly in developing countries, but also indirectly through its interaction with human capital. However, the study observed that the interaction of FDI with the technology gap had significant negative impact on economic growth in developing countries. Borensztein, DeGregorio and Lee (1998) analysed the effect of foreign direct investment (FDI) on economic growth for a group of 69 countries in a cross-country regression framework over the period 1970 to 1989. The study observed that FDI was an important vehicle for technology transfer, contributing relatively more to growth than domestic investment. In addition, the study observed that the higher productivity of FDI remained only when the host country had a minimum threshold stock of human capital. The study concluded that FDI contributed to economic growth only when a sufficient absorptive capability of advanced technologies was available in the host economy.

From the above literature review, it is evident that previous indigenous studies focused exclusively on the effect of foreign direct investment on economic growth with less emphasis on other forms of capital inflow, such as foreign aid. In addition, most of the previous studies focused on aggregate output (that is gross domestic product) without taking cognisance of how capital inflow affected the various sectors of the economy. Finally, in examining the relationship between capital inflow and output at sectoral level, this study considered foreign aids and foreign direct investment as proxy for capitals, which was not considered by previous studies. In the light of the above gaps in the literature, the study seek to examine the extent to which capital inflow had impacted on the output of various sectors with implication to achieving inclusive growth in Nigeria.

III.   Methodology

III.1   Theoretical Framework

This study employed the Harrod (1939) and Domar (1946) growth models, and the Chenery and Strout (1996) two gap model. The Harrod-Domar model emphasised capital accumulation (net investment) as a key factor in the process of economic growth. The model assumes a simple production function of the form:

$$Y = kK \tag{1}$$

Where Y is output, K is total stock of capital and k is capital-output ratio which is assumed to be constant. Equation (1) implies that output Y is proportional to total stock of capital and this proportion remains constant. Thus, any increase in output (Y) equals $k.\Delta K$ (Dwivedi, 2013). Therefore, equation (1) becomes:

$$Y = k.\Delta K \tag{2}$$

Since increase in capital stock (ΔK) in any period equals net investment (I) of the period, that is, $\Delta K = K_t - K_{t-1} = I$, then equation (2) can be re-written as:

$$Y = k.I \tag{3}$$

From equation (3), output growth rate (defined as $\Delta Y / Y$) is given as:

$$\Delta Y / Y = k \left(I / Y \right) \tag{4}$$

At equilibrium level of income, Harrod-Domar model postulated that desired savings (S) equals desired investment; that is:

$$I = S \tag{5}$$

Therefore, given equation (5), output growth rate of equation (4) is the equilibrium growth rate, indicating capacity utilisation of capital stock (Dwivedi, 2013). However, in reality, the required level of investment in developing countries (Nigeria inclusive) to attaining equilibrium growth rate is constrained by the lack of adequate domestic savings. This gap between investment and savings is known in the literature as the investment-savings gap. This is the first gap identified by Chenery and Strout (1996) constraining the achievement of economic growth in developing countries. The second gap is the import-foreign exchange earnings gap. The two-gap model by Chenery and Strout (1996) emphasised that shortage in domestic savings and foreign exchange earnings are two major factors constraining investment in developing countries; and that developing countries cannot fill these gaps on their own, but only through foreign assistance[1] (such as capital inflow) to achieve the targeted growth rate of the economy.

It follows from the foregoing, therefore, that the investment (*I*)-savings (*S*) gap and the import (*M*)-foreign exchange earnings (*X*) gap can be filled by capital inflow (*CF*). Therefore;

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[1] Chenery and Strout (1996) emphasised foreign aid as the assistance needed by developing countries to achieve economic growth.

$$I - S = CF \tag{6}$$

$$M - X = CF \tag{7}$$

Incorporating capital inflow into the investment equation (that is equation (5)), we have:

$$*(S + CF) = I* \tag{8}$$

Equation (8) implies that the required investment to achieving equilibrium growth rate is the sum of aggregate savings (S) and capital inflow (CF). Thus, the growth rate of investment $I*$ is given as:

$$\left(\frac{\Delta Y}{Y}\right)^{*} = k * \left(\frac{(S + CF)*}{Y}\right) \tag{9}$$

It is expected that the output growth rate of equation (9) would be greater than that of equation (4) given the presence of capital inflow.

III.2   Model Specification

Drawing from the theoretical framework above, and the need to examine the direct relationship between capital inflow and sectoral output, the study specified a simple production function of the form similar to those employed by (Akinlo, 2004; Umoh et al., 2012). Thus, the capital inflow-sectoral output model is specified as:

$$Q = Af(K, L, CF, Z) \tag{10}$$

Where Q is the sectoral output, K is domestic capital stock (*CAP*), L is labour force (*LAB*) , CF is capital inflow (decomposed into foreign direct investment (*FDI*) and foreign aid (*AID*)) and Z are other macroeconomic variables identified by empirical literature to have significant influence on output growth. These variables include: consumer price index (*CPI*), financial development (*FD*) and government expenditure (*GXP*).

Thus, equation (10) can be re-written as:

$$Q = Af(CAP, LAB, FDI, AID, CPI, FD, GXP) \tag{11}$$

Introducing the error term (ε), equation (11) is re-written in semi log-linear form as:

$$\ln Q = \alpha_0 + \alpha_1 \ln CAP + \alpha_2 \ln LAB + \alpha_3 \ln FDI + \alpha_4 \ln AID + \alpha_5 CPI$$
$$+ \alpha_6 \ln FD + \alpha_7 \ln GXP + \varepsilon \tag{12}$$

Equation (12) would be estimated for each of the six sectors considered in this study.

III.3   Data Measurement and Sources

Sectoral output (Q) is the dependent variable and is measured by the output of the six sectors, namely: agricultural sector (crop production, livestock, forestry and fishing); extractive sector (coal mining, petroleum and natural gas, metal ores and mining and

quarrying); manufacturing (oil refining, cement and other manufacturing); building and construction, wholesale and retail and the social sector or producers of government services (public administration, education and health).

Capital stock (CAP) is measured by gross fixed capital formation; labour (LAB) is measured by the labour force; foreign direct investment (FDI) measured by the annual aggregate inflow of direct investment in Nigeria; foreign aid (AID) measured by net overseas development assistance (ODA) and official aid received by the Nigerian economy; consumer price index (CPI) is measured by the annual consumer price index; financial development (FD) is measured by the ratio of broad money supply to gross domestic investment; and government expenditure (GXP) is measured by aggregate (capital plus recurrent) expenditure of the government. Data on sectoral output, capital stock, foreign direct investment, financial development and government expenditure were obtained from the Central Bank of Nigeria (CBN) Statistical Bulletin, 2014 edition, while data on labour force, consumer price index and foreign aids were obtained from the World Development Indicators, 2014 edition.

IV.   Data Analysis and Interpretation
IV.1   Descriptive Statistics

The empirical analysis commenced by examining the characteristics of the variables of estimate. From Table 1, the standard deviation showed that consumer price index (41.62) was the most volatile variable in the time series, while labour force (0.27) was the least volatile variable. The skewness statistic showed that agricultural sector (lagr), extractive sector (lextr), wholesale and retail sector (lwss), foreign direct investment (lfdi) and government expenditure (lgxp) were negatively skewed, while the remaining variables (manufacturing (lman), building and construction (lbcs), social (lsocs), capital stock (lcap), labour (llab), foreign aid (laid), consumer price index (lcpi) and financial development (fd)) were positively skewed.

Table 1: Descriptive Statistics

Variables	Mean	Std. Dev.	Skewness	Kurtosis	Jarque-Bera	Probability	Observations
LAGR	11.022	1.821	-0.161	3.777	1.327	0.515	45
LEXTR	10.74	1.797	-0.777	4.423	8.318	0.016	45
LMAN	9.192	1.663	0.55	7.22	35.663	0	45
LBCS	8.542	1.388	1.396	10.986	134.201	0	45
LWSS	10.223	1.793	-0.083	5.325	10.185	0.006	45
LSOCS	8.116	1.196	3.059	18.733	534.284	0	45
LCAP	11.323	2.466	0.158	1.735	3.189	0.203	45
LLAB	17.323	0.274	0.337	1.724	3.901	0.142	45
LFDI	9.356	3.409	-0.004	1.381	4.917	0.086	45
LAID	19.203	1.566	0.722	2.648	4.14	0.126	45
CPI	29.767	41.617	1.389	3.806	15.696	0	45
FD	22.097	6.646	0.562	2.651	2.597	0.273	45
LGXP	11.556	2.729	-0.066	1.661	3.395	0.183	45

Source: Author, 2016

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The kurtosis revealed that agriculture, extractive, manufacturing, building and construction, wholesale and retail, social sector and consumer price index were leptokurtic, suggesting that their distributions were peaked, relative to normal distribution, while capital stock, labour force, foreign direct investment, foreign aid, financial development and government expenditure were platykurtic, suggesting that their distributions were flat, relative to normal distribution.

Finally, the Jarque-Bera statistic rejected the null hypothesis of normal distribution for the extractive sector, manufacturing, building and construction, wholesale and retail, social sector and consumer price index at five (5) per cent critical value, while the null hypothesis of normal distribution for the other variables were accepted at the same critical value.

IV.2   Unit Root and Co-integration Tests

The unit root test for all variables used in this study is presented in Table 2, using the Augmented Dickey Fuller (ADF) test. The Schwarz Information Criterion (SIC) was used to select the optimal lag length. Table 2 showed that LARG, LEXTR, LCAP, LLAB, LFDI, LAID, FD and LGXP were not stationary at levels. The variables became stationary after first time difference. With respect to LMAN, LBSC, LWSS, LSOCS and CPI, the variables were not stationary at levels, but became stationary after the second difference.

Table 2: Unit Root Test

Augmented Dickey-Fuller (ADF) Test			
Variables	**Level**	**After Differencing**	**Status**
LARG	0.0384	-3.6481*	I(1)
LEXTR	-1.1120	-4.0019*	I(1)
LMAN	0.2906	-3.4639*	I(2)
LBSC	0.5366	-4.3262*	I(2)
LWSS	0.0434	-5.2403*	I(2)
LSOCS	1.1382	-2.9676**	I(2)
LCAP	-0.6695	-5.0013*	I(1)
LLAB	-0.2375	-5.7428*	I(1)
LFDI	-0.5261	-9.3475*	I(1)
LAID	-0.6433	-5.8966*	I(1)
CPI	2.9106	-7.4091*	I(2)
FD	-2.5675	-6.7440*	I(1)
LGXP	-1.4720	-7.4096*	I(1)

Note: *=1% and **=5% significance level.

Sequel to the non-stationarity of the variables at level, this study proceeded to investigate the co-integration properties of the variables. Using the Johansen co-integration technique. Table 3 showed that the trace and maximum-Eigen tests indicated the presence of co-integration among the variables in each of the six sectoral output models.

This implies that a linear combination of the variables was found to be stationary. In other words, the presence of co-integration indicated that there is a long-run relationship among variables. Thus, the problem of spurious and inconsistent regression can be avoided, which otherwise could occur with regression of non-stationary series (Nwachukwu and Egwaikhide, 2007).

Table 3: Summary of the Co-integration Estimate

Agriculture Sector (LAGR) Model					
Trace Test			**Maximum Eigen value Test**		
Hypothesised No. of CE(s)	Stat. Value	95% critical values	Hypothesised No. of CE(s)	Stat. Value	95% critical values
None*	200.71	159.53	None*	58.91	52.36
At most 1*	141.80	125.62	At most 1	44.60	46.23
At most 2*	97.20	95.75	At most 2	38.96	40.08
At most 3	58.24	69.82	At most 3	25.69	33.88
Extractive Sector (EXTR) Model					
Trace Test			**Maximum Eigen value Test**		
Hypothesised No. of CE(s)	Stat. Value	95% critical values	Hypothesised No. of CE(s)	Stat. Value	95% critical values
None*	197.67	159.53	None*	58.73	52.36
At most 1*	138.94	125.62	At most 1	46.11	46.23
At most 2	92.83	95.75	At most 2	34.60	40.08
Manufacturing Sector (LMAN) Model					
Trace Test			**Maximum Eigen value Test**		
Hypothesised No. of CE(s)	Stat. Value	95% critical values	Hypothesised No. of CE(s)	Stat. Value	95% critical values
None*	200.46	159.53	None*	64.55	52.36
At most 1*	135.90	125.62	At most 1	41.15	46.23
At most 2	94.75	95.75	At most 2	36.10	40.08
Building and Construction Sector (LBCS) Model					
Trace Test			**Maximum Eigen value Test**		
Hypothesised No. of CE(s)	Stat. Value	95% critical values	Hypothesised No. of CE(s)	Stat. Value	95% critical values
None*	199.99	159.53	None*	58.08	52.36
At most 1*	141.91	125.62	At most 1*	48.53	46.23
At most 2	93.38	95.75	At most 2	36.20	40.08
Wholesale and Retail Sector (LWSS) Model					
Trace Test			**Maximum Eigen value Test**		
Hypothesised No. of CE(s)	Stat. Value	95% critical values	Hypothesised No. of CE(s)	Stat. Value	95% critical values
None*	197.01	159.53	None*	61.02	52.36
At most 1*	135.99	125.62	At most 1	41.69	46.23
At most 2	94.29	95.75	At most 2	38.82	40.08
Social Services (LSOCS) Model					
Trace Test			**Maximum Eigen value Test**		
Hypothesised No. of CE(s)	Stat. Value	95% critical values	Hypothesised No. of CE(s)	Stat. Value	95% critical values
None*	192.69	159.53	None*	57.12	52.36
At most 1*	135.57	125.62	At most 1	42.57	46.23
At most 2	93.00	95.75	At most 2	36.95	40.08

Source: Author, 2016

IV.3   Regression Estimate

Sequel to the co-integration estimate, this study estimated both the long-run and the short-run relationship between capital inflow and sectoral output. The error-correction model of the short-run showed the speed of adjustment for short-run distortions in the relationship to be corrected in the long-run. The long-run regression estimate, on the effects of capital inflow on sectoral output, is presented in Table 4. The regression estimate showed that capital stock (LCAP) had insignificant effect on all sectors, while labour force (LLAB) had significant but negative effect on the output of all sectors. The effect of capital stock and labour on sectoral output was contrary to a priori expectation. Foreign direct investment (LFDI) was observed to have significant and positive effect on the extractive, building and construction, and the wholesale and retail sectors. However, foreign direct investment inflow had insignificant effect on the agriculture, manufacturing and social service sectors. The inflow of foreign aid was insignificant in influencing the output of all sectors. The insignificant effect of foreign aid on sectors' output could be as a result of corruption and the use of foreign aids for consumption purposes, instead of investment in infrastructural facilities that could enhance production. The insignificant effect of foreign aid on all sectors of the economy and, in particular, the social sector is in contrast to the claims of UNCTAD (2008). In addition, consumer price index and government expenditure had significant effect on the output of all the sectors, while financial development only had positive and significant effect on the agricultural sector.

What is the implication of the above findings in achieving inclusive growth in Nigeria? The insignificant effect of capital inflow (FDI and AIDs) on the agriculture, manufacturing and social service sectors showed that the relationship between foreign capital inflow and sectoral output does not guarantee the achievement of inclusive growth in Nigeria. This is because these sectors (agriculture, manufacturing and social service) engage large proportion of the labour force than the remaining sectors combined. Thus, the insignificant impact of capital inflow on sectors output could aggravate the unemployment situation and further worsens the poverty rate in Nigeria.

The ECM variables used in the short-run regression were the residual terms derived from the long-run regression sectoral estimates presented in Table 4. The residuals, as is conventional in econometric practise, are introduced into the short-run regression estimates after taking the first lag. From the Table, it was observed that the *ECM(-1)* estimates from the parsimonious model of all the sectors were negative, ranging from -1.239 (manufacturing sector) to -3.919 (social service sector) and are significant. The coefficients of -1.77, -1.42 and -1.24 denoted that 177 per cent, 142 per cent and 124 per cent of any past deviation in the agriculture, extractive and manufacturing sectors would be corrected in the current period while the coefficients of -3.48, -1.61 and -3.92 denote that 348 per cent, 161 per cent and 392 per cent of any past deviation in the building and construction, wholesale and retail, and social service sectors would be corrected in the current period.

To find out how long it will take to fully correct any distortion in the long-run relationship, we simply divided one by the ECM coefficient (Umoh et al., 2012). Thus, for the agricultural sector i.e., (1/1.77) = 0.56. Since this value is less than one, it implies that it would take less than one year for full adjustments to take place after a shock occurred in the agricultural sector; also for the extractive (1/1.42 = 0.70); manufacturing (1/1.24 = 0.81); building and construction (1/3.48 = 0.29); wholesale and retail (1/1.60 = 0.63); and social service (1/3.92 = 0.25). The implication of the above is that it would take less than one year for full adjustments to take place after a shock occurred in these sectors. The regression estimates

of each model were subjected to diagnostic tests, such as the serial correlation LM test and heteroskedasticity ARCH test. The results from these tests (see Table 5) and correlogram of residuals test (not reported but available on request) showed the relative stability of the estimated models.

Table 4: Effects of Capital inflow on Sectoral Output

Monetary Variables	SECTORS[2]					
	LAGR	**LEXTR**	**LMAN**	**LBCS**	**LWSS**	**LSOCS**
LCAP	-0.333	-0.311	-0.375	0.034	-0.314	-0.463
	(-0.847)	(-0.650)	(-0.720)	(0.074)	(-0.711)	(-0.956)
LLAB	-13.883*	-15.574*	-14.067*	-9.103*	-13.033*	-8.276*
	(-6.11)	(-5.635)	(-4.677)	(-3.463)	(-5.10)	(-2.953)
LFDI	0.172	4.474	0.410	0.659	0.589	0.366
	(0.986)	(2.23)**	(1.774)	(3.268)*	(3.006)*	(1.701)
LAID	0.152	0.129	0.112	0.028	0.187	0.068
	(1.021)	(0.711)	(0.566)	(0.165)	(1.112)	(0.370)
CPI	0.032	0.022	0.037	0.031	0.033	0.035
	(4.469)*	(2.59)**	(3.896)*	(3.765)*	(4.054)*	(3.920)*
FD	0.042	0.033	0.032	-0.001	0.027	0.001
	(2.614)**	(1.700)	(1.521)	(-0.047)	(1.527)	(0.062)
LGXP	1.961	2.548	2.158	1.639	2.321	1.504
	(5.087)*	(5.436)*	(4.231)*	(3.676)*	(5.357)*	(3.165)*
ECM(-1)	-1.773	-1.418	-1.239	-3.478	-1.604	-3.919
	(-3.43)*	(-2.37)**	(-3.10)*	(-4.060)*	(3.413)*	(-6.005)*
R-Square	0.77	0.76	0.68	0.80	0.69	0.85
D.W. Statistics	1.65	1.69	1.66	1.90	1.40	1.71

Note: The values of the variables above the parenthesis are the regression coefficient, while the values in the parenthesis are the t-values of the estimates.

Source: Author, 2016.

Table 5: Diagnostic Estimate

Diagnostic	SECTORS					
	LAGR	**LEXTR**	**LMAN**	**LBCS**	**LWSS**	**LSOCS**
Serial Correlation LM Test:	0.0656	0.0573	0.0444	0.0739	0.6756	0.1318
	(0.9366)	(0.9445)	(0.9567)	(0.9212)	(0.5206)	(0.8779)
Heteroskedasticity Test: ARCH	0.2266	0.2491	0.3748	0.0606	0.2079	0.5169
	(0.6368)	(0.6206)	(0.5441)	(0.8068)	(0.6510)	(0.4766)

Note: The values above the parenthesis are the F-Statistics, while the values in the parenthesis are Probability values of the diagnostic estimates.

V.   Conclusion and Policy Recommendations

This study examined the impact of capital inflow (foreign direct investment and foreign aid) on sectoral output in Nigeria for the period, 1970 to 2014, with implication for achieving inclusive growth. Utilising the ordinary least squares technique, the study observed that foreign direct investment had significant and positive influence on the extractive, building and construction, and wholesale and retail sectors, while the impact of foreign direct investment on agriculture, manufacturing and social service sectors was insignificant on the sectoral output. The effect of foreign direct investment on sectors output is different. These

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[2] **LAGR**= Agricultural Sector, **LEXTR**= Extractive Sector, **LMAN**= Manufacturing Sector, **LBCS**= Building and Construction Sector, **LWSS**= Wholesale/Retail Sector, **LSOCS**= Social Sector.

findings cast doubts on the policy conclusions inferred from previous studies that had used aggregate output (GDP) to examine the effect of capital inflow on output growth. The study also observed that foreign aid was insignificant in influencing the sectors. The study concluded that the impact of capital inflow on sectoral output do not guarantee the achievement of inclusive growth in Nigeria.

Base on the differential impact of foreign direct investment on some sectors of the economy and the importance of achieving inclusive growth, a-one-for-all capital inflow policy would be inappropriate, but sector-specific to realise greater impact of these sectors on employment. Consequently, the following policy recommendations are offered.

There is the need for selective incentives for attracting foreign investors, particularly in sectors in which foreign capital inflow had insignificant effect. Such incentives may yield significant impact of foreign direct investment on agriculture, manufacturing and service sectors, given their capacities to generate huge employment opportunities. Provisions of favourable land use laws with modernised irrigation and water dams would encourage capital inflow in the agricultural sector, and consequently employment opportunities. Provisions of production-enhancing amenities, such as industrial estate with stable power supply, portable water and good roads would induce investment in the manufacturing and social services sectors and consequently employment opportunities. Economic linkage between these sectors is capable of opening up new employment opportunities, particularly for transport and other service providers.

More so, to achieve inclusive growth, there is the need to make foreign aid more productive by channeling it into human capital development; particularly in the areas of formal education, vocational/technical training and entrepreneurial development. There is also the need to channel foreign aid to the development/provision of productive amenities, such as power supply and portable water. The presence of the aforementioned factors would give confidence to the development of small and medium enterprises dominated by entrepreneurs and small scale businesses. Finally, there is the need to create an investment fund (from the inflow of foreign aid) at a zero interest rate to entrepreneurs with feasible investment plan capable of creating meaningful employment opportunities.

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Determinants of Domestic Gross Savings in Nigeria: Lessons for Policy

Bamidele A., M. Jibrin and A. Isa*

Abstract

This study investigated the determinants of savings in Nigeria and lessons for policy, using descriptive and econometric analyses. Long-run static and short-run dynamic error correction models were estimated for the period, 1960 to 2013. The results indicated that the per capita income, inflation and the real interest rate affect savings as predicted by theory. This result fully supports the McKinnon and Shaw hypothesis. It also indicated that the Keynesian absolute income hypothesis is found to hold in Nigeria. Intuitively, this indicated that the low disposable income was a strong impediment to savings mobilisation in Nigeria. The 1987 policy shift showed positive relationship with domestic gross savings, suggesting that financial sector reforms had, to some extent, achieved the optimal saving rate in Nigeria. The paper, therefore, recommends that policies should focus on measures to improve current account balance, moderate inflation and increase personal income, as well as promote financial intermediation. The implementation of these recommendations is expected to increase savings mobilisation in Nigeria.

I.   Introduction

The sluggish output growth among most developing economies has attracted serious concern for policy makers and political leaders. The problem is more prevalent in the Sub-saharan African (SSA) countries, where the level of savings and investment required to propel growth has remained low. In particular, the savings mobilisation, which is a critical factor for economic growth and development, remains perpetually lowest, compared with other regions, despite economic liberalisation drive (Ndungu'u and Ngugi, 2000). Savings mobilisation is persistently low and shows consistent decline over the last forty years in most countries, rarely exceeding 15.0 per cent of the gross domestic product (GDP). It is well known that Africa faces serious credit constraints, coupled with low income, which could greatly reduce incentives to save. Thus, the economic growth and development trajectory of the region over the past decades has been described as gloomy (Elbadawi and Mwega, 2000).

The World Bank analysis of the resource gap in SSA (1986 -1990) revealed that Africa needed at least US$11.0 billion yearly in concessional capital flow during the period to address the predicament of low income. In the same vein, it is postulated that if Africa's economic problem is to be reversed, there should be more resources for investment and efficient use of the existing resources, including higher domestic private savings, investment and control of its population growth rate (World Bank, 1986:2, 11). It was revealed that capital accumulation, not technological progress; explains the high growth rates of the East Asian "tigers", including Korea and Hong Kong.

The World Bank Report (1993) observed that, on the average, East Asian economies recorded a savings/income ratio of about 33.0 per cent in 1980-95. Singapore maintained a savings mobilisation rate in excess of 45.0 per cent for the period, while Korea

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exceeded 35.0 per cent. However, in Sub-saharan Africa (SSA), Latin America and the Caribbean gross domestic savings did not only remain remarkably low, but stagnated, averaging only 8.0 per cent of GDP and sometimes negative during the period. In 2010, SSA recorded 20.2 per cent of Gross National Savings (GNS) as a percentage of GDP, which increased to 20.8 and 20.9 per cent in 2011 and 2012, respectively.

Nigeria's savings/GDP ratio, which was modest, at an average of 15.1 per cent between 1983 and 1988, declined significantly, reaching a trough of 8.6 per cent in the 1990s as a result of distress in the financial sector. However, since 2005, it has resumed growth, reaching a high level of 31.1 per cent in 2010, resulting in an annual average of 15.6 per cent between 2001 and 2010. This, however, fell short of 26.0 per cent of savings/GDP ratio for middle income countries and 22.0 per cent for high income economies in the same period. Nigeria savings growth, which recorded 31.1 per cent in 2010, rose to 37.2 in 2011, before declining to 35.2 and 28.32 per cent in 2012 and 2013, respectively.

Mobilisation of domestic savings is central to development process of most developing economies, including Nigeria. The problem of low savings as constraint to resource mobilisation and economic growth remains a big challenge to Nigeria. It, therefore, requires that the determinants of savings are identified and analysed empirically in Nigeria to guide policy. Most of the few empirical literature on the determinants of savings employed cross-country data without much consideration for their time series dimension. Besides, the paucity of empirical literature on domestic savings in Nigeria also provides justification for the study. For instance, most of the studies on the savings behaviour in the country focus on per capita income and interest rates as determinants of savings. The failure of many studies to identify the main factors determining savings and their impact on saving rates is apparent. For example, the conclusion by Essien and Onwioduoki (1998) and Obadan and Odusola (2001) that savings mobilisation is insensitive to disposable income and financial development remains polemical. These studies did not consider financial reforms and general economic transformation of the Nigerian economy that started in 2003. Besides, the variables used and the exclusion of the important determinants of savings, like income, real interest rate, government savings, could also affect their results. This study is expected to overcome this problem by using a longer time frame, dating 1960 to 2013.

In addition to the shorter period of analysis adopted by other studies, they also failed to capture important reforms such as the Structural Adjustment Programme (SAP), deregulation of the financial sector, Small and Medium Scale Enterprises Development Agency of Nigeria (SMEDAN), and the National Agency for Poverty Eradication Project (NAPEP). Moreover, their studies fail to recognise the Federal Government's Medium Term Expenditure Framework (MTEF) and Medium Term Sector Strategy (MTSS); and the improved conduct of monetary policy by the Central Bank of Nigeria since 2003. There are also financial reforms, which revolve around debt management and the consolidation of banking and financial institutions (2004 -2012). These reforms include the 2004 New Pension Scheme, the reforms in the capital market and the consolidation of the insurance sector.

The main objectives of this study include:

i.   empirical investigation of the main determinants of domestic savings in the Nigerian economy; and
ii.   evaluation of the special role of interest rates in savings mobilisation.

The paper is structured into six sections. Following the introduction, Section 2 discusses institutional framework for savings mobilisation in Nigeria, while Section 3 presents a review of the theoretical and empirical literature on the determinants of domestic savings in developing countries. Section 4 focuses on the methodology, while the results of the econometric investigation are discussed in Section 5. Section 6 concludes the paper with policy recommendations.

II.   Institutional Framework for Savings Mobilisation in Nigeria
II.1   Conceptual Framework for Savings Mobilisation

In the national accounting framework, any portion of Gross National Disposable Income (GNDI), which is not consumed is assumed to be saved. Hence, national savings, (S) is defined as GNDI not consumed. For any economy, these savings reflect contributions by various economic units, including individuals, families, companies and governments among others. The marginal propensity to save at the national level by economic agents would depend on many factors such as current income, expected life income, expected returns on savings, demographic influences, and the rate of growth of the economy. The Gross National Disposable Income identity is:

$$GNDI = GDP + YF + TR = C + I + (X - M + YF + TR)$$

Where, GDP is Gross Domestic Product, C is consumption and I is investment. X represents export, M for import, Yt for net factor income and TR stands for net transfer from abroad. National Savings is GNDI – C represented by S.

II.2   Sources of Savings

Financial resources required for economic growth are usually mobilised from several sources because no single source could provide the required funding for investments, economic growth and development. Savings are generally mobilised from both formal and informal sectors. The formal sector consists of the public and private sector activities. The public sector includes government fiscal activities, and external sector transactions (official development assistance, migrant remittances and foreign investments), while the private sector includes savings of households and the corporate sector. Both sectors have to save and/or borrow to meet their consumption and investment needs.

The formal institutions that have been established to encourage financial savings include the Deposit Money Banks (DMBs), development finance institutions, and mortgage institutions. Others include non-bank financial institutions like capital market, insurance companies, finance companies, Nigeria social insurance trust fund (NSITF), mutual trust funds, and pension funds as well as institutions like microfinance banks, among others. All these are regarded as formal sources of savings for investment in Nigeria as they are well organised with appropriate records of transactions and have enabling laws, which stipulate the obligations and functions of all parties involved, including the prohibited activities; and the penalties for non-compliance.

At end-June 2013, there were 23 banks in Nigeria with 5,590 branches located all over the country. However, this source of savings remained inadequate. Attempts were made in the past through the rural banking scheme to encourage banks to establish rural

branches. Besides, with progress made in the financial sector reforms, other innovative institutions have been promoted to encourage rural savings. These include Microfinance banks, Pension funds contribution, mobile banking and proposed agent banking practice.

In addition to the existing formal institutions, informal organisations are also engaged in savings mobilisation despite the progress that has been made in the liberalisation of the financial sector. They are informal because their activities are underground and difficult to measure due to lack of documentation of their transactions. Examples of informal financial activities in Nigeria include the Rotating Savings and Credit Association (ROSCAS) otherwise called Esusu, Cooperative Societies, Credit and Town Union, Occupational Groups, religious organisation, among others, which serve as vehicles for pooling small savings. The current CBN initiatives in financial inclusion strategy are expected to reduce the size of the informal financial sector and increase national savings propensity.

II.3 Trends in Domestic Savings

Prior to the commencement of the Structural Adjustment Programme (SAP) in 1986, incentives were limited by intervention of the regulatory authorities, which fixed not only the savings and lending rates, but the permissible credit limit on aggregate and sectoral basis. However, since the structural reforms, especially from 1987, the implementation of financial liberalisation opened the way for numerous incentives. For instance, the savings mobilisation increased significantly from 6.1 percent of GDP between 1973 and 1985 to 11.7 per cent of GDP between 1994 and 1998. This was reflected in the growth rate of real GDP, which increased from 1.5 per cent between 1973 and 1987 to 2.5 per cent between 1994 and 1998. It recorded 7.43 and 6.58 per cent in 2011 and 2012, respectively.

Unlike in the pre-SAP era, interest rates became largely market determined (though with occasional reverses), thus, making individual and institutional savers to respond positively to alternative interest rates and other benefits to attract savings from primary sources. These benefits, included: allowing savers to bargain for the interest rate to be paid; branding products or deposits instruments, which could be used as collateral for borrowing; and offering special services. In the process, competition to pay higher interest rates to customers to capture a large share of the market commenced.

Beginning with the sum of ₦43.7 million in 1960, savings increased to ₦411.8 million in 1970. By 1980, the figure had climbed to ₦5,769.9 million, rising further to ₦29,651.2, ₦385,190.9 and ₦5,954,260.45 million in 1990, 2000 and 2010, respectively. At end-2011 and 2012, the figures stood at ₦6,531,913.01 and ₦8,062,901.35 million, respectively. Table 1 shows that owning and operating a formal savings account is relatively higher among males (39.8%) than females (33.3%). This is also noticed to increase with education and income status. For example, while only 14% of those that completed primary education or less have a savings account, 88.9% of those with tertiary education have savings account. In addition, 17.3% and 71.8% of the poorest and richest groups do have formal savings accounts, respectively.

Table 1: Ownership of formal savings account by characteristics of Nigerians

	Savings account at a financial institution		
Demographics	Yes	No	Total
Gender			
Male	132 (39.8)	200 (60.2)	332 (100.0)
Female	104 (33.3)	208 (66.7)	312 (100.0)
Total	236 (36.6)	408 (63.4)	644 (100.0)
Education level			
Completed primary or less	37 (14.0)	227 (86.0)	264 (100.0)
Secondary	191 (51.5)	180 (48.5)	371 (100.0)
Completed tertiary or more	8 (88.9)	1 (11.1)	9 (100.0)
Total	236 (36.6)	408 (63.4)	644 (100.0)
Within-economy income quintile			
Poorest 20%	19 (17.3)	91 (82.7)	110 (100.0)
Second 20%	21 (18.9)	90 (81.1)	111 (100.0)
Middle 20%	38 (29.2)	92 (70.8)	130 (100.0)
Fourth 20%	69 (41.1)	99 (58.9)	168 (100.0)
Richest 20%	89 (71.8)	36 (28.2)	125 (100.0)
Total	236 (36.6)	408 (63.4)	644 (100.0)

Source: Ajakaiye computations from the World Bank Global Findex Survey, 2011

On the other hand, the contribution of other deposit institutions to total saving was relatively small. Beginning with N36.9 million in 1960, their total contribution rose to ₦29, 651.20 million and ₦385,190.90 million in 1990 and 2000, respectively. At end-2002, their deposits peaked at ₦592,094.00 million or 8.57 per cent of total savings in the country. Similarly, available data indicated that total savings mobilised by these institutions as a proportion of GDP averaged 7.9 per cent between 1960 and 2002. The fall in real value of funds in both the financial and institutional savings was in line with the fall in real income over the same period. Nonetheless, these figures highlighted the relatively low level of institutional savings although figures for pension and provident funds are large. In recent time, pension funds alone accounted for about ₦3.2 trillion in the first quarter of 2013.

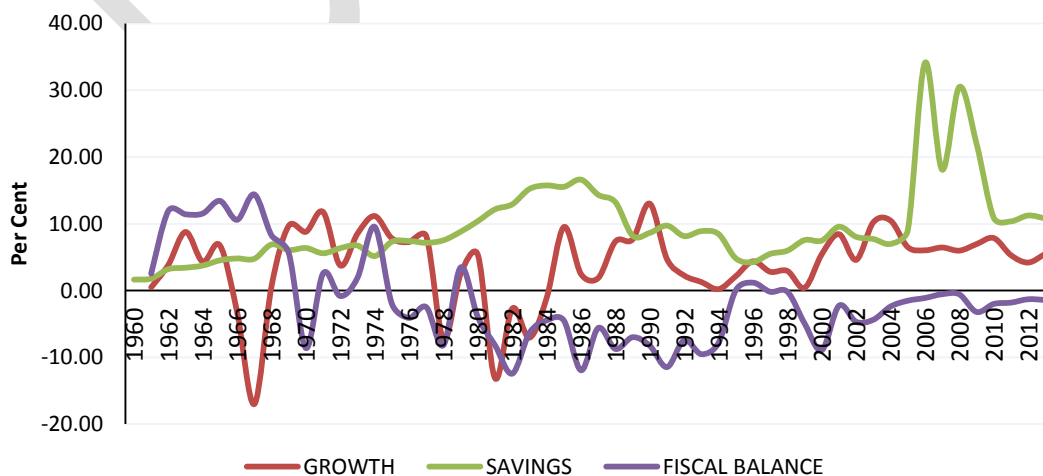**Figure 1: Growth, Savings and Fiscal Balance**

Figure 1 depicted the movement of other economic variables of interest namely GDP, domestic savings and fiscal balance as proportion of GDP pre-dating the reforms (1961

– 1986) and the period after the reforms (1987 – 2001). The GDP growth rate fluctuated between 13.3 and -17.0 per cent in the period, 1960 to 2013. In the 28-year period 1960 to 1986, the economy experienced negative growth rate 7 times, while making a positive growth over 20 times. However, growth had been positive since 1987. On the other hand, Nigeria's fiscal balance was more disquieting as the Federal Government fiscal balance did not conform with projections most of the times. Records indicated that for the period between 1969 and 2012, deficit financing was the order of the day except in 1972, 1973 and 1994. This means that the country experienced budget surplus in 14 times out of the 53 years period 1960 to 2013. The State governments had not fared better, with each state competing to outspend the other.

In most part of Nigeria, particularly rural areas, the low utilisation of banking services is attributed to the absence of banking facilities. However, in areas where there is access to banking facilities, the main problem is the high cost of opening and maintaining a bank account. Consequently, large amount of naira circulates through the informal sector, which has a negative impact on the country economic growth and development as well as the effectiveness of monetary policy.

The results of the Enhancing Financial Innovation & Access (EFInA) survey in Nigeria showed that in 2010, 39.2 million Nigerians, representing 46.3 per cent of the adult population were financially excluded, while only 25.4 million Nigerians or 30 per cent of the adult population were banked. Following several government efforts and financial reforms by the Central Bank of Nigeria (CBN), financial exclusion rate reduced to 39.7 per cent in 2012. The survey also revealed that 23.8 million adults were either keeping their money at home or saving through informal channels. Thus, if 50 per cent of these people are to save ₦1,000.00 per month, then up to ₦143.0 billion could be incorporated into the formal sector annually.

Table 2: Gross National Savings (% of GDP)

Country	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Sub-Saharan Africa	19.0	22.8	23.6	22.6	21.1	18.7	19.7	19.3	18.6	17.5	16.3
Brazil	19.8	19.0	19.3	20.1	20.1	17.5	18.3	19.0	16.8	17.2	15.6
Chile	22.9	23.5	25.3	24.7	22.3	22.4	24.1	22.5	21.8	20.7	20.3
Egypt	21.3	21.2	20.4	22.9	22.9	16.8	17.5	14.5	12.5	11.8	13.2
Ghana	18.1	16.8	13.4	14.2	11.0	18.4	19.6	19.0	16.8	13.5	15.2
Indonesia	24.0	23.6	25.8	24.4	33.0	33.0	33.6	33.2	32.4	30.9	31.7
Kenya	16.8	17.0	16.7	17.3	14.2	14.9	14.8	12.5	13.1	11.2	11.0
Malaysia	34.9	36.2	38.0	37.9	37.6	34.0	33.5	34.1	30.9	29.4	29.3
Nigeria	26.1	39.1	33.3	30.1	24.9	26.6	21.2	19.2	19.3	18.5	16.0
South Africa	15.7	15.2	15.7	15.6	17.6	18.0	18.0	17.0	15.1	14.4	14.9
Uganda	26.0	27.4	24.4	26.5	20.1	21.2	16.9	18.7	21.5	22.0	20.6

Source: IMF World Economic Outlook October 2014

In 2012, GDP grew by 4.7 per cent in SSA, excluding South Africa. About a quarter of SSA countries grew at 7.0 per cent in 2012 with several African countries among the fastest

growing economies in the world. The net capital flows increased by 3.3 per cent to a record $54.5 billion in 2012 despite 8.8 per cent decline in the developing countries. In addition, FDI dominates the flows to SSA and increased by 5.5 per cent in 2012.

Table 3: Total Investment (% of GDP)

Country	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Sub-Saharan Africa	18.9	18.5	19.8	20.9	20.7	21.7	20.4	20.1	20.4	20.3	20.5
Brazil	18.0	17.4	18.0	20.0	21.8	19.0	21.8	21.8	20.3	21.0	20.0
Chile	20.3	22.0	20.7	20.6	25.9	20.4	22.3	23.8	25.5	24.4	21.4
Egypt	16.9	18.0	18.7	20.9	22.4	19.2	19.5	17.1	16.4	14.2	14.0
Ghana	22.8	23.8	21.6	20.1	21.5	20.7	25.7	26.6	32.0	23.5	24.8
Indonesia	27.4	28.6	29.0	28.7	33.0	31.2	32.9	33.0	35.1	34.0	34.7
Kenya	17.5	18.2	18.6	20.5	19.6	19.3	20.7	21.7	21.5	20.1	21.4
Malaysia	23.6	22.3	22.4	23.0	21.1	18.9	23.4	23.2	25.7	25.9	25.0
Nigeria	17.1	16.0	16.6	19.3	16.0	21.6	17.3	16.2	14.9	14.9	15.8
South Africa	18.5	18.3	20.2	21.0	23.2	20.7	19.5	19.1	20.1	20.1	20.4
Uganda	29.2	29.7	28.0	30.9	27.7	27.6	26.0	29.5	29.5	29.2	30.2

Source: IMF World Economic Outlook October 2014

The 2012 Survey of the Enhancing Financial Innovation and Access (EFInA) showed that the exclusion rate had declined across the geo-political zones of Nigeria as shown in Table 4.

Table 4: Financial Exclusion Rate

Geo-political Zone	2010 Adult Exclusion	2012 Adult Exclusion	Improvement in Percentage Point
North East	68.3	59.5	12.9
North West	68.1	63.8	6.3
North Central	44.2	32.4	26.7
South East	31.9	25.6	19.8
South West	33.1	24.8	25.1
South-South	36.4	30.1	17.3
Nigeria	46.3	39.7	6.6

Source: DFD, CBN 2013

Nationally, the exclusion rate declined from 46.3 per cent in 2010 to 39.7 per cent in 2012. To adequately tackle the huge size of excluded adult Nigerians, the CBN, in collaboration with stakeholders, launched its National Financial Inclusion Strategy on 23rd October 2012. The broad target of the strategy is to reduce adult financial exclusion rate to 20 per cent in 2020.

Domestic savings have always been inadequate in view of optimal investment level required for development. The country has continued to rely on foreign capital to finance the saving-investment gap. The over-reliance on foreign savings is not sustainable because of the decline in concessionary lending and the tendency for the foreign debt to keep rising without concomitant increase in the country's capacity for debt servicing. Moreover, the supply of foreign savings is associated with problems of portfolio investment or "hot money", which is highly volatile because as interest rates

decline or adverse economic conditions are noticed in the host economy, massive capital outflow could take place. Alternatively, short-term foreign capital could depart the host economy once better opportunities emerge in the home country or in other jurisdictions. In this case, diversification of sources of domestic savings should be encouraged.

Savings mobilisation in any economy has been identified as a critical factor for economic growth since investment is usually stimulated by savings. Thus, the need to understand the various factors influencing savings behaviour assumed greater significance given the declining trend in availability of financial resources to many economies.

II.4 Real Interest Rate and the Mobilisation of Domestic Savings in Nigeria

Savings mobilisation and management remain a major role for financial intermediaries, owing to information asymmetry and transaction costs among economic agents. The financial intermediaries help to ameliorate the problems created by information and transaction frictions. In Nigeria, Deposit Money Banks (DMBs) are the main financial intermediaries that make funds available to deficit units from surplus units. Thus, in mobilising funds from the surplus unit of the economy, DMBs incur some costs mainly in the form of interest payments on deposit accounts (e.g. current, saving and time deposit accounts).

To recover the cost of deposit mobilisation and other operating costs, banks lend with some margins. Charges are made for the intermediation services offered under uncertainty, and consequently, lending rates are set above deposit/savings rates. The difference between the deposits and lending rates is called interest rate spread or the intermediation spread. The wedge between the lending and deposit rates defines the intermediation costs and also proxies or measures the efficiency of the intermediation process in the money market. For instance, under perfect competition, the spread is narrow, composed only of transaction cost, while in an imperfect environment, the wedge is wide, reflecting inefficiency in market operations. Currently, the low interest rates paid to the majority of savers in the country and the higher interest rates on loans charged by DMBs reflect inefficiency in the intermediation process, which is typical of an information inefficient financial system. The huge spread between funding and lending currently hovering between 15.0 to 20.0 per cent, is a dis-incentive to savings mobilisation with negative impact on the rate of financial intermediation in the development process.

Sanusi (2009) admitted that the high and wide spread between deposit and lending rates is a major impediment to the realisation of economic development through the financial intermediation role of the banking industry. He added that the interest rate spread, is influenced by non-interest expenses, including prudential and reserve requirements, market structure, inflation, credit risk and profit expectation of banks, among others. Standard and Poor's (2010), in backing this assertion in its Banking Industry Country Risk Analysis (BICRA), stated that the inefficiency is being caused by high cost of doing business, which result from infrastructural problems and inflation rate. According to the rating agency, the high operational costs also arise from the high credit risks exacerbated by the weak judicial system, poor corporate governance and a large informal working sector.

Figure 2: Rates and Interest Rates Spread
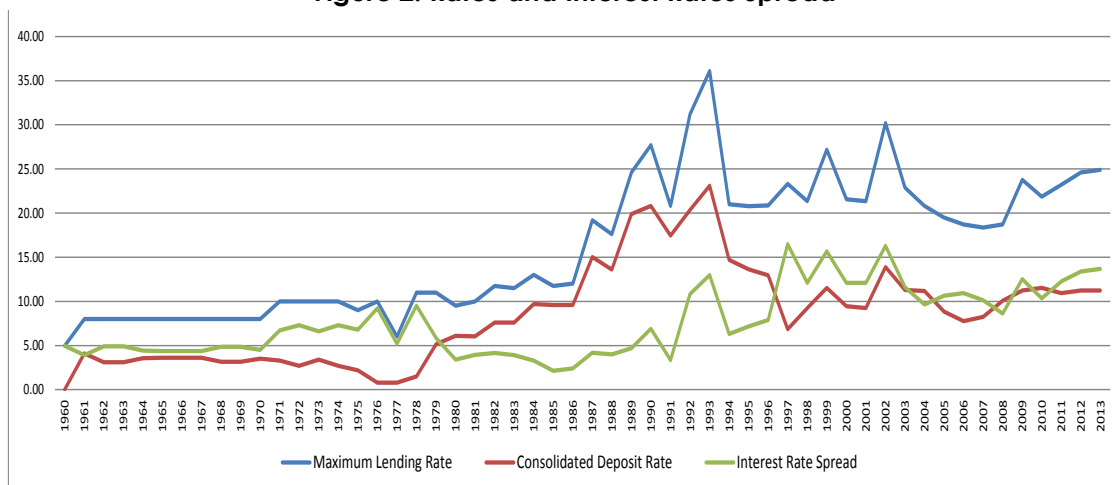
Using the maximum lending and weighted consolidated deposit rates, the interest rate differential moved from an average of 4.55 per cent between 1965 and 1970 to an average of 6.94 per cent from 1970 to 1975 and marginally dropped to an average 6.63 per cent between 1976 and 1980. Thereafter, the average interest rate spread maintained a downward trend, falling to 3.49 per cent between 1981 and 1985 before rising to 4.44 per cent between 1986 and 1990. Subsequently, the yearly interest rate spread maintained an upward trend, rising from 8.13 per cent between 1991 and 1995 to 12.84 per cent between 1996 and 2000, before declining to 12.05 between 2001 and 2005. Average interest rate differential stood at 9.89 per cent between 2005 and 2012. The widening gap between the weighted consolidated deposit and maximum lending rates reflect the prevailing inefficiency in the Nigerian banking system and shallow financial sector, which deterred potential investors from borrowing, and thus, lowered the level of investment in the economy.

Figure 3: Real Interest Rate (per cent)
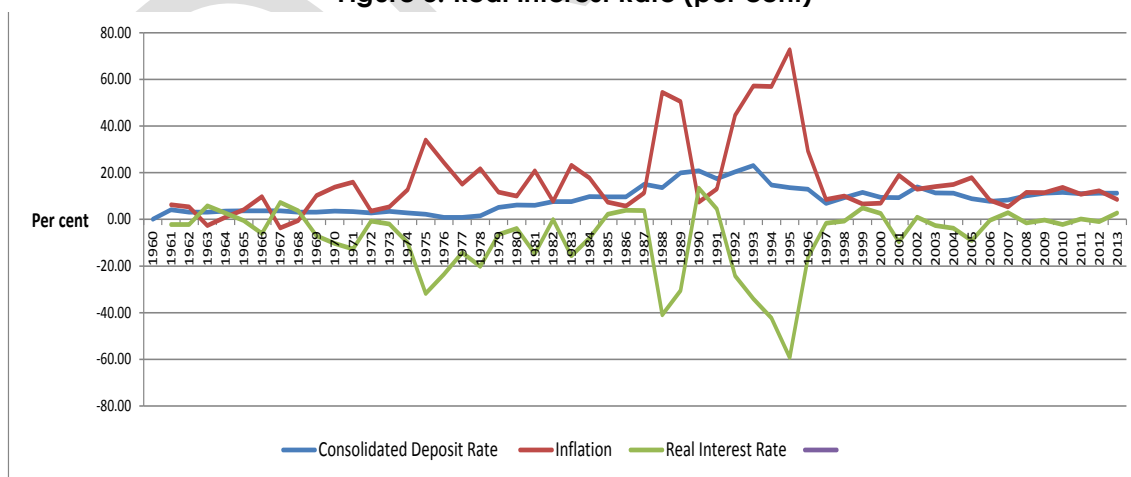
Figure 3 indicates that the real interest rate remained negative for deposits for most of the period 1960 – 2013. The Figure was negative 38 times, attaining positive levels only 15 occasions. During the period, the economy was characterised by an oil windfall and a reasonable growth in GDP. Between 1992 and 1996, a period of guided deregulation, real interest rate remained largely negative, even though deposits rate averaged 17.57 per cent during the period as a result of official intervention. The

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inflation rate actually played a very important role in making the real interest rate negative as it averaged 32.7 per cent. These episodes of negative real interest rates confirmed the inconsistency between savings and investment in the Nigerian economy. In addition, it gives credence to the observation that interest rates have had little influence on savings and that policy should be directed at increasing income if savings are to be enhanced. A cursory glance at Figure 3 would also show that the years when real interest rate was negative usually coincided with those of double digit inflation rates. In January 2013, headline inflation recorded a single digit and real interest rate was positive.

III. A Review of Theoretical and Empirical Literature on Determinants of Savings

In this section, we reviewed both the theoretical and empirical literature on determinants of savings in Nigeria.

III.1 Theoretical Literature

Early economic literature on consumption-saving relationship identified various motives for savings. These include the motive for smoothening out consumption over time as indicated in the life income cycle hypothesis, the bequest motive where the current generation saves to provide for their heirs, the precautionary motive against unforeseen circumstances and speculative motive induced by the investment opportunities available and rate of returns. Keynes postulated three motives for demand for money to include transactional, precautionary and speculative motives.

The theoretical determinants of savings are traceable to the classical economists, who postulated that saving is an increasing function of the interest rate. While several studies were conducted on interest rate as a determinant of savings, especially in developing countries, the effect of this variable on savings is largely indeterminate (Kessler and Strauss-Khan, 1984). Subsequently, the theory explaining savings was for long dominated by the Keynesian approach, which stated that savings positively dependent on disposable income. According to Keynes' absolute income hypothesis, the average propensity to save rises with per capita income at least in the short-run. In other words, consumption is a positive function of income and saving is positively related to income, as it is a residual of income after consumption. This implies that there is no major economic factor that motivates household saving. The Keynes theory did not, however, include interest rate, which has become a controversial factor in determining modern savings behaviour.

The Permanent-Income Hypothesis (PIH), proposed by Friedman (1957) postulated that savings are a function of permanent income, which can be proxied by the weighted average of past levels of income, or the growth of income. The idea behind the permanent-income hypothesis is that consumption depends on what people expect to earn over a considerable period of time. A worker will save only if his or her current income is higher than the anticipated level of permanent income, to guard against future declines in income. The hypothesis also introduced lags into the consumption function. The PIH suggested that effects of changes in the terms of trade (hence income) on consumption will be smoothened over time, if these changes are expected to be temporary, and would be absorbed by changes in savings.

The Life Cycle Hypothesis (LCH), primarily from the contribution of Modigliani and Brumberg (1954), is the mainstream theoretical framework that has guided the study of savings behaviour used by economists over the years. The life-cycle hypothesis predicts that given the intertemporal nature of the savings process, it is the lifetime income of the individual and not just the current income as implied in the Keynesian consumption function that should influence current savings. The hypothesis predicts that as income/earnings are low in early life (during working-age), high in mid-life and low in retirement, savings thus, follow the same pattern to smooth consumption. The life-cycle model suggests a higher rate of savings during certain periods, e.g., in pre-retirement years to provide for consumption at old age.

The McKinnon (1973) and Shaw (1973) hypotheses argued that in countries characterised by "financial repression" raising interest rate relative to inflation would increase savings and the supply of investible resources in an economy. According to these two economists, financial repression arises mostly when a country imposes ceiling on normal deposit and lending rates at low levels relative to inflation. The low or negative real interest rates that results discourage savings mobilisation and the channeling of the mobilised savings through the financial system. This has negative impact on the quality and quantity of investment and hence on economic growth.

The "Two-Gap" models of economic development ascertains that foreign assistance is essential if at least developing countries (LDCs) are to break the savings deadlock and achieve some meaningful economic progress. But the experience of many LDCs in the last three decades has, however, brought the view of the complementary and essential role of foreign capital under severe scrutiny. In developing countries, quite unlike developed countries, where consumption contributes significant proportion of GDP, foreign savings may not be positively correlated to domestic savings and in turn to domestic investment. While foreign savings have traditionally been regarded as complementary, there is now a contention that they may partially or fully crowd-out domestic savings. This argument is valid for a country where foreign borrowing, instead of financing investment, finance consumption, which imply lower domestic savings. This contention is very controversial and can only be resolved empirically.

III.2 Empirical Literature on the Determinants of Savings

Studies on savings behaviour in developing countries have identified variables such as real per capita Gross National Domestic Income (GNDI), growth rate of real per capita GNDI, real interest rate, capital inflows, fiscal balance, rate of inflation, degree of financial leverage, terms of trade, external debt service ratio, demographic structure and government savings as important determinants of private savings.

The central role that savings play in the development process has given rise to a number of studies aimed mainly at investigating, empirically and otherwise, the determinants of savings in developing countries. For example, Mikesell and Zinser (1973) reviewed the effects of interest rates on savings in developing countries and found a statistically significant and positive effect of interest rates on savings. Williamson (1998) examined the relationship between interest rate and savings in six Asian countries and using time series analysis and found the interest rate elasticity of savings to be negative whereas Gupta (1970) found it positive and statistically significant at the one per cent level for India. Both studies used the real interest rate as explanatory variable, while the

dependent variable was private savings. Gupta (1984) modeled a savings function for twelve Asian countries using permanent income, transitory income, expected inflation, unanticipated inflation, the nominal interest rate, and the financial intermediation ratio as explanatory variables. In nine cases, the coefficients were positive, but significant in only three cases.

Gupta (1987) analysed separately countries from Asia and Latin America using pooled cross-section and time series data for the 1967-1976 period. He regressed gross national savings on nominal interest rate, permanent income, transitory income, the expected rate of inflation, the financial intermediation ratio and inflation uncertainly variable. While a positive and significant interest rate coefficient was reported for Asian countries, in Latin America the variable was found to be insignificant, which highlight the problems of pooling data across geographical areas. The real interest rate does not have a statistically significant effect in most studies. An exception to the study which found a positive coefficient was Masson *et al* (1998), Fryo (1981) and Gupta (1987) in the case of Asia, but not in Latin America. There was no consensus in the literature on the impact of real interest rates on aggregate savings.

Soyibo and Adekanye (1992) undertook a study on the Nigerian economy to test the validity of the hypothesis that financial conditions do matter in savings behaviour from (1969 – 1989). They discovered that real interest rate impacted positively on savings. The study established the determinants of savings in Nigeria to include lagged aggregate savings ratio, current gross domestic product, foreign savings and real interest rate.

Essien and Onwioduokit (1998) analysed the effects of financial development on savings mobilisation in Nigeria from (1987 -1993) using the error correction model. Their results showed that there was no long-run equilibrium relationship between financial depth and domestic resources mobilisation. Obadan and Odusola (2001) employed Granger causality tests to determine the impact of growth on savings and found no relationship between savings and income growth in Nigeria. These findings conflict with the results by Tochukwu and Egwaikhide (2007) and Tochukwu and Odigie (2009). This study is expected to investigate these contradictions.

Reichel (1997) studied the impact of negative interest rate in Nigeria. He estimated the interest elasticity of the savings rate using real income as an explanatory variable to capture the Keynesian absolute income hypothesis. He specified a lagged savings function to account for the sluggish adjustment of the savings rate. His findings were similar to those of other researchers who found a positive, but hardly significant interest rate elasticity of gross domestic savings.

Tochukwu and Egwaikhide (2007) compared estimation results of partial adjustment and error correction models and found that ECM performed better as savings rate increased with disposable income, but declined with rate of growth. They established that inflation rate, terms of trade and external debt service ratio had positive relationship with savings rate. Similar finding was reported by Tochukwu and Odigie (2009) that savings rate increased with the rise in disposable income and real interest rate on bank deposits. Oremadu (2007) found that GDP per capita, broad money and real interest rate including inflation impacted on savings in Nigeria. Surprisingly, Chete (1999) revealed that financial deepening has negative impact on private savings in Nigeria, which contradicts the findings by Tochukwu and Egwaikhide (2007).

Epaphra (2014) examined determinants of savings in Tanzania between 1970 and 2010 and the results showed that disposable income, real GDP growth, population size and life expectancy had positive effect on national savings. The inflation had a negative impact on savings, which he explained that, from policy perspective, the precautionary motive for savings was not supported. He emphasised that there is need to understand the nature of savings behaviour to guide appropriate design of policies to promote savings and investment, which would enhance economic growth and development. Tesha (2013), however, explained that the rate at which higher savings translate into higher investment always depend on the efficiency of financial intermediation process in a particular jurisdiction.

IV.   Methodology

IV.1   Specification of the Model

The study employed both descriptive and econometric analyses. The econometric analysis specified a model based on the empirical work of Epaphra (2014), which used variables identified by the life-cycle/permanent income hypotheses, including other variables suggested by some empirical studies in Tanzania. Judging from the plethora of literature and theoretical framework, the empirical investigation employed time series data from 1960 to 2013 in evaluating the determinants of domestic savings in Nigeria. The annual data were sourced from the *CBN Annual Reports and Statistical Bulletin, the National Bureau of Statistics (NBS)* as well as the *IMF International Financial Statistics (IFS)*.

The nature of the relationship between the real interest rate and savings remains polemical among researchers given the pivotal role of savings in investment and growth on the one hand, and the different economic conditions obtainable in different jurisdictions. This may be due to varying forms of savings used and the focus of various studies. Such relationships need to be studied for individual countries to see how they differ from country to country and on temporal basis given, the dynamism of the economic and financial environment.

The dependent variable is gross domestic savings (LGDSAV). The explanatory variables are lagged real per capita income (LRPCYP), lagged gross domestic savings (LGDSAVt-1), real government savings (RGS), current account balance (CA), real interest rate (RIR), financial intermediation ratio (FIR), terms of trade index (LTOT), inflation rate (CPI), and foreign savings (proxies by FDI/GDP). DEP is the age-dependency ratio. A dummy variable (D87) is also introduced to capture economic reforms, in particular, the shift in financial policy regulation to deregulation of interest rates in 1987 and takes the value of 0 for pre-reforms (1960 -1986) and 1 for post reforms (1987-2013). The inclusion of lagged variables is to contain problems of omitted variable bias and autocorrelation, arising from model mis-specification.

This functional relationship can be specified in an estimable equation as follows:

$$\text{GDSAV}_t = \alpha_0 + \beta_1 \text{RPCYP}_t + \beta_2 \text{CPI}_t + \beta_3 \text{RGS}_t + \beta_4 \text{RFS}_t + \beta_5 \text{FIR}_t + \beta_6 \text{RIR}_t + \beta_7 \text{TOT}_t + \beta_8 \text{DEP}_t + \beta_9 \text{D87}_t + \varepsilon_t \tag{2}$$

$\beta_i \dots \beta_n = Coefficients,$

Other variables are as defined above

Long Run Static Model
To estimate the long-run relationship, equation (2) can be re-written in a semi-logarithmic form to linearise the relationship and directly estimate their elasticities as follows:

$$\text{Log(GDSAV)}_t = \alpha_0 + \beta_1 \text{Log(RPCYP)}_t + \beta_2 \text{LogCPI}_t + \beta_3 \text{LogRGS}_t + \beta_4 \text{RFS}_t + \beta_5 \text{FIR}_t + \beta_6 \text{RIR}_t + \beta_7 \text{LogTOT}_t + \beta_8 \text{LogDEP}_t + \beta_9 \text{D87}_t + \varepsilon_t \tag{3}$$

We have the following *a prior* signs:

$\beta_2, \beta_5, \beta_7, \beta_8$ and $\beta_9 \leq 0$, while $\beta_1, \beta_3, \beta_4,$ and $\beta_6 \geq 0$:

Dynamic Error-Correction Model
Using the three key criteria of economic plausibility, statistical significance and economic acceptability, the dynamic savings function is re-specified to include error correction term (ECM).

$$\text{Log(GDSAV)}_t = \alpha_0 + \beta_1 \text{LogD(RPCYP)}_t + \beta_2 \text{LogD(CPI)}_t + \beta_3 \text{LogD(RGS)}_t + \beta_4 Log\text{D(RFS)}_t + \beta_5 \text{D(FIR)}_t + \beta_6 \text{D(RIR)}_t + \beta_7 Log\text{D(TOT)}_t + \beta_8 \text{LogD(DEP)}_t + \beta_9 \text{D87}_t + \beta_{10} ECM_{t-1} + \varepsilon_t \tag{4}$$

V. Estimation Results and Discussion

Descriptive Statistics
The nature of the distribution of the variables is presented in Table 5. Obviously, the Jacque-Bera statistics rejects the null hypothesis of normal distribution for the TOT, CPI, FIR and D87 variables; while the remaining variables are assumed to be normally-distributed.

Table 5: Summary of the Descriptive Statistics of the Variables

	LNGDSAV	LNRPCYP	LNTOT	RGS	RIR	LNCPI	FIR	RFS	D87
Mean	9.8708	12.1958	4.0389	-1.2867	-7.5188	1.1276	8.7544	2.2049	0.4815
Median	9.6886	11.2697	4.3716	-2.1287	-2.0245	0.4040	6.7500	1.7000	0.0000
Maximum	16.3011	17.7359	5.2575	14.3984	17.2000	5.0259	42.7000	8.2800	1.0000
Minimum	3.7773	7.6927	3.1046	-12.4398	-62.1000	-2.2073	0.0000	-1.1500	0.0000
Std. Dev.	3.6373	3.3446	0.7628	6.7665	16.1718	2.6485	6.9471	1.8703	0.5043
Skewness	0.0886	0.2005	-0.2259	0.6426	-1.4446	0.1657	2.5046	1.2456	0.0741
Kurtosis	1.9060	1.6593	1.4455	2.7797	4.6504	1.4380	11.8512	4.9354	1.0055
Jarque-Bera	2.7634	4.4062	5.8964	3.8257	24.9094	5.7369	232.7314	22.3922	9.0001
Probability	0.2512	0.1105	0.0524	0.1477	0.0000	0.0568	0.0000	0.0000	0.0111
Sum	533.0205	658.5739	218.1026	-69.4836	-406.0174	60.8895	472.7374	119.0657	26.0000
Sum Sq. Dev.	701.2012	592.8641	30.8373	2426.6500	13860.9000	371.7729	2557.8970	185.3884	13.4815
Observations	54	54	54	54	54	54	54	54	54

Source: Authors' Computation

Correlation Matrix

To establish the relationship among the identified variables, a summary of correlation matrix is presented in Table 6.

The correlation matrix presented in Table 6 showed positive correlation between the dependent variable gross domestic savings (LNGDSAV) and some key variables, such as per capita income (LNRPCYP), age-dependency ratio (DEP), consumer price index (CPI), terms of trade (TOT), financial intermediation ratio (FIR), foreign saving (RFS) and dummy variable (D87). Government savings rate (RGS) showed negative relationship with gross domestic savings. However, consumer price index (LCPI) exhibited positive correlation, which is counterintuitive showing that Nigerians do not consider inflation when taking decision to save.

Table 6: Summary of the Correlation Results

	LNGDSAV	LNRPCYP	LNTOT	RGS	RIR	LNCPI	FIR	RFS	D87
LNGDSAV	1								
LNRPCYP	0.9910148	1							
LNTOT	0.7602236	0.727874	1						
RGS	-0.4147248	-0.3667994	-0.5744505	1					
RIR	0.0787711	0.0896103	-0.0291169	0.2344343	1				
LNCPI	0.9777187	0.993382	0.733135	-0.3633785	0.0768455	1			
FIR	0.6899295	0.6927192	0.3371159	-0.047422	0.2346731	0.6684239	1		
RFS	0.499523	0.5097145	0.3593857	-0.3179334	-0.3411506	0.5468357	0.3366626	1	
DRATE	0.5910067	0.5726573	0.6457175	-0.5389085	-0.167905	0.6021529	0.2560503	0.6065682	
D87	0.0309049	0.025079	0.0417447	-0.1023534	0.0647254	0.0193588	-0.0554871	-0.1331833	1

Source: Authors' Computation

Time Series Properties

Testing for the existence of unit roots and co-integration became paramount in order to minimise the possibility of estimating spurious relationship. The stationarity of each series was tested using the Augmented Dickey-Fuller (ADF) and the Phillip Perron (PP) tests as shown in Table 7.

Table 7: Unit Root Test Results

	ADF				Philip Perron (PP)			
	Test Statistics	Critical Value	P-Value	Order of Integration	Test Statistics	Critical Value	P-Value	Order of integration
LNDSAV	-6.5042	-2.9187	0.0000	1(1)	-6.4966	-2.9187	0.0000	1(1)
LNRPCYP	-6.6155	-2.9187	0.0000	1(1)	-5.6155	-2.9187	0.0000	1(1)
FDI	-11.4946	-2.9187	0.0638	1(2)	-9.5406	-2.9187	0.0000	1(1)
LNCPI	-3.7912	-2.9187	0.0053	1(1)	-3.6835	-2.9187	0.0072	1(1)
FIR	-8.1295	-2.9199	0.0000	1(1)	-20.7715	-2.9187	0.0000	1(1)
LNTOT	-6.8547	-2.9187	0.0000	1(1)	-6.8533	-2.9187	0.0001	1(1)
RIR	--9.9576	-2.9187	0.0000	1(1)	-21.1344	-2.9187	0.0001	1(1)
RGS	-9.9971	-2.9187	0.0000	1(1)	-11.4871	-2.9187	0.0000	1(1)
Lndep*	-2.9029	-2.9211	0.0052	1(2)	-7.0825	-2.9189	0.0000	1(2)

*Indep with 1(2) order of integration has been dropped in the model estimation

Result of Stationarity Tests

The results of the stationary test showed that the *GDSAV, RPCYP, LCPI, RGS, RFS,TOT, RIR and FIR* are stationary at first difference {1(1)}. On the other hand, D*EP* became stationary at second difference and was dropped to ensure that variables have the same order of integration.

Results of the Long-Run Static Model

Table 8: Long-Run Static Regression Result for Domestic Savings Model

Variable	Coefficient	t-Statistic	Prob.
C	-10.89	-6.14	0.00
LNRPCYP	1.62	10.34	0.00
LNCPI	-0.83	-4.21	0.00
FIR	0.01	1.01	0.31
RGS	0.04	1.17	0.24
LNTOT	0.04	3.44	0.00
RGS	-0.01	-1.65	0.10
RIR	0.001	0.26	0.79
D87	0.02	0.19	0.84
Adjusted R-squared	0.98		
F-statistic	621.98		
Prob(F-statistic)	0.00		
Durbin-Watson stat	0.65		

Source: Authors' Computation

Interpretation of the results

The t-statistics of the static or long-run model (Table 8) showed that the real per capita income, inflation and terms of trade are significant at 5 per cent level, while government savings is significant at 10 per cent. The real interest rate, foreign savings and foreign direct investment are not significant. Inflation rate shows a negative sign, which is consistent with the a priori expectation. Since we have a log-linear specification between savings and per capita income GDP, the long-run coefficient of the log of per capita GDP (LRPCYP) of 1.62 means that if there is 1 per cent increase in per capita income, there will be 1.62 per cent increase in the savings level. This corroborates the modified Life Cycle Hypothesis that income variable (RPCYP) is an important determinant of savings. These results are consistent with those obtained by Modigliani (1970).

The overall model is significant at 5.0 per cent as shown by the F-statistics. However, the Durbin-Watson statistics of 0.65 suggests evidence of serial correlation (autocorrelation). The model is used to generate residual series (ECM) for the estimation of dynamic error correction model. The adjusted R-Square is high at almost 98 per cent suggesting that the independent variables accounted perfectly for the variation in the dependent variable. Despite these favourable statistics, the outcomes of the model cannot be relied upon due to the presence of autocorrelation.

The Co-integrated Test

To avoid estimating spurious regression problems, co-integration test was conducted. The existence of co-integrating relationship among the variables implies that the determinants of total domestic saving in Nigeria are most efficiently represented by an error correction specification. This allows for fitting an ECM.

Table 9: Unit Root Test on the Error Correction Term (Residual from Static Regression)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-3.9565	0.0033
Test critical values:	1% level	-3.5600	
	5% level	-2.9176	
	10% level	-2.5988	
*MacKinnon (1996) one-sided p-values.			

Source: Authors' Computation

The unit root test statistics on the residual (ecm) from the long-run equation showed that p- value is higher than the Mackinnon critical value at 1 per cent level of significance. This implies that the error term is stationary and hence, it can be concluded that there is co-integration among the variables that determine savings. That is, long-run equilibrium relationship exists among the variables. It is, therefore, possible to use the results of Equation 3 to make preliminary conclusion about the long-run behaviour of savings in Nigeria.

Dynamic Error-Correction Model

Having identified that the variables in Equation 4 are co-integrated using the Engle and Granger (1987) two-step procedure, we then explored the dynamics of the savings process. This was done by estimating an over-parameterised model that included various lags of the dependent and some independent variables. Based on parsimonious principle, insignificant variables were dropped to achieve a dynamic error correction model as shown in Table 10.

The result indicated that the Keynesian absolute income hypothesis was found to hold in Nigeria. Intuitively, this indicated that low disposable income is an impediment to raising the savings level in Nigeria. The 1987 policy shift dummy had a positive sign and significant at 5 per cent, suggesting that the interest rate liberalisation and financial reforms had increased, to some extent, savings rate in Nigeria.

The error correction term (ECM(t-1)) was negative and significant. This was expected to correct any deviations from long-run equilibrium. The coefficient of the error correction value of -0.34 per cent means that 34 per cent of any past deviations would be corrected in the current period. So, it will take more than two years for any disequilibrium to be corrected. Loayza, Schmidt-Hebbel, and Serven (2000) had shown that the effects of a change in any determinant of saving are fully realised only after a number of years, with long-run responses.

Table 10: Estimates of the Short Run Error-Correction Model

Variable	Coefficient	t-Statistic	Prob.
C	0.157	2.24	0.03
LGDSAVL(-1)	0.992	10.4	0.00
DLRPCYP	0.972	5.89	0.00
DLFIR	0.374	2.16	0.03
RIR(-1)	0.002	2.11	0.04
DLCP1	-0.320	-1.86	0.06
DLCA	0.349	2.70	0.00
RGS(-3)	-0.002	-0.40	0.68
D87	0.129	2.25	0.03
ECM(-1)	-0.337	-2.64	0.01
Adjusted R-squared	0.98		
F-statistic	6324		
Prob(F-statistic)	0.0000		
Durbin-Watson stat	2.11		

Source: Authors' Computation.

The DW-Statistics, which is 2.11 suggested that there was no serious problem of serial correlation in the model. Also, the coefficient of determination (R^2), which was 0.98 suggested that the model was robust as about 98.0 per cent of the changes in domestic savings in Nigeria was explained by the identified explanatory variables during the review period. The overall significance of the model is high as shown by the probability of the F-statistics.

Diagnostic Testing

Post estimation diagnostic tests are important in the assessment of the adequacy of a model. In this regard, this study carried out both residual and stability tests to ascertain the reliability and acceptability of the model. Chow test would have been conducted, but the introduction of policy shift dummy variable (D87) for financial reform in 1986, invalidated the conduct of test for structural break (chow stability test).

Table 11: Results of the Diagnostic Tests

	F-statistics	Probability
Breusch-Godfrey (LMSC)	0.8235	0.7756
ARCH	0.7376	0.7311
Heteroskedasticity Breusch-Pagan-Godfrey	0.5435	0.5010
Ramsey RESET	0.2037	1.1424
Normality	0.6249	0.5648

Source: Authors' Computation

The outcome of the diagnostics tests was satisfactory. A value with a corresponding probability greater than 5 per cent is an indication of good result. The result of the test further suggested that the model was well specified and robust for policy analysis (see Table 11). In addition to the above tests, the CUSUM and the CUSUM of Square stability test were performed to establish the reliability and stability of the model. The graphs below show that the parameter movements were within the corridor or critical lines at

the 5 per cent level of significance, indicating stability of the model.
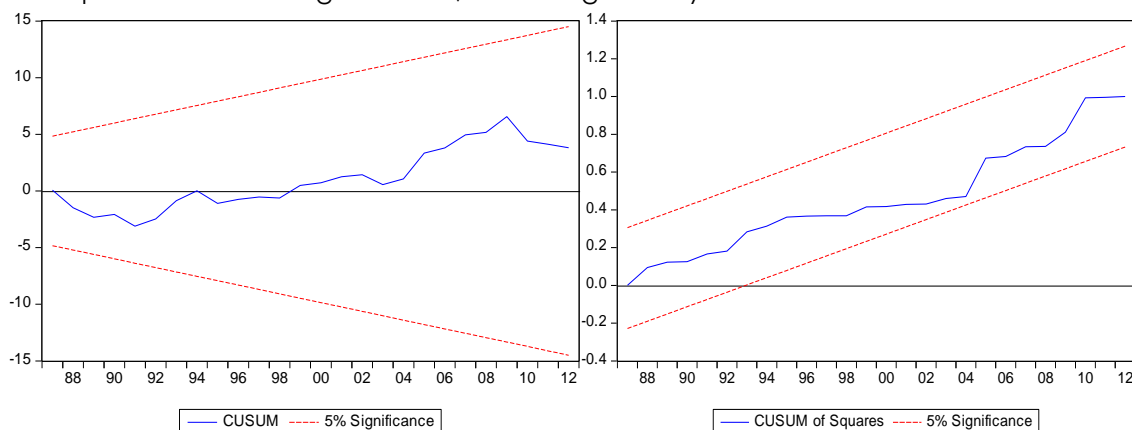
VI. Conclusion and Policy Recommendations

The study investigated key determinants of gross domestic savings in Nigeria. The empirical investigation covered the period 1960 – 2013. The estimation results of the long-run and short-run dynamic models revealed that the lagged gross savings, real per capita income, financial intermediation, current account balance, inflation rate, financial reforms and real interest rate had significant impact on gross domestic savings in Nigeria. These findings could be used to deduce clear roles for fiscal, monetary and structural policies in increasing total savings in Nigeria. Based on the findings, the following recommendations were made:

Macroeconomic policies aimed at increasing gross domestic savings through employment generation should be encouraged to promote savings and investment as revealed by the study and ultimately increase national income. Rising national income is anticipated to increase personal savings and investment according to Keynes (1936). The policy trust should focus on measures to increase per capita income, promote effective financial intermediation and encourage further liberalisation of interest rates. Government should provide sound and stable macroeconomic environment by ensuring a reduction in budget deficits to ensure financial system stability and low inflation through robust fiscal and monetary policies.

Similarly, monetary policy should focus on ways of making savings rate attractive, as low interest rate and a wide spread between deposit and lending rates are dis-incentives to savings in the country. Other areas of financial reform that will impact on savings mobilisation is reduction in cost of delivery of banking products. It is expected that gains from banking efficiency and other financial system reforms will reduce intermediation spread. Thus, the current shared services scheme of the Central Bank of Nigeria should be sustained.

The new contributory pension scheme should be strengthened, judging from the sharp increase in national savings observed due to its introduction. In addition, this is expected to smooth out consumption patterns over the life-cycle of individuals.

Finally, in terms of creating linkages between the formal and informal financial sectors, the authorities are encouraged to continue with financial reforms to reduce financial exclusion so as to increase national private savings and overall national output.

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The Effects of Fiscal and Monetary Policies on Capital Market Development: The Nigerian Experience

Kama U., Bewaji P., Yakubu J., Adigun M., Adegbe O.

and Elisha J.[*]

Abstract

The paper examined the effects of monetary and fiscal policy measures on capital market, using quarterly time series data (2000Q1-2013Q4). Descriptive statistics was used to examine ex-post and ex-ante effects of policy and capital market measures on the stock market. The study found inter alia; that the endogenously determined and most dominant structural break coincided with the 2007 Global financial crisis. Under such circumstances and with regards to the stationarity of the data generating process, the study applied the Autoregressive distribute lag (ARDL) bounds test approach to ascertain the long and short-run relationships among the variables in the presence of structural breaks. The error-correction factor indicated a co-integrating relationship among the variables. Findings reveal that capital market was not highly responsive to adjustments in monetary policy rates. Liquidity channel had a dominant effect on the capital market in the long and short-run. Exchange rate depreciation affected negatively the capital market in the short-run, while fiscal deficits had a crowding-out effect, which depressed stock market performance. The 2007 Global financial crisis had a short and long-term impact on the capital market.

I.   Introduction

Financial market has become increasingly important and is considered as a key barometer for measuring the performance of an economy. As an integral component of the financial market, capital market provides a platform for economic agents (government, firms and institutions) to raise capital directly from the public, giving room for wider ownership among the public, reduction in the cost of capital, as well as the distribution of risks and wealth amongst investors. For investors, it provides an avenue for making investment decisions that align with their risk appetite and provide an investment avenue for people who wish to invest their resources for a long-term. It also provides higher returns to investors and boosts capital formation. By directing the mobilised savings/resources to economic agents, the capital market facilitates the expansion of existing stock of capital in the economy, boosts the productive capacity of the economy and increase growth. Similarly, the functioning of the capital market affects liquidity, acquisition of information about firms, risk diversification, and savings mobilisation (Anyanwu, 1998).

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[*] *The authors are staff of the Financial Sector Division, Research Department, Central Bank of Nigeria. The usual disclaimer applies.*

Capital market transactions cover a spectrum of instruments, such as government securities, corporate bonds, equities and mutual funds, which provide diverse investment choices for the public. In addition to providing a platform for mobilising long and medium-term loans, the market also offers other types of financial services, such as underwriting, consultancy, investment management, trading, and market research. To attract capital investment from overseas and domestic sources, ensure proper operation of the capital market and the protection of investors' interests, it is necessary to develop regulatory and operational frameworks and policies to improve market liquidity, boost investor confidence, raise issuer confidence, attract and maintain foreign investment in the capital market. To perform effectively, capital market requires the free flow of information, without which investors cannot keep abreast of developments or gauge, to the best of their ability, the true value of stocks. The implication is that if market conditions are not favourable, holdings of capital market instruments and mobilisation of long-term fund will be limited. Where the market operates efficiently, public confidence is enhanced and investors will be willing to part with funds and invest them in securities with the hope that in future they will recoup their investment (Ewah et. al., 2009).

As an integral part of the financial system, capital market is affected by government policies, plans, measures or interventions designed and pursued to influence or guide a particular course of action among economic agents to achieve an end. Sectoral inter-linkages could also mean that laws and regulations designed for other sectors could have significant implications for the capital market. For example, monetary and fiscal policies influence short-term investment decisions and demand factors in the economy, which further affects the equity and debt markets. In addition, the debt management policy of an economy can influence significantly the volume of government securities available for issuance. It is argued that fiscal policies in the form of tax incentives in the capital market will encourage corporate entities to seek listing on the stock exchange, increase the number of listed companies, encourage investors to purchase securities and yield good returns on investment. Policies, sometimes, affect the capital market with positive, negative and in some cases neutral outcomes. However, capital market sometimes induces a reactionary policy response from government. As much as they contribute to economic growth and development, capital markets are susceptible to volatility. This can impede the economic progress of a nation and trigger some form of government intervention.

There is substantial literature on the relationship between macroeconomic factors and the stock market. Most of these were conducted for industrialised and developed economies with a few from developing and emerging economies. This study builds on existing work by including new macroeconomic variables to examine the endogenous effects of some capital market measures on the stock index. It also intends to assess the effect of government policies – in particular, fiscal and monetary policies and capital market measures on capital market performance in Nigeria. The study employed the auto-regressive distributed lag model, using quarterly data for the period 1986:1-2013:4. This period was considered appropriate because it was associated with the 1986 structural adjustment programme (SAP), the post-adjustment period characterised by the 1993 financial sector deregulation, the 1999 transition from military to democratic governance,

the 2007/2009 Global financial crisis and other reform periods, all of which had implications for the stock market- proxied by the all share index.

This study is organised as follows: Following this introduction is Section 2 which discusses the policy debates on the role of government intervention and reviews some empirical studies. Section 3 examines the trends in the Nigerian Stock Exchange, incorporating some capital market policies. In Section 4, charts are used to review and highlight reactions of the stock market to monetary and fiscal policies. The Section describes the data, methodology and presented the unit root tests of the time series data. Empirical results are presented in section 5, while section 6 concludes the paper.

II.   Review of Literature
II.1   Theoretical Issues

The policy debate on government intervention in the financial markets has hovered around making choices among government regulation, deregulation, no regulation and intervention "on a need" basis. Market proponents who support a full deregulation base their argument on the classical economic theory that markets are perfect with symmetric information on prices and costs, less likely to transmit economic shocks to the economy-wide sectors and should be allowed to operate under the "invisible hand". This conventional neo-classical economic theory, known as the "efficient market hypothesis" (EMH) holds that prices of financial securities fully reflect all relevant information, reducing the need for arbitrage opportunities, and allows for free flow of capital. Opponents of the theory, however, argue that the EMH fail to recognise that market imperfections such as abuse of trust, information asymmetry, inefficient allocation of capital, uninformed investors, incomplete and imperfect information, can and do transmit economy-wide shocks and disturbances. The need to address these market imperfections has led critics of the efficient market hypothesis to support and rationalise some form of government intervention in the financial market in order to minimise the inefficiencies that could lead to costly financial crises (Stiglitz, 1994; Dodd, 2002; Daniel et. al., 2002; and DaRin, et. al., 2005). Stiglitz (1994) espoused that beyond market failures and imperfections, the complex nature of financial markets should be a good reason to appreciate the need, limits and strength of government intervention.

According to Bekaert et. al., (2001), growth in equity markets depend not only on economic liberalisation polices, but also on other conditions such as education level. Some stock exchanges recognise its importance and embarked on education and awareness initiatives. Literature has drawn the attention of government regulators, and international monetary authorities to possible complacency in supervisory and oversight roles in the workings of the financial markets at the breakout of the crisis. These have led to renewed efforts (national, regional and international) to regulate domestic financial markets and rebuild the international financial architecture. The foregoing indicates that the idea of market liberalisations and perfect functioning of markets without government intervention is unrealistic. In view of this, Stiglitz and Ocampo (2008) stated; "Government policies are required to: change the nature of the shocks the economy confronts; reduce the underperformance of the economy that results when the economy experiences a

shock, both with automatic stabilisers and discretionary actions; and create social protection systems to help individuals and firms cope with the consequences of these shocks".

Government intervention in financial markets does not necessarily imply regulation. Merton (1990) categorises five (5) broad roles of government in the financial markets. First, government is the legislator- setting rules and procedures guiding market operators, product development and rule enforcer. Secondly, government acts as negotiators in international markets and interveners. Capital transactions- especially in the form of equity, bonds, trust funds, venture capital, mutual funds, pension funds, takes place in the stock exchanges. such transactions recorded in the capital and financial account of the balance of payments of a country further reflects the role of trade and foreign exchange policies in capital market development. By virtue of its sovereignty, governments do change corporate regulations, tax and investment laws, as well as foreign exchange guidelines. Thirdly, government provides the market platform for trade in risk-free government securities. Merton (1990) argued that the non-existence of a deep and liquid market for government securities can affect the smooth functioning of a vibrant bond market. Fourth, as a market participant, government expands the "network effects" of the capital market. Merton (1990) advanced that the larger the number of market participants, the lower the burden of fixed cost among existing participants. Investors also benefit from the increased depth and liquidity due to large number of participants. Where these features are lacking, firms are incentivised to seek out more liquid markets for their transactions. Babalola and Adegbite (1996) further corroborate that "the more liquid a stock market is, the more investors will be interested in trading in the market". Lastly, government plays an enabling role by supporting the development of market trading infrastructures and new financial market products.

The pivotal works of Tobin (1969), Barro (1974), and Keynes (1936), complemented by Goldsmith (1969) and McKinnon (1973) provided the foundation for the theory postulating the reaction of stock markets to government policy shocks. The conventional classical economists are of the view that markets are always in a steady state equilibrium, captured in the Aggregate Supply (AS)-Aggregate Demand (AD) model, in particular the savings-investment gap. Financing this gap is often considered crucial when domestic financial resources are insufficient to address the investment needs and foreign inflows are required to narrow the gap. The classicalists supported the use of interest rates to create the necessary balance in the domestic financial market. Interest rates are seen as positively related to savings, thus rendering consumption less attractive in the face of higher interest rates. Similarly, higher interest rates would reduce the demand for investible fund and interest rates will continue to adjust in such a manner to ensure that the demand and supply of credit remains balanced. If the supply of funds exceeds the demand for funds, the system recognises the need for low interest rates to boost demand for investment funds.

Similarly, when savings are low, interest rates have to be higher to attract funds. Thus, to the classicalists, interest rates are critical to maintaining the balance in the financial markets. They argued that under conditions of constant velocity and full employment,

monetary policy is ineffective at affecting the stability of the economy. Therefore, any increase in money supply would only lead to higher growth in prices when those assumptions hold (Omanukwue, 2010). As it relates to fiscal policy, a neo-classical perspective led by Barro (1974), however, argued that lower taxes may not boost spending, but would rather encourage savings since economic agents will be inclined to save more in anticipation of future increase in taxes. Attempts to also boost government spending through deficit budgeting (funded by borrowing from the capital market) will lead to increase in interest rate. The higher cost of fund reduces consumption and investment expenditure due to crowding-out of the private sector. Therefore, the classicalists considered fiscal policy as an ineffective tool to affect aggregate demand.

Conversely, the Keynesians' logic of government actions in the capital market is that which ends up boosting aggregate demand without any upward pressure on interest rates. They argued that in an economic slowdown, businesses are unwilling to borrow funds from conventional sources (i.e. banks) due to excess (existing) capacity prior to the economic slowdown. This lack of demand from private sector redirects bank lending to the government to finance its spending without an upward pressure on interest rates. Therefore, unlike the classicalists, the issue of crowding out the private sector demand does not arise. As cited in Anderson (2004), Smith (1776, 1911) provided the seminal foundation of tax policy effects on the flow of capital across economies. Higher taxes would encourage capital funds, not tied to a specific country, to seek out arbitrage and investment opportunities in countries with lower rates. North (1990) and Montesquieu (1748) opined that socioeconomic and political institutions also shape the performance of the economy as investors assess the economic environment before deciding whether to trade or not in a particular economy or region. There have been empirical studies conducted to validate some of these theories and a review of some form the focus of the next section.

II.2 Empirical Literature

The extent to which market reacts to policies depend on whether or not these policies are anticipated or unforeseen. Meek (1960) investigated the economic impacts of the United States government deficits on the capital market. He buttressed the need for tariff reduction, anti-inflationary monetary policies and external finance as policy measures that would create a competitive market and attract investments in the capital market. Barro (1974) asserted that fiscal balances- deficits do not affect the net worth of investors so long as these investors' expectations of future higher taxes are discounted from current decreases in taxes. In other words, the net effect of such fiscal deficits leaves their net worth unaffected. As cited by Laopodis (2009), studies such as Evans, (1987a, b); and Boothe and Reid, (1989) had shown support for Barro's theory. The studies by Frenkel and Razin, (1986); Darrat, (1987, 1988); and Zahid, (1988), which were in line with Tobin (1969) produced contrary outcomes, citing significant impacts of both monetary and fiscal policy on the stock market. Laopodis (2009); Afonso and Sousa (2009) findings showed the existence of a negative relationship between budget deficits and stock market returns. Göndör and Bresfelean (2011) upheld the significance of fiscal policies in financial markets. They asserted that the size of government deficit and public debt could generate uncertainty about the stability of an economy, which eroded investor confidence and

affect the capital market. They did acknowledge that these effects do differ, especially in times of distress.

On the impact of monetary policy on the stock market, Pearce and Roley (1983) concluded that unanticipated changes in monetary policy exerted a negative effect on stock prices. Kholodilin et. al., (2008) investigated the effects of the European Central Bank's monetary policy on both aggregate and sectoral indices of the European stock market. They reached the conclusion that on a sectoral basis, a positive shock to interest rates by 25 basis points led to a decline in the stock market in the range of 0.3 - 2.0 per cent, while, on aggregate level, the decline was 1.0 per cent, on the day the rise in interest rates is announced. Laopodis (2009), using the vector autoregressive framework, found that unanticipated rise in the federal funds rate and inflation shocks lead to a negative response from the stock market.

Aziza (2010) used co-integration analysis and vector error correction model to assess monetary policy impacts on stock market performance (proxied by market capitalisation) of countries in each continent for the period 1988-2008. Two countries were chosen to represent each continent. His findings showed that growth in money, quasi-money, lending and inflation rates had a long-run relationship with stock market performance with differing effects. Pennings et. al., (2011) provided empirical evidence of a negative impact of contractionary monetary policy on stock markets for Canada, UK and eight (8) small open economies. Amador et al. (2011) discovered that expansionary monetary policy had a positive effect on stock market liquidity. Aliyu (2012) explained that during the 2007 Global financial crisis, unexpected shocks to the policy rate and growth of broad money supply were statistically significant in explaining the volatility in the Nigerian stock market. Chen and Wu (2013) used a threshold model to analyse the ex-post and ex-ante effects of central bank's interest rate on stock index. Their findings showed that irrespective of an increase or decline in rates, stock indices were statistically significant and positively related to interest rates, contrary to theoretical expectations of an inverse relationship. They, however, found an inverse relationship between interest rate and stock indices, which happened after a certain threshold. To validate their results, they employed the error correction model and found a co-integrating relationship between interest rates and stock indices before and after interest rate cuts by the central bank.

Anderson (2004) assessed the impact of monetary and fiscal policy on capital markets of forty–seven (47) countries, using a multivariate regression technique. He utilised six (6) dependent variables as proxy for market strength - market capitalisation, market turnover, liquid liabilities, private domestic credit (% GDP), gross domestic savings and foreign direct investment. His measures of explanatory variables cut across four broad policy mix. Interest (lending) rates, inflation rates, and corporate tax were proxies for monetary and fiscal policies. External policies were proxied by exchange rate. Political variables such as democracy, level of autocracy, political competition were tested, while endowment variables such as GDP growth were included in his models. Other variables to account for rule of law and creditor rights were also tested. He concluded that rule of law had a significant and positive effect on attracting private sector credit. Interest (lending) rates and GDP growth were significant in explaining 50 and 40 per cent of variations in market

capitalisation, while inflation had a negative effect on stock market turnover. He reached the conclusion that more "monetary and fiscal policy variables were associated with the dependent variables than the legal, endowment and political variables".

Mosley and Singer (2008) adopted the OLS technique to analyse the effects of political institution, fiscal balance, index of capital account openness, inflation, GDP per capita and real interest rates as explanatory variables on stock market valuations for thirty –seven countries from 1985-2004. They concluded that real interest rates, increased capital account openness, and a democratic polity were statistically significant in explaining stock market valuation, but suggested the need for a more disaggregated approach on the effects of different market assets. In examining the effects of New Zealand's elections on stock market returns for the period 1985-2009, Abidin et al (2010) concluded that there was no evidence of an election effect in the New Zealand stock market, but acknowledged the existence of a political cycle. Wilson (2012) further corroborated the impact of political events on the stock market when he stated that "revolutions in Egypt and Tunisia had an adverse effect on stock prices as uncertainty resulted in investor panic". In China, Wang (2010) summarised that most of the changes and fluctuations in the Chinese stock market were attributable to policy, rather than the market.

Akinkuotu (2013) conducted a comparative study of the "impact of fiscal and monetary shocks on stock market performance in Nigeria", employing quarterly data from 1981 to 2012. The study used structural vector autoregressive (SVAR) model and the results indicated that there was a very significant relationship between the fiscal policy shocks and stock market performance as well as monetary policy shock and stock market performance. However, the fiscal policy shocks exhibited more effect on the stock market than its monetary policy shock counterpart.

Okpara (2010) investigated the outcome of monetary policy on the stock market returns in Nigeria utilising monthly data for the period 1985 to 2006. He employed the two-stage least square method, Vector Error Correction Model (VECM) and the forecast error decomposition analysis using data on stock market returns, inflation, interest rate, treasury bill rate, and minimum rediscount rate. The paper discovered that monetary policy was an important factor of long-run stock market returns in Nigeria, while high treasury bill rate decreased stock market returns. The variance decomposition demonstrated that the principal sources of fluctuation of returns are largely stock returns and interest rate shocks. This implies that interest rate can better explain returns in the Nigerian stock market.

Abaenewe and Ndugbu (2012) used annual data from 1985 to 2010 to investigate the effect of monetary policy developments on equity prices in Nigeria. Ordinary least square (OLS) regression was employed using five monetary policy variables namely: minimum rediscount rate, treasury bill rate, interest rate, exchange rate and consumer price index (proxy for inflation) on the equity prices (proxied by all share price index). The study found a weak correlation between monetary policy and equity prices, and insignificant influence of monetary policy over the prices of ordinary equities. The study concluded that equities market was not a good transmission channel for monetary policy in Nigeria. The authors recommended that corrective measures should be put in place to effectively link

monetary policy to the equities market to ensure price stability, encourage investors and address the distortions in the financial system caused by huge fiscal spending.

Muktadir-Al-Mukit (2012) considered the effect of monetary policy variables on the performance of the stock market of Bangladesh using monthly data from the period of January 2006 to July, 2012. The dependent variable, DSE General (DGEN) Index was used as a proxy for stock market performance and four independent variables namely, money supply, repo rate, inflation rate and three-month treasury bill rate were used as proxy for monetary variables. Using co-integration method, it indicated that in the long-run, a one per cent increase in inflation, money supply, T-bill rate and repo rate causes 1.69, 0.38 and 1.09 per cent increase and 2.37 per cent decrease in market index, respectively. The ECM model showed that 26.0 per cent of the deviations of stock returns were corrected in the short run. The Granger causality analysis revealed the existence of unidirectional causality from inflation, money supply and T-bill to market index. The study suggested that investors should consider the impact of monetary policy when constructing their portfolios and making investment decisions.

Chartziantoniou (2013) examined the stock market response to monetary and fiscal policy shocks using quarterly data from the period 1991 to 2010 and the structural vector autoregressive approach (SVAR). The study found that both fiscal and monetary policies impact stock market returns via direct and indirect channels and that the interaction between the two policies was very important in explaining the stock market development. In conclusion the paper suggested that both the fiscal and monetary policies should be considered together rather than in isolation.

III.   The Nigerian Stock Market
III.1   Evolution and Developments

History of policies aimed at improving activities in the Nigerian capital market dates back to pre-independence period when the General Loan and Stock Act, was enacted in 1957 as the first of many ways of fostering a capital market in Nigeria. Subsequently, the establishment of the Central Bank of Nigeria in 1958, the Lagos Stock Exchange in 1960 and the National Provident Fund in 1961 were some of the initial efforts by the government to set-up the legal and infrastructural framework for the take-off of a viable securities/capital market in Nigeria. The need to further entrench a broader approach in the capital market necessitated the establishment of six new trading floors (now 13) in addition to changing the name of the Lagos Stock Exchange to Nigerian Stock Exchange (NSE) in 1977. Increase in the level of economic activities, coupled with the promulgation of the Nigerian Enterprises Promotion Decree in 1972, necessitated the establishment of Capital Issues Committee to oversee and regulate capital market activities. This body metamorphosed into the Securities and Exchange Commission (SEC) following the promulgation of the Securities and Exchange Commission Decree No. 71 of 1979. As in most jurisdictions, the SEC is the apex regulatory body of the NSE with the additional responsibility of protecting investors, developing the stock market and ensuring market integrity through registration of qualified securities/market intermediaries, rule-making,

surveillance of trading practices, investigation of market breaches and enforcement of penalties. The NSE performs a self-regulatory role through its supervision of the operations of the formal quoted or listed companies as well as disciplines the management of companies and market operators while the SEC has the power to review any disciplinary action by the NSE.

In Nigeria, there are two categories of the NSE membership: the Ordinary and the Dealing members. The NSE also undertakes developmental activities aimed at improving the capital market. At inception of its operation, the NSE had 19 listed securities. Despite the indigenisation and the Nigerian Enterprise Promotion policies of the 1970s, the Nigerian capital market exhibited traits of imperfection. Some of these included the barring of foreign investors from entering into the Nigerian capital market, imposition of price caps on share price movement, the absence of appropriate infrastructure, low investors' awareness, paucity of listed companies, low volume of transactions and illiquidity in the market, (Oludoyi, 1999; Adelegan and Ariyo, 2008; Inanga and Emenuga, 1997; Emenuga 1998). Consequently, the Nigerian capital market was not adequately poised to support the nation's economic expansion. In April, 1985, the Second-tier Securities Markets (SSM) was established to cater for the capital needs of the small and medium scale enterprises. A major feature of the SSM was the dilution of the listing requirements and reduction of listing cost for any company in the category of small and medium scale enterprise, seeking quotation on the market. This policy was intended to broaden and deepen the market by assisting small and medium sized indigenous enterprises to gain access to the resources at the capital market for expansion and modernisation (Oke and Adeusi, 2012).

Similarly, as part of government's effort at directly deepening operations in the Nigerian capital market, the functions and powers of the Nigerian Stock Exchange Commission were expanded by Decree No. 45 of 1999. The Commission was empowered to establish a commodity exchange, futures markets, derivatives and any other Exchanges, which the commission considers desirable (Ogege and Ezike, 2012). These platforms were expected to broaden investment options and deepen market activities.

Figure 1: Some Key Landmarks in the NSE
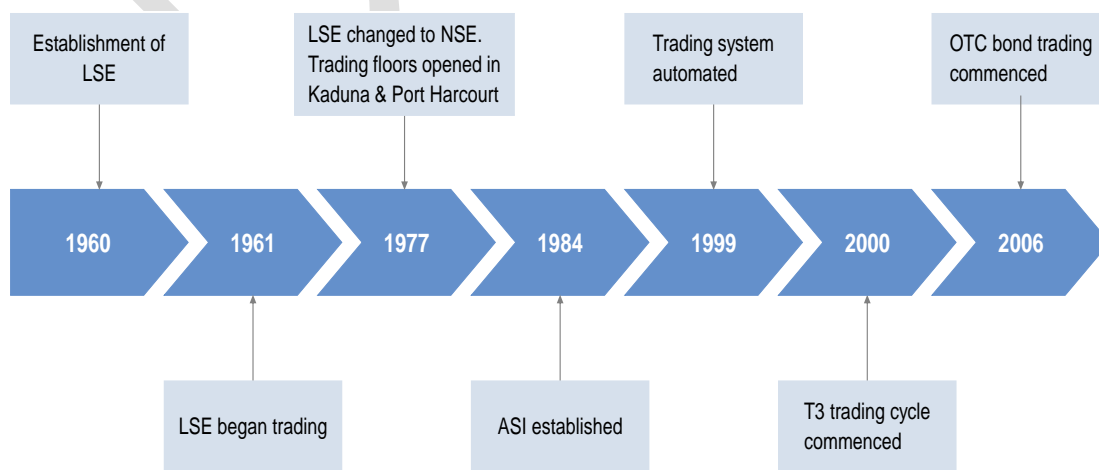
Source: The Report of the SEC Committee on the Nigerian Capital Market - February 2009

The adoption of Structural Adjustment Programme (SAP) in 1986 heralded the beginning of a comprehensive reform policy in the nation's economy. SAP had as an integral part of it, deregulation and shift in economic management philosophy towards a largely market-driven economy. Liberalising the entire financial system and markets was the bedrock of the programme. Since the introduction of SAP in Nigeria, the country's stock market has grown very significantly, (Alile, 1996 and Soyode, 1990). In 1986, there were 240 listed securities on the NSE, made up of 99 equity securities and 141 debt securities, relative to 1961 when only 19 securities were listed on the stock exchange. By 2000, the number of listed securities stood at 260 comprising 195 equity securities and 65 debt securities. In 2010, the number grew to 264 securities, made up of 217 equity securities and 47 debt securities. While the number of listed equities has grown significantly, the quantum of debt securities had declined considerably. Appendix 1 depicts the trends in the number of listed securities on the Nigerian stock market.

The privatisation and commercialisation policy which involved government divesting from about 111 public owned enterprises, was identified as one of the reasons for improved performance of key indicators of the capital market in the 1990s (Babalola and Adegbite, 1993). They added that the increased number of companies and new issuance of securities in the market could be partly attributed to the listing of eighteen (18) government parastatals (16 Federal and 2 State government-owned). Another major step taken by the government to promote the growth of the capital market and to facilitate the development of a secondary market for trading debt instrument was the licensing of three discount houses in 1992. The houses were also expected to promote primary and secondary markets for government securities (Oke and Adeusi, 2012). Similarly, the government in 1995 provided an avenue for free importation and exportation of foreign currency by introducing the Foreign Exchange (Monitoring and Miscellaneous Provision) policy. The policy liberalised foreign exchange transactions allowing investment of foreign currencies and capital in enterprises or securities in Nigeria and also permitted the repatriation of funds in foreign exchange without approval, provided any such amount above $5,000 is declared upon exportation or importation.

The year 1991 witnessed a significant decline in the available debt instruments on the Exchange, which persisted till 2003 when there was a rebound in the debt segment of the market following the establishment of the Debt Management Office (DMO) in 2000. The DMO was to centrally coordinate the management of Nigeria's debt and provide a one-stop shop for clearing all national debts with a view to transforming the nation's portfolio into an asset for growth and development. These functions were hitherto done by a myriad of establishments in an uncoordinated fashion, a strategy, which led to inefficiencies in the nation's debt management process. Transactions in government securities and industrial loan stocks also declined and seemed to have been influenced by high short-term interest rates. Table 1 shows the value of trading transaction in the Nigerian stock market. As indicated, the equity segment has largely dominated transactions on the Nigerian stock market. The total value of equity traded as a share of all securities traded grew from 10.9 per cent in 1989 to 99.9 per cent in 2009.

Between 1994 and 2012, transactions in equity constituted an average of 99.0 per cent of all stock exchange transactions. In spite of the rebound in government bond activities in 2003, the size of the bond segment, relative to the size of the economy, is still small. The market value of the Exchange proxied by total market capitalisation as a proportion of gross domestic product (GDP) declined consistently from 9.8 per cent in 1986 to 5.9 per cent in 1992. By 2007, market capitalisation had peaked at 64.4 per cent. It however, declined to 36.5 percent in 2012,

Table 1: Trading Activities on the Nigerian Stock Exchange (N'M)

Year	Debt	Equities	Total	GDP (N'B)	ET/TVT	TMC (N'B)	TMC/GDP (%)
Average 1986-1990	345.84	51.018	396.858	159.54	14.42	10.82	7.362
Average 1991-1995	55.44	787.16	842.6	872.34	85.786	69.7	7.382
Average 1996-2000	228.06	14519.08	14747.14	3197.84	98.78	320.52	10.006
Average 2001-2005	3372.34	141837.86	145210.2	9221.56	97.418	1559.86	15.904
Average 2006-2010	404.28	1283508.32	1283912.6	23503.64	99.92	8905.14	38.45
Average 2011-2013	128.25	1214546.06	1214674.32	40287.28	99.99	14720	36.16

Source: Compiled from NSE Annual Reports and Accounts 2012, and CBN Statistical Bulletin 2011[1].

Figure 2 shows the trend of all share index (ASI) and market capitalisation. The two indices behaved in a similar way. Between 1985 and 2007, the indices displayed an upward movement where they both reached their peak in 2007 after which they declined up till 2009. The impressive performance of the market between 2005 and 2007 could be attributed to the increased confidence by investors driven by key policy reform measures in the financial services industry.

The Central Bank of Nigeria had announced the 2004 Banking Consolidation Programme that involved an increase in the capital base of banks from ₦2 billion to a minimum of ₦25 billion. At the end of the exercise, while the number of banks reduced from 89 to 25, the capital base of banks increased from ₦400 billion to approximately ₦1.12 billion. In 2006, a similar recapitalisation programme for the insurance sector was announced. The insurance industry reforms required the recapitalisation of insurance and reinsurance companies to ₦2 billion for composite insurance companies and ₦10 billion for re-insurers. The exercise

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[1] **Prior to 2011, figure comprised equities listed on the Main Board only – i.e., shares listed on the Emerging Markets board (now ASeM) were not included in the market capitalisation calculation. ET represent value of equity transacted, TVT represent total value of all securities traded, TMC represent total market capitalisation and GDP represent gross domestic product at current basic prices. Debt includes Federal, State and Local government bonds. Equities includes equity, corporate bonds, and Exchange traded Funds transactions*

led to the emergence of 49 recapitalised insurance companies out of the 104 companies that existed before the exercise (NAICOM, 2008).

Figure 2: All Share Index and Market Capitalisation
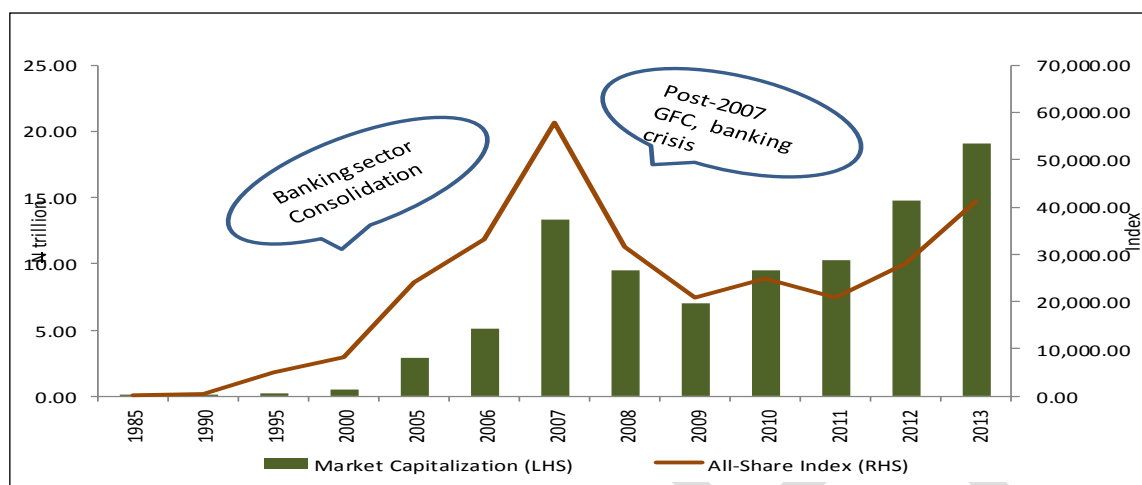
The increase in capital base of banks' and insurance companies was achieved through an upsurge of capital raising activities as well as mergers and acquisitions. This resulted in a high influx of banking and insurance stocks into the Nigeria stock exchange, which gave the capital market a boost as most recorded successes in their initial public offers (IPOs). Further investment was encouraged and capital formation rose. The value of equity traded as a proportion of total market capitalisation increased by 17.6 per cent in 2008, while the All Share Index of the NSE peaked at 63,016.56 points in March 2008 and equity market capitalisation (EMC) reached N12.1 trillion with banks accounting for 60 per cent of the EMC. The index grew from 134.6 in January 1986 to 65,652.4 at end- March, 2008, but later fell slightly to 63,016.56 in April 1, 2008. The crash in the stock market prices in the Nigerian stock market was aided by the global financial crisis of 2007-2008. At end-December 2008, the All Share index fell to 31,450.8 from 63,016.56 in March, 2008. The fall in All Share index continued to 19,851.9 at end- March 2009.

III.2   Government Policies and Stock Market Response in Nigeria

This section examines the relationship between policy measures (monetary and fiscal) and the Nigerian capital market. In this regard, the stock market performance is assessed using the all share index by examining quarterly data from 2000:1 - 2013:4. How does the Nigerian stock market respond to monetary policy? The starting point is to visually examine the movement of monetary policy measures and stock market indices which seems to suggest a mixed outcome. Figure 3 implies the existence of an inverse relationship between growth in money supply and all share index from 1986-1989. The rest of the sample period beginning from the 1990s suggested that broad money supply co-moved with the all share index most of the time tracking the business cycles albeit with the index responding with almost two lags to developments in money supply. An expansionary

(contractionary) monetary policy should expand (contracts) activities in the stock market. However, the figure indicated that the response rate of the index was somewhat low, compared with the growth in broad money supply.

Super-imposing the money gap (here defined as the gap between broad money and narrow measures of money supply) further indicated that funds, which were not committed in term deposits seemed to have been invested in the stock market, leading to strong relationship between excess funds and the stock market. In certain instances, the growth in the index far outweighed the growth in available cash in the economy. A key event that stood out was the second round effects of the 2007 Global financial crisis, which hit the domestic stock market in 2008.

Figure 3: Broad Money, Money Gap and All Share Index (YOY)
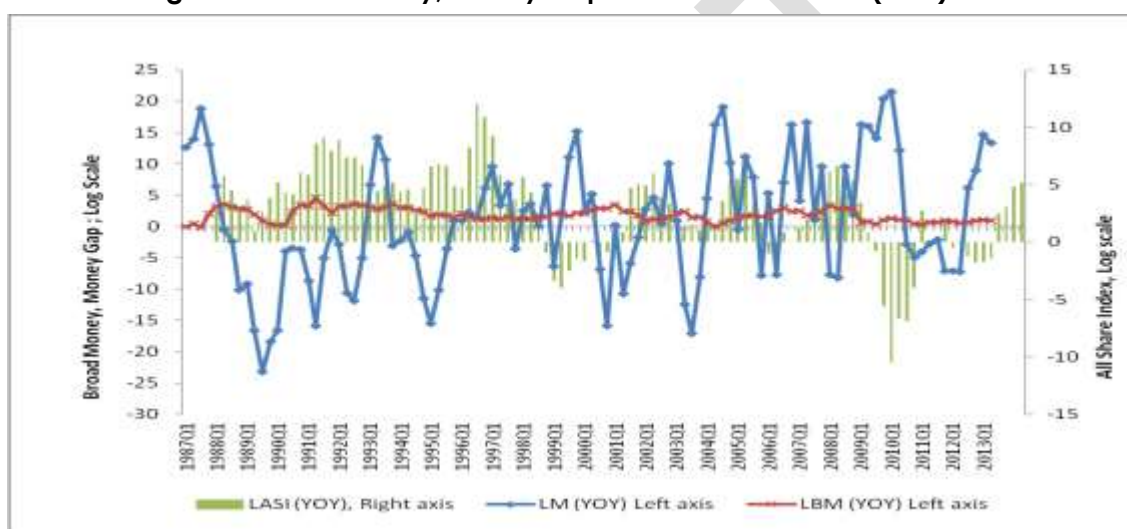
> ➢ LASI is the log of All Share Index; LM is the log of money gap; LBM is the log of broad money

This, coupled with other domestic factors such as the banking crisis, margin lending, and huge exposures of the banking system to the downstream oil and gas sector, led to a dip in stock market activities. Regulators embarked on expansionary monetary policy, but the increase in excess cash did not find its way to the stock market and barely lifted stock market activities at the time suggestive of other factors at play. In this case, investors were wary of investing, existing investors were divesting and an expansionary monetary policy (at least in the short-term) did not attract investors back to the market. It was not until 2009 before stock market activities began to witness a rebound and peaked in 2011 even though it was still below the pre-crisis levels.

Interest rate remains a key macroeconomic variable. It signals the policy direction of the regulatory authority and influences the flow of capital. Theoretically, adjustments in central bank policy rates act as a predictor of the future stock market direction. It is interesting to observe from Figure 4 that the stock market seems to respond only to a persistent contractionary monetary policy action. In 1986-1989, monetary policy actions seemed to

predict stock movements only for about 3 quarters. As monetary policy rate continued to rise (signaling an intent to slow down an overheated economy), the stock market seemed to disregard the intent of policy makers with stock market trending upwards, but begins to decline after three (3) policy rate rise. Overall, an inverse relationship between policy rates and stock market activity is depicted, further mimicking similar trend patterns observed in Figure 3. The inverse patterns became quite discernible from 1994 with the exception of the 2008 domestic stock market crash, which also showed similar movements as in Figure 3.

Figure 4: Monetary Policy Rate, Cash Reserve ratio, All Share Index
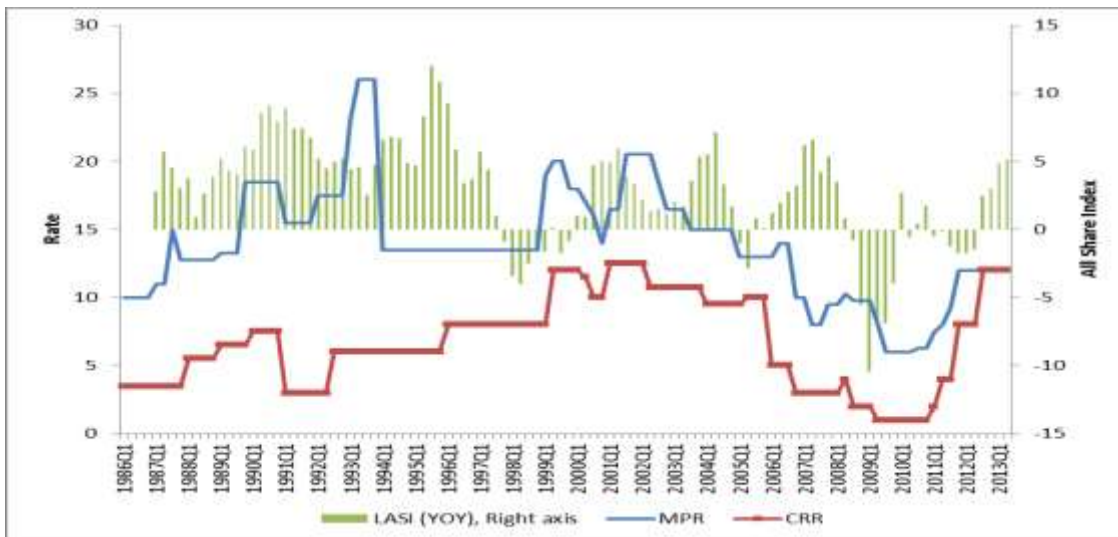
A further review of recent data on the announcement effects of monetary policy to assess the one-month ex-ante and ex-post effects of policy rate adjustments indicated that in certain instances, the stock market responded to the intent of the monetary authority (Appendix 3).

The visual relationship between inflation and the all share index indicated an inverse relationship between inflation and equity prices, with the exception of few episodes between 1999 and 2003 (Figure 5). As inflation grows, borrowing costs spiked and demand for market assets declined. This affected investments and company profits, causing a decline in stock prices.

From the lender's perspective, interest rate is the fee charged for lending capital, while a borrower considers it as the cost of borrowing funds. Thus, when deposit rates rise (fall), investors tend to engage in asset switching from (to) stock market to (from) the money market. It is expected that such a switch will reduce (increase) the demand for stocks, and reduce (increase) stock prices. Similarly, when bank lending rates increase, investors tend to source for alternative and affordable capital. In such instance, they resort to the capital market. Therefore, theoretically, an inverse relationship should exist between interest rate and stock prices. However, the rise in lending rates can also depress economic activities and the effects on the market may net out each other.

Figure 5: Movements in All Share Index and Consumer Price Index (%), 1998:Q1 – 2013:Q4
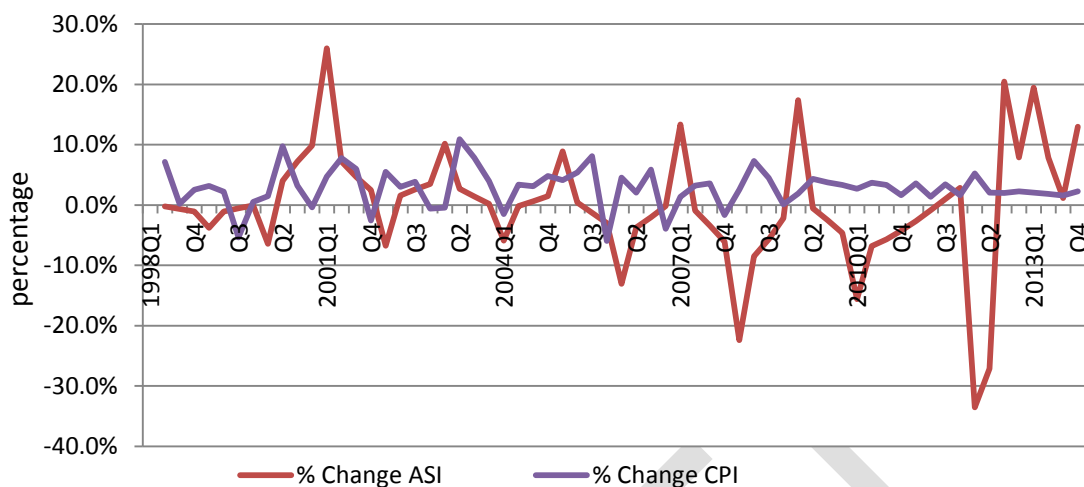
Figure 6 shows the treasury bills (risk-free) and prime lending (market) rates *vis a vis* the All Share index. The first ten (10) years suggested a positive relationship between these variables. Subsequent time-periods seem to conform to the asset switching postulation with stock prices trending upwards as interest rates decline. In periods of sharp decline in lending rates, the all share index maintained an upbeat movement. This suggested that as lending rates fell, the demand for capital in the money market and economic activities increased thereby boosting activities in the stock market. The visual investigation indicated that the stock market responded to movement in interest rates.

Figure 6: Market Interest rates and All Share Index
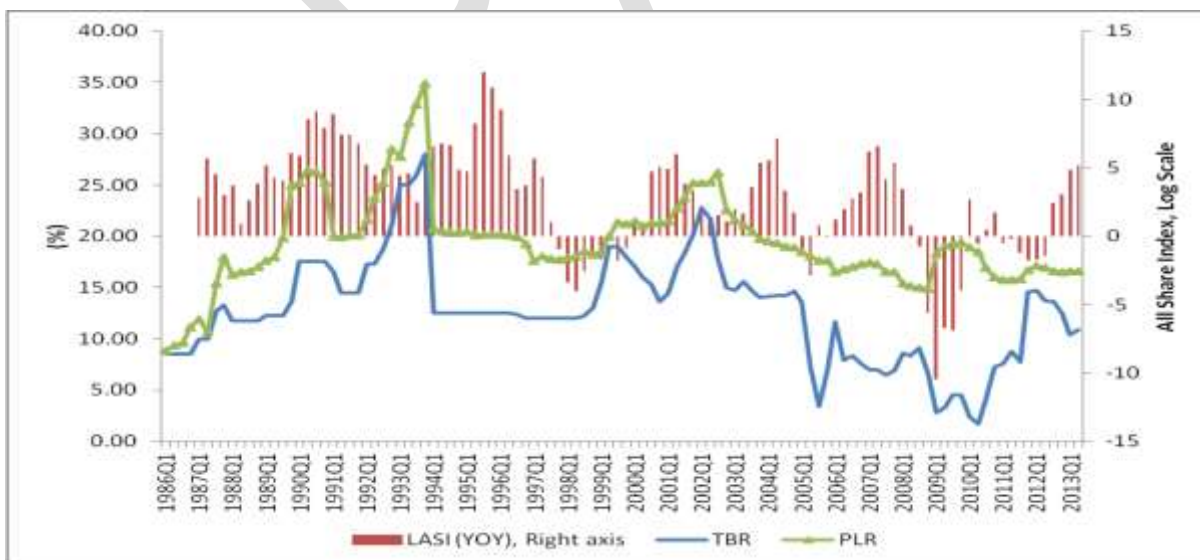
Furthermore, a visual examination of the effect of fiscal policy on the stock market was undertaken. The working hypothesis is that in the course of running an economy, government relies on a budget, which it can finance through taxation or outright borrowing (ways and means from the central bank, foreign borrowing or issuance of

bonds). Available data indicated that most of the budget financing has come from the domestic market, and in particular, the non-bank public. Figure 7 illustrates the relationship between all share index and the fiscal balance.

Figure 7: Fiscal Balance and All share Index
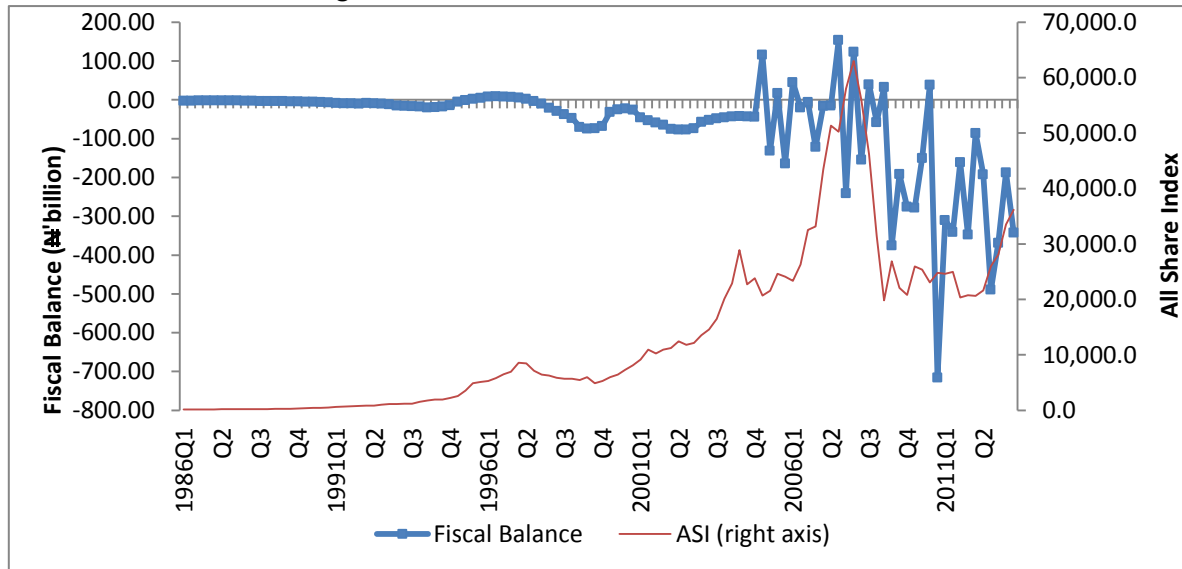
The stock market seemed to anticipate an increased activity following a deficit position and reacted with just about a quarter's lag to government deficit position in the previous period. In the periods leading to the stock market crash in 2008, stock market maintained its upward trajectory responding to government's deficit situation as well as the flurry of activities associated with the bank consolidation exercise. With the exception of the effects of the global financial crisis, when there was an instantaneous positive relationship between all share index and the government's fiscal balance, an inverse pattern between these variables was quite discernible at the latter part of the sample period.

Empirical research indicated divergent impact of taxes and trading costs on the stock market turnover. Bond et al (2004) in their study concluded that reduction in stamp duties had a positive and significant impact on UK share prices. The scholarly work of Saporta and Kan (1997) indicate that since stamp duties are factored in (priced) share prices, the prices of stock may not exhibit volatility. In this regard, we examine the case for Nigeria. The National Council of the Nigerian Stock Exchange usually sets the transaction fees and other charges- listing, issue fees, and brokerage commission, which are subject to review. Table 2 shows a summary of transaction costs in the Exchange.

As part of efforts at reviving the stock market, following the global financial crisis and domestic banking crisis, which wiped out about 70 per cent of market capitalisation between 2008 and 2009, the NSE fee structure was revised in 2011. Notable among the revision was the elimination of Central Securities Clearing System (CSCS) fees on the buyer, while there was a fee reduction by 0.06 percentage points to 0.3 per cent on the seller side. In addition, the Value Added Tax (VAT) fees was harmonised at 5.0 per cent for the NSE, CSCS and SEC in contrast to an individual VAT payment for each of NSE and CSCS.

However, in December 2012, Government, through the Minister of Finance, announced a waiver on the stamp duties payable on stock exchange transaction fees as well as "exempt from VAT, commissions: (a) earned on traded values of shares, (b) payable to the SEC, and (c) payable to the NSE and the CSCS; by including these commissions in the list of VAT-exempt goods and services." In 2011, when the initial rate reduction took place, there was an increase in market capitalisation, but a decline in the all share index was recorded.

Table 2: Fee Structure in the Nigerian Stock Exchange

Primary Market Regulatory Costs	
Bond Issue	**Equity Issue**
1.20%	1.21%
Secondary Market (total)Transaction Costs	
Buy side	**Sell Side**
1.1226-1.856%	1.556-2.186%

Source: Adapted from The Report of the SEC Committee on the Nigerian Capital Market - February 2009. N/B: The NSE figures were based on the revised fee structure published by the SEC in November, 2008.

To properly gauge these effects, we assessed the market liquidity measured as value of stock traded divided by market capitalisation. Examining annual data series, it was observed that the 2011 rate cut did not boost market liquidity. Figure 8 indicated that prior to stock market collapse in 2008; there had been an increase in market liquidity. Thereafter, market turnover has been on a downward path, suggesting that investors seemed to be stuck with assets and were compelled to hold on to these stocks longer than desired. However, when we examined available data on a quarterly basis (Figure 9), we observed a slight increase in market liquidity in the second quarter of 2011, which persisted into 2012:2 before it dipped and by December 2012 when the Government announced its waiver on stamp duty, market liquidity buoyed and had sustained its rise to 2013:2.

Figure 8: Market Turnover and All Share Index (Annual)
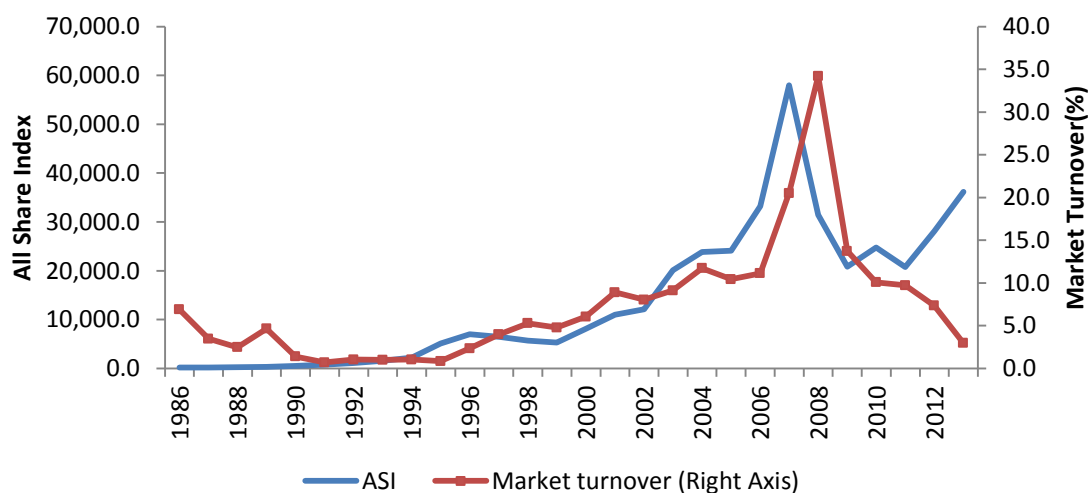
Figure 9: Market Turnover and All Share Index (Quarterly)
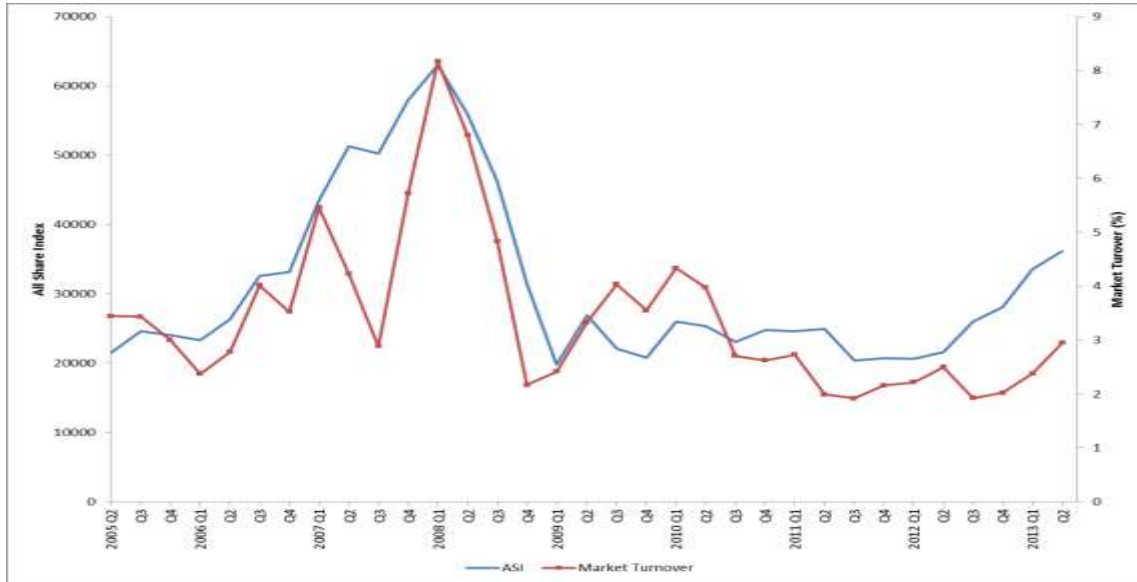
It is assumed that inter-day data analysis may produce a better outcome[2] and the visual evidence in Figure 9 may be enhanced. Appendix 2 presents the announcement effects of some key market episodes on the Nigerian stock market.

Overall, governments at different times have adopted and implemented various measures to promote the growth of the capital market. For example, the Nigeria Investment Promotion Commission was charged with the responsibility of fostering, encouraging and coordinating investment activities in Nigeria. To improve the Nigerian investment climate, the Commission was involved in the registration and monitoring of enterprises in which foreign participation were permitted and also allowed foreign companies to invest in Nigerian enterprises in any convertible foreign currency. The policy provided an avenue for smooth inflow of capital into specified industries in a manner that was beneficial to the economy. Public quoted companies on the Nigerian Stock Exchange were allowed to issue through the Exchange, non-voting paid up shares to interested local or foreign investors. The establishment of the Nigeria Deposit Insurance Corporation and the Pension Reforms were two other policies that, not only increased confidence in the system, but also improved activities in the stock market. Either in the form of monetary and fiscal policies or captured within other forms of sectoral reforms, attempts were made to steer the activities and operations of the market in a way and manner that will enable it effectively support economic growth and expansion.

In more recent times, the NSE has implemented several key initiatives to enhance market liquidity, market depth, and strengthen the regulatory framework. The Exchange initiated its five-year transformation agenda in 2011. This programme revolves around "Five Pillars": targeted business development, enhanced regulatory programmes, twenty first century

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2High frequency data are not normalised; they however exhibit fluctuations that may not be easily observed in annual, monthly or quarterly time series.

technology strategies, enhanced market structure, and investor protection initiatives. Various transparency measures were introduced in 2012 to drive recovery of investor confidence while creating the impetus for issuers and market operators to comply with the Exchange rules (Onyema, 2012). Notable among the measures were: the X-Compliance report and the BrokerTraX. These initiatives were expected to improve transparency of the compliance level of listed companies and broker-dealers, respectively. Some of the other major initiatives to increase market depth and investor's confidence, included: implementation of the NASDAQ OMX X-stream market management solution; advocacy for public policy formulation; massive investor education effort designed to increase 'financial literacy'; the Exchange's Market Making; securities lending; demutualisation and dematerialisation. The Securities and Exchange Commission (SEC) has been in the fore front of ensuring that the Nigerian capital market is not only strong, but also well-functioning. Over the period 2010 till date, SEC has adopted among other policies, zero tolerance policy to urgently address governance weaknesses, addressing capacity deficiencies, furthering disclosure, transparency and accountability in a bid to restore investor's confidence.

IV.   Data and Empirical Methodology

The focus of this section is to conduct empirical tests on the subject of discourse and validate some of our earlier observations. There are two approaches to analyse policy effects on the stock market- the institutional and macroeconomic approaches. In this paper, the focus is on the macroeconomic approach. The first part of this section discusses data issues, while the second part explains the methodology.

IV.1   Data

The study uses quarterly data for the sample period 2000:Q1 - 2013:Q4. This period is considered appropriate because it captures the bank consolidation period and the 2007 global financial crisis. In a study examining policy effects on the capital market, it is rational that variables that directly relate to indicators of policies and capital market activity are considered, while consideration is given to other variables if they provide additional information on the subject of discourse. It is necessary to state, however, that the choice of variables was also motivated by theory and empirical literature. Policy variables have been categorised into monetary policy, fiscal policy and capital market variables. Monetary policy variables that capture the various policy transmission channels have been identified. Broad money supply is a proxy for the key monetary aggregate. We expect its apriori sign to be unclear. A marginal increase in money supply is expected to boost economic activities. However, an excessive growth in money supply (without growth in output) can induce inflationary pressures, which will affect the stock market negatively. Nominal exchange rate captures the exchange rate transmission channel and is introduced to reflect the foreign exchange policies. An increase (decrease) in the exchange rate connotes deprecation (appreciation) of the Naira. Its apriori effects on

stock market prices are ambiguous. The interest rate channel is used to proxy the monetary policy rate.

The fiscal policy variable was captured by the fiscal balance weighted by the gross domestic product to also account for the underlying economic activities. The quarterly time series data on fiscal balance between 2000 and 2004 was extrapolated for this period using the quadratic match sum method to account for the underlying volatility in the data and its additive principle. The apriori expectations are unclear for this variable. Government deficit/gdp ratio above a threshold can crowd out and harm stock prices. Corporate income tax was transformed from low to high frequency using the constant match average method. However, due to the low variability in this data, it was not employed in the econometric estimation used to analyse the effects of the one-time change in corporate tax that occurred during the sample period. Stock market is proxied by All-Share Index (ASI) to capture the entire performance of the stock market, as movement in the ASI reflect changes in the value of stocks over time and also capture the dynamic changes of other measures like market capitalisation, liquidity and turnover ratio. Although, the ASI is calculated based on the movement of prices of 258 companies listed on the Exchange, it is still the most appropriate measure of stock market price movement. Other stock market variables proxied by market liquidity, volume of trade, value of trading transactions and market capitalisation, were used in the trend analysis.

Two control variables: inflation and nominal income were included. Inflation was included to capture the consumer price index, which also covers a basket of commodities that are also listed on the Exchange and to measure the impact of macroeconomic instability on the stock market. The apriori expectation is that economic volatility measured by changes in CPI (inflation) will induce a lower incentive for firms and investors to channel funds to the stock market. Thus, an inverse relationship is expected between consumer prices and stock market index. Nominal output is expected to have a positive effect on the stock market as income rises. Foreign portfolio investment (FPI) has a positive long-run relationship with stock market. All variables, except interest rate and fiscal balance-gdp ratios, were in logarithm form. Data was sourced from the Central Bank of Nigeria's Statistical Bulletin, various editions of the annual economic reports of the CBN and the Nigerian Stock Exchange.

IV.2   Methodology

In analysing the effects of government policy on capital market, the study focused largely on whether monetary and fiscal adjustment variables had any influence on the Nigerian capital market. Thus, we sought to provide answers on the extent to which these policies affected the stock market. The working hypothesis was, therefore, that the Nigerian stock market reacted to policy adjustments. The initial approach was to investigate the informational content of the data and examine its time series properties. Due to the implications of structural breaks in econometric analysis, it was of crucial significance that we determine structural breaks in the time series data and even more so as the sample period covered a spectrum of regime shifts.

In this regard, a formal test was conducted using the Bai-Perron tests of L+1 vs. L sequentially determined breaks. The outcome of these tests provided further guidance on the appropriate econometric approach to adopt. Consequently, this paper employed the Autoregressive Distributed Lag (ARDL) framework of Pesaran et. al., (2001). The ARDL approach was the preferred choice, especially in conditions where the presence of structural breaks could introduce uncertainty on the order of integration of the time series. It also allowed for flexibility in the lag structure of the explanatory variables as opposed to the co-integrating VAR models, which do not allow for different lags for different variables.

A major advantage over other methodologies is its non-restrictive assumption on the integrating order of the variables and can be applied irrespective of whether the underlying variables are I(1) or I(0) or mutually co-integrated, (Pesaran and Shin, 1999). Nevertheless, in order to satisfy the condition of the ARDL approach, the time series properties of the variables was examined using the Augmented Dickey-Fuller (ADF) unit root test procedure. A standard ADF test of significance is the coefficient ρ in an AR (1) process:

$$Y_t = \rho Y_{t-1} + \epsilon_{t;} \ |\rho| \langle 1$$

Where the errors ϵ_t are independent, with zero mean and constant variance σ^2, which may be normally distributed. Accordingly, the null hypothesis of unit root is rejected when ρ is significantly different from zero (Hill, Griffiths and Lim (2008).

IV.3   Model Specification

The following ARDL model was specified and estimated to test for the existence of co-integration between the all-share index and monetary and fiscal policy variables as well as a control variable; the consumer price index. Following the outcome of the Bai-Perron test, the most dominant structural break occurred in 2007:4. Co-incidentally, this fell within the global financial crisis period. Hence, in order to avoid spurious regression through neglect in the shift of the mean, an intercept dummy variable was introduced in the regression equation to account for this shock:

$$\Delta lasi_t = \mu_0 + \sum_{i=1}^{n} \mu_1 \Delta lasi_{t-i} + \sum_{i=0}^{n} \mu_2 \Delta lbm_{t-i} + \sum_{i=0}^{n} \mu_3 \Delta lcpi_{t-i} + \sum_{i=0}^{n} \mu_4 \Delta \ln e_{t-i} + \sum_{i=0}^{n} \mu_5 mpr_{t-i} + \sum_{i=0}^{n} \mu_6 \Delta fy_{t-i} + \sum_{i=0}^{n} \mu7_3 \Delta lfpi_{t-i} +$$

$$\sum_{i=0}^{n} \mu_8 \Delta \ln y_{t-1} + \mu_9 lasi_{t-1} + \mu_{10} lbm_{t-1} + \mu_{11} lcpi_{t-1} + \mu_{12} \ln e_{t-1} + \mu_{13} mpr_{t-1} + \mu_{14} fy_{t-1} + \mu_{15} fpi_{t-1} + \mu_{16} \ln y_{t-1} + \varepsilon_t \qquad (1)$$

Variable Name	Definition	Apriori Expectation
asi	All Share Index;	
bm	Broad money;	±
cpi	Consumer price index;	- (inverse)
ne	Nominal exchange rate	Ambiguous
mpr	monetary policy rate;	±
fy	Fiscal balance/GDP ratio;	±
fpi	Foreign portfolio investment	+ (positive)
ny	Nominal output; and	+ (positive)
ε_t	Error term	

IV.4   Results of Summary Statistics, Correlation Analysis and Time Series Properties

The summary statistics, correlation results and time series properties of the variables are presented in Tables 4, 5 and 6, respectively. Table 4, showed that with the exception of interest rates and fiscal deficit-gdp ratio, there were minimal dispersion in the time series data. The Jacque-Bera statistics, indicated that all variables with the exception of broad money and fiscal deficit-gdp ratio were normally distributed.

Table 4: Summary Statistics

	LASI	LBM	LCPI	LFPI	LNE	LNY	MPR	FY
Mean	9.970450	15.25514	4.269408	11.17036	4.880471	15.26741	12.56944	-7.271934
Median	10.04209	15.24384	4.298894	11.08699	4.867988	15.38350	12.50000	-3.987326
Maximum	11.05115	16.56721	4.987708	12.27558	5.062279	16.21043	20.50000	9.906163
Minimum	8.693865	13.58676	3.402863	9.312643	4.603969	14.30819	6.000000	-44.56804
Std. Dev.	0.554704	0.936736	0.453881	0.669306	0.129151	0.636510	4.129226	9.961042
Skewness	-0.304303	-0.101316	-0.158288	-0.297298	-0.247508	-0.111085	0.143389	-1.285696
Kurtosis	2.812550	1.566421	1.921321	2.638414	2.201097	1.638720	2.216403	5.391825
Jarque-Bera	0.912463	4.716468	2.843477	1.089648	1.987394	4.280499	1.566598	27.74898
Probability	0.633667	0.094587	0.241294	0.579944	0.370205	0.117625	0.456896	0.000001
Sum	538.4043	823.7777	230.5480	603.1996	263.5454	824.4401	678.7500	-392.6844
Sum Sq. Dev.	16.30793	46.50614	10.91842	23.74241	0.884039	21.47269	903.6771	5258.785
Observations	54	54	54	54	54	54	54	54

The Spearman's rank correlation test (table 5) indicated that broad money supply, consumer price index, nominal exchange rate, foreign portfolio investment and nominal output exhibited a positive and strong correlation with the ASI, while interest rate variable (monetary policy rate) and fiscal deficit as a ratio of GDP showed a negative relationship with the ASI. Of the variables, which had a negative correlation relative to the ASI, the monetary policy rate was the strongest (negative correlation). By statistical inference, the single coefficient of determination indicated that broad money supply determines 40.4

per cent of movement in the ASI, consumer price index (40.4 per cent), nominal exchange rate (11.9 per cent), nominal output (41.5 per cent), monetary policy rate (42.7 per cent), foreign portfolio investment (34.7 per cent), and fiscal deficit /gdp ratio (0.6 per cent).

Table 5: Correlation Matrix

	LASI	LBM	LCPI	LFPI	LNE	LNY	MPR	FY
LASI	1.000000	0.635525	0.635220	0.589175	0.346306	0.644292	-0.653681	-0.075967
LBM	0.635525	1.000000	0.997865	0.305432	0.824998	0.992377	-0.799767	-0.491671
LCPI	0.635220	0.997865	1.000000	0.309701	0.833003	0.991843	-0.799882	-0.487707
LFPI	0.589175	0.305432	0.309701	1.000000	0.159259	0.288127	-0.318523	0.167982
LNE	0.346306	0.824998	0.833003	0.159259	1.000000	0.815354	-0.564559	-0.511817
LNY	0.644292	0.992377	0.991843	0.288127	0.815354	1.000000	-0.805657	-0.506385
MPR	-0.653681	-0.799767	-0.799882	-0.318523	-0.564559	-0.805657	1.000000	0.268578
FY	-0.075967	-0.491671	-0.487707	0.167982	-0.511817	-0.506385	0.268578	1.000000

The ADF Test results (table 6) indicated that all variables were integrated of order 1, I(1) with the exception of consumer price index and fiscal deficit-gdp ratio, which were integrated of order 0, (I(0)). Hence, we can conclude that the ADF test result satisfied the conditions of the ARDL framework.

Table 6: Augmented Dickey Fuller Test (Null Hypothesis: Has a Unit Root)

Series in log	t-stat	1%	5%	10%	log (At) ~ I(X)
Monetary Policy Rate (mpr)	-6.39	-2.61	-1.94	-1.61	I (1)
Foreign portfolio investment (fpi)	-4.49	-3.57	-2.92	-2.59	I (1)
Fiscal balance/GDP (fy)	-7.45	-4.14	-3.49	-3.17	I (0)
Broad Money (bm)	-8.04	-3.56	-2.91	-2.59	I (1)
Consumer Price Index (cpi)	-3.46	-4.14	-3.49	-3.17	I (0)
All Share Index (asi)	-6.13	-4.14	-3.49	-3.17	I (1)
Nominal output (ny)	-8.86	-3.56	-2.91	-2.59	I (1)
Nominal exchange rate (ner)	-5.98	-3.56	-2.91	-2.59	I (1)

Upon establishing the stationarity of our variables, we test for a co-integrating relationship among the variables using the autoregressive distributed lag bounds test.

IV.5   Model Diagnostics Test Result

The results from Table 9 indicated that the selected policy and control variables were partially responsible for changes in the growth of stock market index. The diagnostics test indicated that the R-squared was 74.0 per cent, suggesting a good fit of the error. The F-statistics was also significant indicative of the joint significance of the explanatory variables. Table 9 also indicated that each variable had an effect on the stock market

index through the error adjustment factor, which was found to be negative and statistically significant. This finding confirmed the existence of a co-integrating relationship between the stock market index and the explanatory variables. However, the speed of adjustment to equilibrium after a shock was slow and indicated that 21.0 per cent of previous quarter's deviation from long-run equilibrium was corrected within a quarter.

To test the stability of the estimated parameters over time, we employed the cumulative sum (CUSUM) and cumulative sum of squares (CUSUMSQ) tests. The parameter stability tests are shown in figures 10 and 11. Figure 10 indicated the CUSUM plots fall within the bounds, indicating that the equation was not mis-specified, and that the coefficients and the error correction model were stable. The cumulative sum of squares was also reasonably within the 5.0 per cent significance lines, which suggested that the residual variance was also stable.

Figure 10: CUSUM Plots for Stability Test

Plot of Cumulative Sum of Recursive Residuals

The straight lines represent critical bounds at 5% significance level
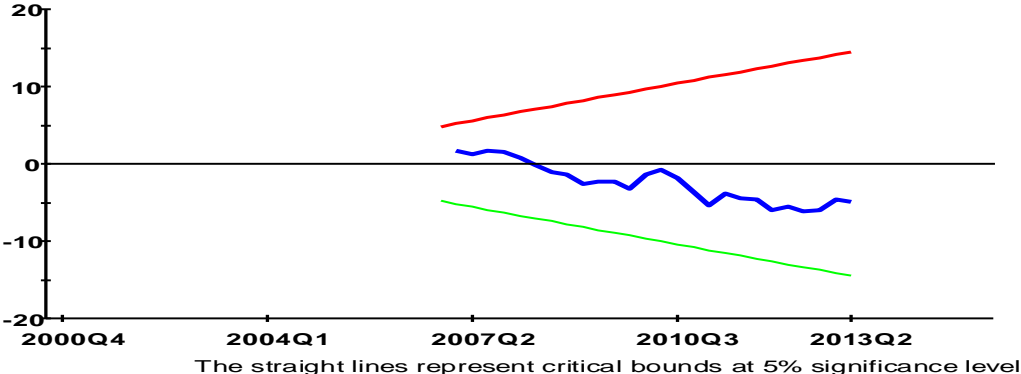
Figure 11: CUSUMSQ Plots for Stability Test

The straight lines represent critical bounds at 5% significance level
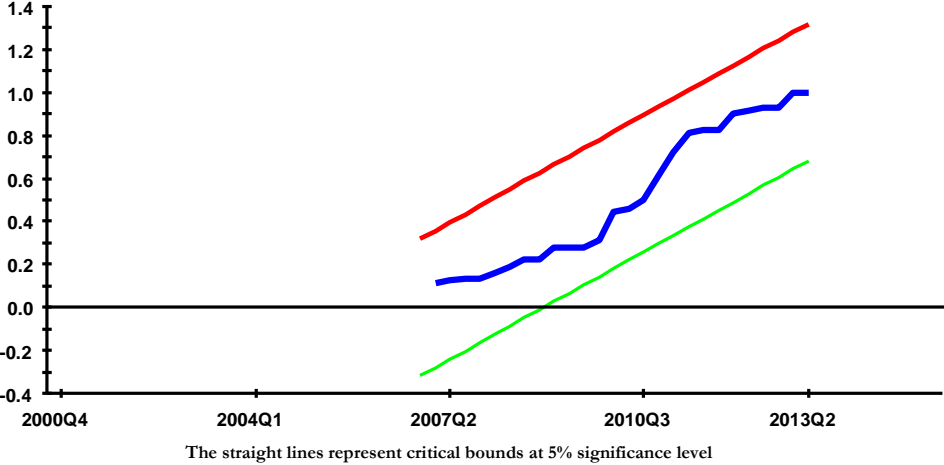
Equation 1 was estimated with the ordinary least square and then the estimated coefficients of the lagged variables at levels were restricted to zero to test the null hypothesis of no long-run relationship among the variables. The test results from equation 1 are indicated in table 7. Based on the computed F-statistics which is inconclusive, we employed the ecm version of the ARDL model.

Table 7: Bounds Test for Co-integration Analysis

Null Hypothesis: No co-integration

Computed F-Statistic	2.14	
Critical Values	Lower bound	Upper Bound
1%	2.96	4.26
5%	2.32	3.50
10%	2.03	3.13

Source: Pesaran et al 2001. Table CI (iii) Case III: Unrestricted Intercept and no trend

Due to the use of quarterly data, a maximum lag of eight (8) was selected at the initial instance and the appropriate lag order was then selected based on the Akaike information criterion (AIC). Having found an inconclusive result on the existence of a co-integrating relationship among the variables, we estimated the long-run regression and short-run error correction representation of the ARDL. The results are presented in Tables 8 and 9.

IV.6   Model Estimation and Results

Using the AIC to ascertain the optimal lag length in the ARDL we obtained the long-run coefficients. The long-run parameters indicated that broad money was statistically significant and positively related with the all-share index indicating that increase in money supply signaled a boost in liquidity, which found its way to stock market investment and led to an upward movement of nominal equity prices which could also signal a wealth effect. However, there were indications that these wealth effects could be larger when real stock prices are considered (Freidman, 1988). Monetary policy rate, though not statistically significant had a negative impact on the stock market. This conforms to theoretical postulations that an increase in policy rate signals intent to slow down economic activities and that the stock market does respond to such signals, but not significantly.

Table 8: Estimated long run coefficients

ARDL (1,0,0,3,3,3,0,3)	Dependent Variable: lasi	
Regressor	Coefficient	P-Value
lbm	3.04	0.08
mpr	-0.02	0.65
lner	8.13	0.27
lcpi	-4.24	0.31
fy	0.05	0.20
lny	-23.73	0.45
lfpi	0.17	0.60
C	6.67	0.92
Du07	-1.61	0.08

The effect of Inflation on the stock market was negative, suggesting that corporate profitability was affected by inflationary pressures which further moderated stock prices. The results, however, showed that the coefficient of inflation was statistically insignificant. In the long-run, foreign portfolio flows boost stock market index, albeit not significantly. Fiscal deficits did not have a significant effect on the stock market index. However, its positive co-efficient suggests that rising deficits increase stock prices. It also suggests the absence of crowding out effects that would otherwise harm stock prices.

The estimated coefficient of the endogenously determined structural break captured by the shift dummy was negative and significant, indicating that the 2007 global financial crisis had a long-term impact on the stock market.

Table 9: Estimated Short-run Error Correction Representation of the ARDL Model

Dependent variable: Δlasi		
Regressor	Coefficient	P-Value
Δlbm	0.63	0.01
Δmpr	-0.004	0.67
Δlcpi	-0.87	0.15
Δfy	-0.003	0.27
Δfy(1)	-0.12	0.02
Δfy(2)	-.004	0.12
Δlny	-8.00	0.16
Δlny(1)	-12.56	0.02
Δlny(2)	-8.65	0.15
Δlfpi	0.02	0.66
Δlfpi(1)	-0.08	0.19
Δlfpi(2)	0.07	0.21
Δlner	-1.3467	0.11
Δlner1	-1.1995	0.16
Δlner2	-2.0452	0.01
Du07	-0.33	0.03
ECMt-1	-0.21	0.07

R^2: 74 per cent, Adjusted R^2: 54.5 per cent, D.W. statistics 2.2, F-Stat. 4.69[.000]

The results from Table 9 further suggested that in the short-run, a 1.0 per cent growth in broad money would increase stock market prices by 0.63 per cent. The long-run effects of broad money growth were, however, larger than the short-run effects. The coefficients of broad money indicated that the wealth effect persisted both in the long-run and short-run. The impact of adjustments in the monetary policy rate remained statistically insignificant both in the long-run and short-run. However, the signs conformed to expectations in the short-run. In the short-run, the effects were very minimal and further validated the findings from the trend analysis. Growth in consumer prices diminished stock market prices by 0.87 per cent, but this impact was not statistically significant. This finding conformed to similar

studies such as Adaramola (2011) and Ray (2012). In the short-run, growth in fiscal deficit had a depressing impact on the stock market, but this was only significant at lag one (1).

This implied that unlike in the long-run, fiscal deficits crowded out private sector investments and negatively affected stock prices. The impact of growth in nominal output on stock market index yielded counter-intuitive evidence both in the long and short-run, which could not be explained. However, it conformed to similar findings by Zhao (1999), Osamwonyi and Evbayiro-Osagie, (2012). The monetary policy rate, which acts as the anchor for short-term market interest rates, had a negative, but insignificant effect on the stock market, reflecting that investors who were reluctant to source funds from the money market due to high interest rates would rather source funds through the stock market either through public offerings or sale of existing stocks. This increased supply of stocks forces stock prices down (Bernanke and Blinders, 1992; Bofinger, 2001).

The stock market response to growth in foreign portfolio flows was not statistically significant in the short-run. However, the combined effect had 0.01 per cent positive effect on the stock market. The short-run relationship between stock index and nominal exchange rate was negative, indicating that depreciation of the naira had an adverse impact on the Nigerian stock market. Its second lag effect was highly significant. This conformed to theoretical postulation for import-dependent economies, which stated that when faced with depreciating currencies, imports become rather more expensive. With an elastic demand for imported goods, import volumes rise and depresses profits and stock prices of local firms. The negative association observed between stock index and exchange rate is in tandem with the study by Ibrahim (2003), but contradicts the positive relationship found by Kim (2003), and Mukherjee and Naka (1995). The dummy variable capturing the crisis indicated that its impact persisted both in the long and short-run. Its long-run effects was, however, larger than the short-run effect.

V.   Summary, Conclusion and Policy Implications of the Study

This paper set out to examine the effects of fiscal, monetary and specific capital market policies on the stock market. It was observed that stock index adjustments had a long-run relationship with money supply, monetary policy rate, fiscal deficit-gdp ratio, foreign portfolio investment, consumer price index, nominal output and nominal exchange rate. Worthy of note is the fact that the market reacted highly positively to changes in the quantum of money supply suggesting that quantity-based anchors had more impact on the market than price-based anchors and further noted that the liquidity channel was more significant in bringing about changes in the stock market both in the long and short-runs. It has been observed in this study, however, that the stock market was not highly sensitive to adjustments in the monetary policy rates, reflecting that the interest rate channel of monetary policy was not a highly effective tool for determining stock market adjustments. Considering exchange rate as a policy tool, we found that the adjustments in nominal exchange rate affected stock prices in either direction. A depreciation of the naira against the US Dollar was positively (negatively) related to stock price changes in the long (short) run, while fiscal deficits crowded out private sector investment and depressed stock market prices in the short-run.

The findings from this study are expected to guide policy makers and their understanding of the increasing need for policy design and implementation mechanisms that can generate stock market response, especially as the stock market serves as a veritable source of long-term capital for economic growth and development. The potency of policy instruments and measures to enable the stock market effectively play its supportive role of economic activities remains a key area of interest. Consequently, there is the need for policy makers to work with the relevant agencies to ensure that the necessary policies that will drive market growth and development are continuously implemented. The results from this study provide areas of further research where a suite of other policy mix and their influence on the stock market can be considered.

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Appendix 1: Number of securities listed on the Nigerian Stock Exchange

Year	Equities	Debt	Total
1986	99	141	240
1987	100	144	244
1988	102	151	253
1989	111	156	267
1990	131	164	295
1991	142	97	239
1992	153	98	251
1993	174	98	272
1994	177	99	276
1995	181	95	276
1996	183	93	276
1997	182	82	264
1998	186	78	264
1999	195	73	268
2000	195	65	260
2001	194	67	261
2002	195	63	258
2003	200	65	265
2004	207	70	277
2005	214	74	288
2006	202	86	288
2007	212	98	310
2008	213	88	301
2009	216	49	265
2010	217	47	264
2011*	201	49**	250
2012	198	58**	256
2013	198	55	253

Source: *Compiled from data in The Nigerian Capital Market Statistical Bulletin 2010, NSE Annual Reports and Accounts 2011, NSE Market review and Outlook for 2013& 2014. Debt stocks include industrial loans, preference shares, Federal government, and state government bonds. **Includes one (1) Exchange Traded Fund.*

Appendix 2: Stock Market Reaction to Selected Episodes

Episodes	All Share Index	Market capitalisation	Volume of Trading activity (Units)
NSE Introduction of the automated trading system which replaced the call over system replaced on April 27, 1999	5456.2 (March 1999) 5977.9 (June 1999) 4890.8 (Sept 1999)	N260.8bn (Pre-ATS) N287.2bn (ATS) N222.1 bn (Post ATS)	
Waiver in fee structure of the exchange in 2011	31,450.8 (end-2008) 20,730.63 (end-2011)	N6.9trillion (end-2008) N10.3trillion (end 2011)	93.34 (end-2010) 89.58bn (end-2011)
Introduction of X-Gen Trading platform on the NSE on September 30, 2013	36.436.9 (Pre-XGen) 36,585.1 (X-Gen) 36,908.1 (Post X-Gen)	N11.61 trillion (Pre-XGen) N11.65trillion (X-Gen) N11.71trillion (Post X-Gen)	269.89mn(Pre-XGen) 279.16mn (X-Gen) 396.43mn (Post X-Gen)
Announcement of Tapering of the US Quantitative easing on June 19, 2013	33,536.25 (Pre-Tapering) 36,164.31 (Tapering) 37,914.33 (Post Tapering)	12.2 trillion(Pre-Tapering) 11.43 trillion (Tapering) 12.0 Trillion (Post Tapering)	8.5bn (Pre-Tapering) 9.7bn (Tapering) 10.4bn (Post Tapering)
US debt ceiling impasse that lead to a partial shutdown of the US government on September 30, 2013	36.436.9 (Pre-shutdown) 36,585.1 (shutdown) 36,908.1 (Post shutdown)	N11.61 trillion (Pre-shutdown) N11.65trillion (shutdown) N11.71trillion (Post shutdown)	269.89mn (Pre-shutdown) 279.16mn (shutdown) 396.43mn (Post shutdown)

Appendix 3: One Month Ex-ante & Ex-post Effects of Monetary Policy Rates on the Nigerian Stock Market

MPC Meeting Date	Policy Changes	Volume	Value	Deals	ASI	MC(Trillion)	Volume	Value	Deals	ASI	MC
no 60 January 14th , 2009	MPR unchanged at 9.75 per cent	9.7	44.3		31450.78	9.6	6.4	37.3	150689	233744.14	7.9
no 61 February 09, 2009	MPR unchanged at 9.75 per cent	4.8	29.8	138700	21813.76	7.5	7.8	40.2	131419	19851.89	7.1
no 62 April 8, 2009	Reduction in the MPR from 9.75 per cent to 8 per cent	7.8	40.2	131419	19851.89	7.1	7.96	56.9	135499	29700.24	9.45
no 63 May 21, 2009	MPR unchanged at 8 per cent	8	42.4	121940	21491.1	7.6	11.3	94.1	217949	26861.6	6.13
no 64 July 7, 2009	Reduction in the MPR from 8 per cent to 6 per cent	11.3	94.1	217949	26861.6	6.13	9.7		156729	23009.1	8
no 65 September 01, 2009	Retention of MPR at 6 per cent (+/- 2 per cent)	9.7		156729	23009.1	8	10.7	73.3	134394	21766.6604	7.8232
no 66 November 03, 2009	Retention of MPR at 6 per cent (+/- 2 per cent)	10.7	73.3	134394	21766.6604	7.8232	7.6	47.6	119979	20827.2	7
no 67 January 2010	Retention of MPR at 6 per cent (+/- 2 per cent)	7.6	47.6	119979	20827.2	7	8.3	72.2	133112	22985	7.6
no 68 March 1-2, 2010	Retention of MPR at 6 per cent (+/- 2 per cent)	8.3	72.2	133112	22985	7.6	12.6	106.3	206182	25966.25	8.5
no 69 April 15, 2010	Retention of MPR at 6 per cent (+/- 2 per cent)	10.7	91	185643	25966.3	8.4	8.3	72.2	180489	26183.2	8.4
no 70 May 10-11, 2010	Retention of MPR at 6 per cent (+/- 2 per cent)	8.3	72.2	206182	26183.2	8.4	27.9	245.2	172861	25966.3	8.2
no 71 July 5, 2010	Retention of MPR at 6 per cent (+/- 2 per cent)	27.9	245.2	172861	25966.3	8.2	5.3	46.9	142594	24268.2	8
no 72. 21 September, 2010	Increase in MPR from 6.0 to 6.25 per cent	5.3	46.9	142594	24268.2	8	6.7	90.6	117465	25042.2	10.1
no 73 November 22-23, 2010	Retention of MPR at 6.25 per cent (+/- 2 per cent)	6.7	90.6	117465	25042.2	10.1	6.6	56.7	11114	24770.5	9.9
no 74 January 2011	increase MPR from 6.25 to 6.5 per cent (+/- 2 per cent)	6.6	56.7	111114	24770.5	9.9	6.5	60.6	119477	26016.8	10.3
no 75 March 21-22, 2011	increase MPR from 6.5 to 7.5 per cent (+/- 2 per cent)	6.5	60.6	119477	26016.8	10.3	10.1	59	102566	25041.7	11.7
no 76 May 23 - 24, 2011	increase MPR from 7.5 to 7.75 per cent (+/- 2 per cent)	10.1	59	102566	25041.7	11.7	7.6	51.3	113502	24980.2	11.2
no 77 July 25 – 26, 2011	increase MPR from 7.5 to 8.75 per cent (+/- 2 per cent)	7.6	51.3	113502	24980.2		6.7	47.9	96664	21497.6	10
no 78 September 19, 2011	increase MPR from 8.75 to 9.25 per cent (+/- 2 per cent)	6.7	47.9	96664	21497.6	10	12.3	54.6		20935	10.3
no 79 October 10, 2011	increase MPR from 9.25 to 12 per cent (+/- 2 per cent)	12.3	54.6		20373	10.3	5.12	27.8		20003.4	9.9
no 80 November 21, 2011	Retention of MPR at 12 per cent (+/- 2 per cent)	5.12	27.8		20003.4	9.9	6.9	9.4		25271.6	10.2
no 81 January 30 and 31, 2012	Retention of MPR at 12 per cent (+/- 2 per cent)	4.1	31.8	46942	20875.8	11.6	7.5	44.5	69891	20495.92	12
no 82 March 19 and 20, 2012	Retention of MPR at 12 per cent (+/- 2 per cent)	7.49	68.37	83537	20652.47	11.97	7.4	54.4	76586	22045.66	12.44
no 83 May 21 and 22, 2012	Retention of MPR at 12 per cent (+/- 2 per cent)	7.4	54.4	76586	22045.66	12.44	10.6	48.1	74472	21599.57	12.4
no 84 July 23 and 24, 2012	Retention of MPR at 12 per cent (+/- 2 per cent)	10.6	48.1	74472	21599.57	12.4	5.5	43.8		23750.82	13.1
no 85 September 18,2012	Retention of MPR at 12 per cent (+/- 2 per cent)	5.5	43.8		23750.82	13.1	10.48	91.5		26430.9	14.1
no 86 November 19 -20, 2012	Retention of MPR at 12 per cent (+/- 2 per cent)	10.48	91.5		26430.9	14.1	5.2	46.5		28078.81	14.8
no 87 January 21, 2013	Retention of MPR at 12 per cent (+/- 2 per cent)	5.2	46.5		28078.81	14.8	14.93	114.34	167442	33075.14	16.1
no 88 March 18 and 19, 2013	Retention of MPR at 12 per cent (+/- 2 per cent)	14.93	114.34	167442	33075.14	16.1	8.3	95.31	121200	33440.57	15.7
no 89 april 2013	Retention of MPR at 12 per cent (+/- 2 per cent)	8.3	95.31	121200	33440.57	15.7	9.7	146.9	136064	36164.31	15.7
no 90 July 22 and 23, 2013	Retention of MPR at 12 per cent (+/- 2 per cent)	9.7	146.9	136064	36164.31	15.7	6.1	67.8	103298	36248.53	17.5
no 91 24 September, 2013	Retention of MPR at 12 per cent (+/- 2 per cent)	6.1	67.8	103298	36248.53	17.5					
no 92	Retention of MPR at 12 per cent (+/- 2 per cent)										

Resource Inflow, Import Leakages and Growth Linkages: Why Remittance Flows Are Not optimised in Nigeria

Chukwuma Agu*

Abstract

As the search for alternative financing for development intensifies, attention has shifted recently to remittances as a potential alternative (or at least significant complement) to conventional official and private flows. However, its ability to fit into this role depends a lot not only on its size (which is acknowledged to have grown significantly in recent years), but its uses. Unlike many other sources of external financing, remittances come in small packs and their use depends critically on decisions by micro agents. Consequently, to understand its impact and its potential for filling the financing need of developing countries as hoped by many analysts, there is need to evaluate how it interacts with the rest of the economy. This study sets out to evaluate the relationship between remittance flows and the rest of the economy. To do so, it specified and estimated a four-sector medium scale macroeconomic model with 49 variables, comprising 18 endogenous variables, 31 exogenous variables and 14 identities. It found very weak link between remittances and the real sector as well as components of aggregate demand with the exception of private consumption for which impact is marginally significant. Estimates indicated significant leakages for remittance proceeds through imports, possibly accounting for the weak relationship between remittances and the rest of the domestic economy. This also implies that relative spill-over effects of remittances on domestic output and employment might remain weak if not redirected using specific policies. There are indications that non-subsistent remittances are channelled into the stock market, further entrenching the financial supermarket tendencies in the Nigerian economy. Interestingly, such relationships do not seem to impact prices. In turn, however, it could not be confirmed that any major domestic macroeconomic variables drive remittances. Overall, the study found that the impact of remittances on domestic indices is weak on account of high leakages through imports. Consequently, it is largely unable to serve as a sustainable source of development finance. The study recommended the use of specific and directed incentives to both reduce the leakages and encourage investments of remittance proceeds in other (preferably real sector) alternatives as a specific developmental programme.

I.   Introduction

Remittances are now an important source of financial flows, and in Nigeria, are only second to oil as a source of foreign exchange earnings, outpacing other flows. But policy to channel its use is still rudimentary and uncoordinated. With so many remittance instruments, senders, channels, service providers, operators, recipients, agents and corridors, the Nigerian remittance industry could hardly be said to be positioned to help economic growth in any meaningful way. The failure of traditional sources of

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* Dr. Chukwuma Agu is a staff of the Department of Economics, University of Nigeria, Nsukka. *The usual disclaimer applies.*

development finance in jumpstarting quantum growth necessitated critical thinking into the potential of other forms of flows – and remittances is just one such option needing further examination.

However, there are other reasons to be interested in remittance flows in Nigeria. The Nigerian financial sector is maturing quickly in both depth and scope. Even though the link between such growth and real sector performance is still weak, policymakers are working hard to improve incentives to grow the sector and increase its impact on the real sector in the near future. Such efforts are based on the understanding of the huge resource needs for economic growth in the country. In the same vein, a thousand and one policies are put in place to attract foreign direct investment into the country. UN notes that, in 2005 alone, there were over three thousand changes made to national policies to improve the environment for foreign direct investment, particularly in developing countries. Nigeria is definitely one of the many developing countries stretching its policy space thin and making a number of such changes to attract FDI and official development assistance. The market has become extra-liberalised even for portfolio flows paving way for not-too-healthy flows of disruptive short-term capital. These are accommodated with all the potential damages because they are deemed to provide relief, albeit temporary, to funding constraints faced by agents within the economy.

While migrant remittances have been acknowledged to be increasingly important to developing countries, little incentives seem to have been put in place to strengthen them. Indeed, for a country like Nigeria, there is not even enough data on the size and implications of alternative remittance sources and channels to be able to do so. Recently, the Central Bank of Nigeria, in collaboration with some development partners, initiated a survey of the remittance industry. Among other mandates, the work was to evaluate trends in the industry and propose policy options to improve the sector. The work acknowledged, like many others before it, that the size of remittance transfers may be bigger than variously estimated[1]. Measured by the policy measures and incentives, it is safe to assert that policy interest in migrant remittances is still weak in Nigeria, despite intensive human capital export from the country since the adoption of Structural Adjustment Programme. This is strange, given that such huge emigration as witnessed since the 1980s should make the surge in remittances predictable, given the structure of social ties among African families. Without doubt, lack of policies to channel remittances to 'appropriate' sectors (preferably investment sectors) over time has impacted on the overall contribution of remittances to economic development in Nigeria.

Potentials for remittances as a growth catalyst seem presently unlimited in the country. Hopefully, indications are that some policy institutions in Nigeria might soon take interest in appropriately channeling the significant resources in this area. But empirical evidence to anchor such policies is still weak and a few attempts have been made though. For example, Tomori and Adebiyi (2007) evaluated potentials for remittances in poverty reduction, using partial equilibrium analysis. Chukwuone et. al. (2007) equally proposed an

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[1]Several works have put the size of informal sector remittance transfers to developing countries at anything between 40 and 75 per cent of total remittances. The big task has been designing methods of capturing these informal flows and putting in place policies to formalise them or at least boost them.

assessment of improvement in social indicators for poverty receiving households, using the living standards survey. The Central Bank of Nigeria and the World Bank group have both conducted independently surveys to examine trends in the remittance industry. Most of these studies are either micro analytical or based on a survey in time. There is as yet no study though employing a systems model and evaluating time series data on remittances within the ambit of potential influences of other macroeconomic factors to examine multi-directional impacts and feedback.

This paper sets out to evaluate linkages between remittances and the rest of the economy. The analytical approach is two-fold. First, using quarterly data on a four-sector macroeconomic model that emphasises financial flows in an error correction framework, it examined the key determinants of remittances as well as the feedback from remittances to other financial flows and the real sector. It also evaluated issues raised in surveys of remittances and the remittance industry, and assessed the implications of these for improvement of the impact of the sector and its linkages with other sectors to provide the needed boost for economic growth. Among other things, it examined exclusivity clauses, instrument diversification and opportunity for accessing other financial services by remittance recipients.

II.   Trends in Remittance Flows in Nigeria

Studies and data on migration and remittances in Nigeria are very limited and regularly underestimate their sizes. According to AfDB (2011), the remittance figures are largely understated due to the prevalence of unofficial remittance inflow in most countries. The Development Prospects Group (DPG) of the World Bank estimated the stock of emigrants from Nigeria to be about 836, 832 persons spread mainly across other parts of Africa, Asia, Europe and North America and receives 971,450 immigrants, one per cent of which consists of refugees, from its African neighbours. Docquier and Bhargava (2006), Clemens and Petterson (2006), among others, estimated that the country loses about 36.1 per cent of all its skilled manpower with tertiary education to migration. Estimates on the proportion of physicians loaned to the rest of the world after training range from 1,548 to 4,856 (between 4.3 per cent and 13.6 per cent) and nearly 12, 600 (11.7 per cent) of trained nurses find jobs outside the country after training. Inward remittances by these Nigerians abroad are estimated to run into several billions of dollars.

The case for improving policies for remittance is made critical by the fact that remittance inflows into Nigeria, relative to other inflows, are by no means small. Orozco (2003) estimated that approximately 65.0 percent of total official remittance inflows to SSA and 2.0 per cent of formal global remittance flows come to Nigeria. From a meager US$1.18 billion in 1999, remittance inflow into the country were estimated to be about US$10.58 billion in 2006. At end-2007, remittance inflows stood second only to oil receipts, making it a prime foreign exchange source for the country. More importantly, it has been found to be very critically linked to poverty reduction as the average remittance-receiving household is relatively more comfortable than the average non-remittance-receiving household. At the macro level, the rate of growth of remittances has been phenomenal over the last decade, necessitating special attention by monetary and financial authorities to improve instruments for data collection on remittances. Between 2004 and

2007, growth rates had consistently been above 50 per cent annually, even though this might, in part, reflect improved data collection mechanisms than growth in actual remittances. Figure 1 shows trends of remittances, foreign direct investment and official development assistance between 2000 and 2012.

Figure 1: Official Development Assistance (ODA), Foreign Direct Investment (FDI) and Remittances (REM) in Nigeria 2000 – 2015
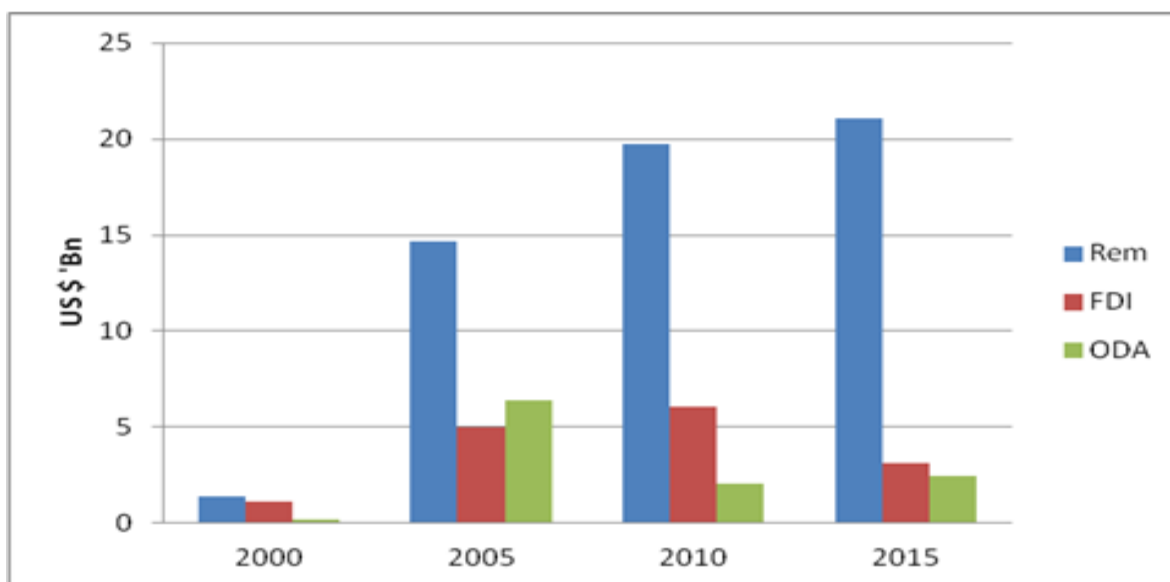
Source: World Bank Data Bank for Nigeria

At nearly $US18.0 billion US Dollars at end-2007 (CBN 2007), remittance inflow into the country significantly outpaced all forms of foreign flows with the exception of oil receipts. Given Figure 1, migrant remittances stood at 7.5 per cent of GDP, compared with FDI at 3.2 per cent of GDP and portfolio flows at less than 1.0 per cent of GDP at end-2006. The implications of these numbers are not difficult to conjecture. FDI and portfolio flows have helped growth in their thousands, but remittances can help growth in its tens of thousands. Though the contribution of the latter has hardly been calculated, it is nonetheless an economic fact attested by multitudes that remittances do help growth and poverty reduction.

Remittances differ from other private flows in more significant ways than one – which eventually impact on the growth benefits that they can engender to an economy. While FDI and Portfolio flows are top-down flows, remittances are bottom-up flows. Funds and consequently returns from FDI and portfolio flows are significant capital concentrated in the hands of a few, compared with remittances, which are small funds spread over the hands of large population. While FDI can potentially provide formal, high earning employment for a few individuals with the expectation that the flows should trickle down to the rest, remittances provide relatively lower sources of income for a much larger proportion of the population and potentially leads to more efficient resource allocation as private agents naturally work to maximise individual utility. Therefore, the capacity of

remittances to alleviate poverty across a wider spectrum of the poor is much higher than the capacity of any other kind of flow.

III.   The Macroeconomic Case for Remittances

Even with substantial restriction on "globalisation and liberalisation of human movement" relative to financial and trade liberalisation, migration and consequently remittances have grown phenomenally since the end of World War II. With that has also come significant interest in the nature, causes and administration of remittance flows in the literature. This interest ranges from evaluation of theoretical and conceptual issues (Crisp, 1999; Boswell, 2002; and Grabel, 2008; among others) to empirical studies assessing the size and direction of flows (Ratha, 2003; World Bank, 2005; Mutume, 2005). Even the World Bank has drafted a *general principles* handbook to guide definition and administration of remittances across countries (World Bank 2007). Policymakers are not left out. Many central banks have disentangled remittances from other flows in the balance of payments records and initiated processes for more efficient remittance data collection. In some developing countries, like Brazil, Mexico and the Philippines, policies have gone further and been more proactive, putting in place incentives to attract more remittances and subtly guide the use to which they are put.

As the phenomenon advances, so do thoughts on it advance. Massey (1993) outlined five groups of views on migration to include neoclassical microeconomic and macroeconomic theories, which respectively focused on rational individual choices based on cost-benefit assessment of net return and geographic differences in the supply and demand for labour in origin and destination countries as factors driving migration and consequently remittances. The New Economics of Migration School views migration as family strategy to diversify income sources, minimise risks and enhance access to capital for the household; while the Dual Labour Market theory holds that demand for low-level workers in more developed economies is the main driving force for international migration. The last of the views on this, often referred to as the World Systems theory holds that it is rather the penetration of capitalism through the combined efforts of neo-colonial governments, multinational firms and national elites, which disrupt traditional systems that lead to global migration.

Todaro's postulation that migration is an economic phenomenon, driven principally by differences in expected and not necessarily actual earning opportunities, has remained a landmark assessment that underpinned analyses on migration and remittances. The premise is simple – potential migrants consider various opportunities in the labour market of their country of origin vis-à-vis labour-receiving countries and rationally choose the option that maximises expected gains over the long-run. The motive for consistent link with the country of origin and for regular remittance of funds to those left behind has been one of intense enquiry. Becker (1974) and Cox (1987) presented two contending models, the first focused on altruism and the second on payment for services provided. Becker's (1974) model conceived the utility of the migrant to be optimised only within the context of the wellbeing of the rest of the household. Consequently, rising income gaps between the

migrant and the rest of the household left behind create remittance pressures and such pressures reduce with declining income gaps. In turn, Cox (1987) conceptualised transfers as return for services rendered, which may include support to enable the migrant achieve his aims as well as other intangible services that the migrant has received over time from those he left behind.

Later discussions and literature on motivation for remittances slightly refined the terms to include altruism, risk sharing and a combination of altruism and risk sharing. Altruism is defined in the sense of the migrant being a part of spatially-dispersed large household and remittance is near-obligatory. Remittances are viewed as responsibilities and indications of affection for the rest of the household. For the risk sharing school of thought, remittances are part of individual hedging and risk management programme since the migrant may ultimately come back to his home country. Prominent works in this direction include De Haan (2000), Agrawaal and Horowitz (2001) and Chimhowu et. al. (2003) on altruism, Stark and Lucas (1988) and Stark (1991) on risk sharing and Clarke and Drinkwater (2001) and Ballard (2001) which think remittances consist of both risk-sharing and altruistic motives.The latter group particularly classifies remittances as tempered altruistic projects consisting of inter-temporal, mutually beneficial contractual arrangement between the migrant and the household in the country of origin based on investment and risk which are self-enforcing. The household is the initial insurer as the migrant works to find his footing, but afterwards, there is a change of roles between the two.

Going beyond the micro concerns about the motivation for remittances to the broader impact on long-term economic growth is more problematic and consensus here is much weaker – both theoretically and empirically. Conceptually, a number of features of remittance flows and the segment of the society that have the capacity to migrate lend them to concerns about their overall impact on economic growth, poverty reduction and of course reduction in income inequality. First, the significant up-front costs of migration may mean that the poorest of the poor are not capable of bearing the costs of migration; thus, implying that overall, it is the same rich who can ultimately get the benefits from remittances. For example, initial costs of migration may mean that only the relatively well-to-do can afford them. Thereafter, siblings of migrants, for whom initial costs have been substantially reduced, will follow suit, implying a dynastic bequest of migration capacity among the rich and leaving out the poor. This argument has been pushed by a number of theorists and empirical findings, including Taylor (2006), De Hass (2005) and Funkhouser (1992) who worked on Nicaragua.

Beyond the income distribution of potential migrants, it is generally known that remittance proceeds are mostly spent on consumption goods, particularly food, housing, healthcare and education. The proportion of remittances spent on these items ranged between 40 and 80 per cent as reported by several studies in many parts of the developing world (Lopez-Cordova and Olmedo, 2006; Solimano, 2004; Burgess, 2007; World Bank, 2006; among others). Even in cases where remittance proceeds go into investment, it is usually after basic needs have been met. What effect this has on growth is an issue at two levels. First, what are the consumption items on which the proceeds are spent? A corollary to this is the potential spill-over effects of the consumption on production and distribution in the

rest of the economy. The second issue is that, on the whole, remittance recipients may develop dependency syndromes, occasioned by consumption patterns, leading to lowered productivity over the long-term. Such impact has been noted in small countries where both the proportion of the population and the proportion dependent on remittances are both very high (possibly beyond 20 per cent) like Samoa and Cape Verde and even in some bigger countries as contained in the conclusions by Chami et. al. (2005) with data from 113 countries over 29 years. Grabel (2008) noted that the question of the nature of the multiplier effects of remittance-financed consumption has received limited attention in the literature. Following the thinking by Kapur (2004), she noted that the overall multiplier impact will depend on what proportion of remittance-induced consumption are domestically-produced goods. This necessitates research on the precise nature of leakages (through imports), multiplier and tax implications of remittance consumption before settling the question of the overall impact of remittances on growth.

Taylor (1996) made a case for remittances as a source of income for household savings and investment (including investment in human capital), with potential growth-enhancing effects. Being the next natural recourse after meeting basic needs, savings and investments from remittances are again incontrovertible (see Osili, 2007, Sander, 2003, Ratha, 2007, among several others). Some studies like Adams (2002) and Kapur (2004) have even noted the relatively higher propensity to save among remittance-recipient households, compared to their non-remittance recipient counterparts. For developing countries like Nigeria, Brazil, India, Mexico, among others, where small and medium enterprises form a significant proportion of businesses, remittance receipts often start, fund and sustain whole enterprises with significant employment spillovers. Housing and real estate investments are also favourites of remittance senders and without doubt create employment, and provide potential sources of growth for the recipient countries (Massey and Parrado, 1998 and Woodruff and Zenteno, 2004 both reporting on Mexico). Many empirical studies have found that expenditure on education (school fees, etc) rank among the most prominent uses to which remittances are put. It can help cushion shocks that otherwise would have led to increase in school drop-out rate. This is documented in several studies, including Ratha (2007), Yang (2005), and Lopez-Cordova (2005). Grabel (2008) summarises the issues by noting that remittances increase access to working capital through two channels: first through direct provision of resources and secondly through increasing deposits in financial intermediating institutions. Remittances reduce credit constraints and stimulate entrepreneurship (World Bank, 2006).

But there lies the challenge. Ratha (2007) argued that the effects of remittance-financed investments in physical assets and human capital are necessarily indirect and long-term. Besides, management of some of these investments falls far below optimal as the initiator is often not around and those surrounding the investment are siblings whose sense of obligation and expertise for sustainability of the investments may be weak. In effect, many of these initiatives fade away quickly. Grabel (2008) argued for some secondary impact, which she termed *public moral hazard* on the part of developing country governments where remittances encourage governments in developing countries to abandon their traditional responsibilities as remittances fill the voids in state expenditure. Such public moral hazard is most probable in social capital investments – education and health. In

cases where remittances replace state investment in such infrastructure, the ultimate burden rests on the poorest segments of the society who may not be able to afford independent provision of these services, leading to a netting-out effect on growth and welfare.

Switching slightly to a macroeconomic, but equally pertinent question for poor developing countries, a challenge arises as to the relationship between remittances and growth through the credit system and/or the capital markets. In theory, the impact of remittances on growth can work either through the financial system or parallel to it. In working through the financial system, agents treat remittances like any other form of savings and allocate them to projects that yield the highest returns whereas in countries with less developed financial systems, remittances might become a significant complement for inefficient or nonexistent credit market by helping local entrepreneurs bypass capital constraints and high lending costs. Using data covering 100 developing countries from 1975 to 2002 Ruiz-Arranz (2006) found evidence that remittances provided alternative to formal financing of investments i.e. remittances act as substitute to the domestic financial system. In contrast, the study could not find evidence of remittance impacting investment through the financial system. In effect, remittances have near-zero impact on growth in countries with well-functioning financial markets.

Thus far, available studies showed limited and often contradictory evidence of impact of remittances on growth (Agunias 2006, Ratha 2007, Grabel 2008). A large proportion of empirical studies found evidence of positive growth effects of remittances. In this group are such works as Solimano (2003), working on Andean countries and Adelman and Taylor, working on Albania (Grabel, 2008). But others like Chami et al (2005) find negative impact on growth. Grabel (2008), in particular, doubts that consensus on the impact of remittances on growth may be reached by more empirical research in the near future, owing to a number of methodological and empirical discrepancies on the subject matter. But where does this lead us? It certainly only makes the case that enquiry into the relationship between remittances and growth has to be country-specific. There are no general rules about impact and a number of factors, not the least the structure of consumption, investment and savings in any country will determine overall impact of remittances on growth. It creates conceptual, empirical and methodological questions and makes the search for impact of remittances on growth more compelling. For example, most studies either use a point-in-time survey or partial equilibrium models. Systems/general equilibrium models for analysing impact of remittances are nearly non-existent. But equally, the voice of every country counts in this debate. This study is an attempt to help make contributions to the debate in this direction.

IV.   The Economics of Remittances and Growth

According to Baraja et. al., (2009) migrant's remittance refers to the transfer to the country of nationality of a part of an international migrant worker's earnings to the migrant's kits and kin. This has in recent times become an important source of finance in the developing

world. As such, it can affect the receiving economy in a variety of ways. These includes through capital accumulation, labour force growth and total factor productivity (Baraja et al, 2009).

Remittance can affect capital accumulation by easing the constraints to domestic households' capital accumulation, thereby allowing recipient household to accumulate both physical and human capital. Remittance could stimulate additional investment in the form of human capital accumulation and physical capital accumulation. Also, if remittance can improve investment in domestic economy through increase liquidity, then increase in remittance could lower the cost of capital in the domestic economy. As such, domestic investment will appear more attractive.

Remittances may also affect growth through the growth of labour input. Since remittance goes to individual, it is possible that the growth in income will lead to reduced labour supply. Hence there is a rational expectation that increased remittance will cause a shortfall in labour input. However, with the efficiency in investment, resulting from the effect of remittance on capital accumulation, remittance can affect total factor productivity.

Studies have shown conflicting report on the relationship between remittance and growth. Guiliano and Ruiz-Arranz (2005) in their study examined the systematic relationship between remittance and growth. The paper used a cross country data for remittance, covering large sample of developing countries to relate the interaction between remittance and financial development and its impact on growth. The study applied the generalised method of moments (GMM) approach and found that remittance can promote growth in less-financially developed countries. The study further showed that remittance can help alleviate the credit constraints of developing countries.

Similarly, Ukeje and Obiechina (2013), using a time series data, from 1970-2010 in an error correction methodology (ECM), examined the impact of workers remittance on economic growth in Nigeria. From the result of the study, it was seen that workers' remittance is significant and has positive impact on economic growth. Furthermore, the short-run dynamic model revealed that the lagged value of workers' remittances is significant and impacted positively on economic growth.

However, Barajas et. Al., (2009) found that remittance at best had no impact on economic growth. The study focussed on appropriate measure of remittance effect on growth. This was occasioned by the disparity found in the result on effects of remittance and growth caused largely by the large variation of choice of variables used as instrument for remittance flows. The study by Barajas et. Al., (2009), therefore, used an instrument that captured the effect of changes in the microeconomic determinants of remittance and still was observable. With these changes in methodology, the study found remittance not to be affecting economic growth.

V.   The Analytical Model

We specify a macro-econometric model of four sectors; namely, production and supply, aggregate demand, external sector and money and prices. The specification in most cases was eclectic, incorporating specific features of the Nigerian economy within broad neo-classical frameworks.

V.1   Aggregate Supply

Following large-scale oil production, aggregate supply in Nigeria is broadly classified along oil and non-oil sectors. In many modelling projects, this broad classification is often considered convenient as it gives a broad overview and easy classification of activities. Besides, due to the unique characteristics of the oil sector, it becomes easy to single it out for special treatment different from the rest of the economy, which may be performing less optimally. For example, despite its relatively lower contribution to value added (below 30 percent), it is the principal source of foreign exchange earnings and government revenue. The non-oil sector is usually divided into the real and service sectors – with the former comprising mainly of agriculture and industry while the latter comprise wholesale and retail trade, communications and banking, among others. For the purposes of this study, it is considered better to assume production in the oil sector exogenous. This is consistent with a number of the behavioural patterns of the oil sector, given that the sector is largely delinked from the rest of the economy; imports most of its inputs and employs barely 2 percent of the labour force. It is largely an enclave economy and linkages with the rest of the economy are quite weak. The non-oil sector is modeled following Cobb-Douglas production function with regular input of labour and capital. However, owing to data challenges, a number of other input may be considered in the place of labour.

Non-Oil Production

Production in the non-oil sector is broadly divided into three – agricultural, manufacturing and others. This classification is adopted on account of the principal goal of the work. Agriculture employs a large proportion of the labour force. In addition, a large proportion of the poor, both potential and actual recipients of remittances, are in this group. Manufacturing, on the other hand, is a critical sector that has been in the development by the government for many years, but has witnessed very meager improvements over time. It has the potential of benefiting from remittances, but it is not clear that it currently does given the large capital outlay required as input into the sector vis-à-vis the small amounts which come in form of remittances. Other services definitely benefit from remittances and probably contribute to the flow of remittances. It may yet be useful in the future to disaggregate services for this purpose, but this work is considered foundational and so begins with an aggregate consideration of the services and other sectors.

i.   Agricultural Value Added

In Nigeria, agriculture is largely seasonal and depends on rainfall. Critical input into agricultural production include fertilizer, which often comes with government support in many areas. In addition to supporting fertiliser distribution, government buys agricultural

products for strategic reserve. Consequently, government expenditure is an important factor in agricultural production. Like other sectors, farmers depend on credit, which can be in the form of guaranteed credit under the Agricultural Credit Guarantee Scheme Fund (ACGSF) or through independent arrangements with banks. We introduce remittances as a source of support funding for poor farmers. As such, agricultural output is modeled to be determined by rainfall, credit to agricultural sector (CREDA), prime lending rate (PLR), government expenditure (GEXP) and remittances (REM)as follows:

$$Y_a = C_1 + \alpha_1 R + \beta_1 CREDA + \chi_1 PLR + \delta_1 REM + \eta_1 GEXP + \mu_1 \qquad (1)$$

ii. Manufacturing Value Added

Critical inputs into the manufacturing sector include credit and imported input. Such imported inputs include both machinery and raw materials. Beyond credit availability, the cost is also critical to the sector as most operators complain of lack of long-term facilities and the inability of producers to meet the high rates of interest charged on commercial loans. While the sector faces a number of challenges in terms of weakness of infrastructure support, leading to high cost of doing business, a number of industrial surveys in the country seem to confirm that energy supply is a critical impediment to output in the sector. Consequently, manufacturing value added is modeled to be determined by prime lending rate (PLR), credit to manufacturing sector (CREDM), non-oil import (Mno), and index of electricity production (IEP):

$$Y_m = C_2 + \alpha_2 PLR + \beta_2 CREDM + \chi_2 M_{NO} + \delta_2 MK + \eta_2 IEP + \mu_2 \qquad (2)$$

iii. Other Non-Oil Output

This models other non-oil output, including services and other tertiary non-oil activities. Like the other aspects of productive activities, they depend on domestic credit system. In particular, wholesale and retail trade makes intensive use of credit from the banking sector. The exchange rate is equally important in determining both volume and trends in these services. Government purchases a significant proportion of output from this sector, while imported input are utilised in most activities for such sectors as building and construction. Remittances come in as an external driver first as an input into setting up of businesses within the system and as a support to demand for services in the sector. Other non-oil output is modeled to be determined by prime lending rate (PLR), credit to other sectors of the economy (CREDO), exchange rate (ER), government expenditure (GEXP), imports (M), and remittances (REM).

$$Y_{no} = C_3 + \alpha_3 PLR + \beta_3 CREDO + \chi_3 ER + \delta_3 GEXP + \eta_3 M + \pi_3 REM + \mu_3 \qquad (3)$$

V.2 Aggregate Demand

The basic modelling framework for aggregate demand is Keynesian. It is taken to be the sum of private consumption, private investment and government net expenditure.

a.   Private Consumption

The specification of private consumption function is based on utility optimisation with income constraints among private agents. The model incorporates standard determinants in the literature, including income (Y) and price movements (measured by inflation rates - INF). However, other economy-specific factors like the lending rate (PLR), capitalisation of the stock exchange (KSE) and migrant remittances (REM) are included to incorporate the rising significance of credit in present consumption, impact of investment options as alternative to present consumption and inflow from migrant remittances from abroad for a rising proportion of households respectively in the determination of household consumption. The latter is increasingly shown in the literature to be a major factor in determining income capacity of households with members earning income abroad and supplementing domestic expenditure.

$$PC = C_4 + \alpha_4 Y + \beta_4 INF + \chi_4 PLR + \delta_4 KSE + \eta_4 REM + \mu_4 \qquad (4)$$

b.   Private Investment

All private investment is lumped into one and follows neoclassical accelerator principles. However, variables that capture sunk costs and impact of macroeconomic uncertainty in investment decisions are incorporated to signify their importance in an unstable economy like Nigeria's in determining overall trends in private investment. The cost of capital is incorporated using prime lending rate. Government is very significant in determining overall trends in private investment, particularly given the weak (and largely dependent) private sector as its expenditure generally drives private behaviour and sends important signals to the private sector. But importantly too, it could motivate private expenditure if such expenditures are targeted at sectors that facilitate improved returns to private investment. Credit to the private sector is considered an important facilitator to private investment. Given the growing significance of the external sector, remittances are brought in as a major determinant of private investment. This is considered important, particularly for such aspects as housing and investment in human and social capital. Given the above, investment decisions are modeled to be determined by income (Y), government expenditure (GEXP), prime lending rate (PLR), remittances (REM) and inflation (INF).

$$INV = C_5 + \beta\alpha_5 Y + \beta_5 PLR + \chi_5 GEXP + \delta_5 CREDP + \eta_5 REM + \pi_5 INF + \mu_5 \qquad (5)$$

c.   Government

Private sector growth is largely reliant on government revenue and expenditure projections captured in the budget. Besides signaling to the private sector the direction of economic activities, government is a significant patron of private services. Government debt stock and servicing programmes also impact on infrastructure for private enterprise and social sector development. Even though the debt stock has substantially diminished, most of the sample period under consideration falls within the period of the debt crisis with

external and domestic debt stock in excess of 80 per cent of export earnings. Consequently, three aspects of relevant government behaviour shall be modeled. These are: government revenue, expenditure and debt service. Owing to data limitations on consolidated revenue, expenditure and debt service for all tiers of government, government fiscal activities in the model are captured by the Central Government Fiscal activities.

i. Government Revenue

In Nigeria, government revenue is largely affected by three major items: indirect taxes from tariffs on imports, domestic value added tax that depends largely on output growth and performance, and crude oil sales. The latter is particularly significant in determining government revenue. So government revenue is specified as follows:

$$GREV = C_6 + \alpha_6 Y + \beta_6 TAR + \chi_6 OILS + \mu_6 \qquad (6)$$

Where Y is output, TAR is tariff and OILS is sales from oil, given as the product of oil export and price.

ii. Government Expenditure

Both recurrent and capital expenditure are nearly evenly split over time in Nigeria. Under certain circumstances, government expenditure could be assumed to be exogenous. However, in the model here, it is assumed to be affected by government revenue alongside a number of other variables. For example, it has been severally observed that government generally ratchets its expenditure up during periods of boom, implying that government expenditure is not wholly independent of its income. However, the model recognises that government often resorts to the domestic financial system for financing in periods of lean resources – at such times often competing with the private sector. To capture impact of previous expenditures and the incremental nature of public expenditures, the lag of the dependent variable, not explicit in the specification, will be experimented with in the estimation. Broad macroeconomic variables like output growth and inflation can equally lead to procyclical or countercyclical action on the part of government as a key part of aggregate demand.

$$GEXP = C_7 + \alpha_7 GREV + \beta_7 CREDG + \chi_7 Y + \delta_7 INF + \mu_7 \qquad (7)$$

iii. Debt Service

Both external and domestic debt stocks have historically been very high in Nigeria. However, following negotiations, the external debt stock has been substantially reduced (nearly eliminated) in recent years, but domestic debt stock has remained fairly high. So it makes sense to include both domestic and external debt stocks in one model. In both cases, government expenditure on debt servicing, impact substantially on resource availability for other aspects of spending and depending on their size, can impede economic growth. In the present model, government debt service is assumed to be impacted by both domestic and foreign interest rates, the first proxied by the treasury bills

rate (TBR) and the latter proxied by London Interbank Rates (LIBOR). Government revenue also determines its capacity to service debts, while external reserves and exchange rates impact on servicing of foreign debt. The relative debt stocks equally determine amounts spent on debt servicing giving the model as:

$$DSERV = C_8 + \alpha_8 TDSK + \beta_8 TBR + \chi_8 FIR + \delta_8 GREV + \eta_8 RES + \pi_8 ER + \mu_8 \qquad (8)$$

Where DSERV is debt service, TDSK is total debt stock, TBR is treasury bills rate, FIR is foreign interest rate, GREV is government revenue, RES is reserves and ER is exchange rate.

V.3   The External Sector

The external sector model broadly comprises equations of the trade, current and capital accounts. Oil is a significant component of the trade account accounting for a large proportion of exports. However, imports are diversified and range from intermediate goods to final products. The current account balance is a two way flow of services both between the country and its major partners and is largely diversified in terms of composition. Relatively higher imports of services in the current account are often counterbalanced by favourable trade accounts particularly in times of oil price rise. Consequently, substantial impact of the current account is hardly felt in the economy. On the other hand, capital flows into the country, particularly following the return to democracy and the subsequent reforms, have been tremendous and has high impact. In particular, private flows in terms of foreign direct investment, foreign portfolio investment and remittances aimed towards taking the expanding opportunities in the real sector, burgeoning capital market and for consumption and other purposes have been significant in recent time. Consequently, the present model shall capture flows in the trade and capital accounts. In particular, modelling of the capital account shall take into account these recent and growing flows. In addition, given the focus of the present paper, the major item is the consideration of the two-way causality between broad macroeconomic fundamentals and remittances. As such, attention shall be focused on the capital account relating same to key macro variables.

a.   Trade Balance

This is grouped into exports and imports. Exports are mainly oil driven (output and price) and the consequent terms of trade and are specified to reflect this dominance. Other variables included are the terms of trade and exchange rate. Quantity of oil sales is multiplied by the dollar value to get the equivalent value from oil sales represented in the model as OILS. Imports are more diversified and depend on domestic income level(Y), the exchange rate (ER), terms of trade (TOT), tariff (TAR) and the domestic cost of funds captured by the prime lending rate (PLR), as well as the terms of trade.

i.   Exports

The exports equation is given as

$$X = C_9 + \alpha_9 OILS + \beta_9 TOT + \chi_9 ER + \delta_9 Y + \mu_9 \qquad (9)$$

ii.   Imports

Total import comprises import of raw materials, intermediate goods and final products. The behaviour of all these components is not exactly alike as the first two reflect production demands, while the last reflects consumption demands. However, their determinants are nearly the same comprising income, exchange rate, tariff rates, access to finance and the cost of funds and the terms of trade. However, we included remittances, which are likely to influence overall imports through the import of final products. As such, the import equation is specified as:

$$M = C_{10} + \alpha_{10}Y + \beta_{10}ER + \chi_{10}TAR + \delta_{10}PLR + \eta_{10}TOT + \pi\,REM + \mu_{10} \qquad (10)$$

b.   The Capital Account

Most of the variables to be modeled in the capital account are private flows consisting of foreign direct investment, foreign portfolio investment and remittances.

i.   Foreign Direct Investment (FDI)

Historically, a sizable chunk of independent real flows into Nigeria goes to the oil sector. However, in recent times, there have been massive flows into the banking and telecommunications sectors following reforms of the two sectors. The modeling of foreign direct investment, therefore, shall be eclectic, incorporating elements of neoclassical framework for the determination of investment on account of flows to these 'new' sectors, but equally incorporating the peculiar characteristics of oil flows and the relative risk factors that might have been retarding flows to the domestic economy. Consequently, FDI is made a function of oil production and price (OILS), non-oil output (Y_N – particularly services output shall be experimented with in the estimations), exchange rate(ER) and domestic inflation (INF), reflecting risk perception by the investing foreign community.

$$FDI = C_{11} + \alpha_{11}OILS + \beta_{11}Y_N + \chi_{11}ER + \delta_{11}INF + \mu_{11} \qquad (11)$$

ii.   Foreign portfolio inflows

Portfolio flows have equally become significant in recent years following growth in the stock market and openings for investment in government securities. In sum, options for alternative investment in the country have grown since 1999 and the global investing community has responded to these with relatively massive flows over the last couple of years. However, risk factors are still considerably high and continue to impact on the size and direction of these flows. For example, prior to and following the global economic crisis, there has been significant outflow from the country and inward investors have been quite cautious, partially leading to a slump in the Nigeria stock exchange. Consequently, the modeling of portfolio flows in the country shall equally be eclectic capturing both standard theoretical variables as well as country-specific features that have shown up in recent years as important. The principal variables include the exchange rate (ER), domestic interest rate measured by the treasury bills rate), price index in the Nigeria Stock

Exchange (measured by the all-share price index – ASPI), capitalisation of the stock exchange (KSE) and a measure of macroeconomic risk (in this case, inflation rate) giving the following equation:

$$FPI = C_{12} + \alpha_{12}ER + \beta_{12}TBR + \chi_{12}ASPI + \delta_{12}KSE + \eta_{12}INF + \mu_{12} \qquad (12)$$

iii.   Remittances

Migrant remittances are a critical consideration in the present work and are assumed to impact on and be impacted on by a number of real, monetary and external sector influences. It has significantly risen in both quantum and significance as a source of development finance. Estimates about the size of remittances from both formal and informal sources vary widely, but there is a consensus that it demands a lot of attention as a possible alternative to regular sources of development finance for poor countries like Nigeria[2]. There are indications that recent surge in the value of remittances in Nigeria owes both to improvement in statistical instruments for capturing the flows as well as the growth in domestic stock market working alongside other reform measures of government. Consequently, remittances are modeled to be impacted by output in agriculture (Ya) and other sectors (Yno) as well as investment (INV) and private consumption (PC) in the domestic economy (particularly consumption and investment in health, education and housing), the exchange rate (ER), stock market capitalisation (KSE) and a measure of macroeconomic stability (again using inflation rate - INF).

$$REM = C_{13} + \alpha_{13}Y + \beta_{13}ER + \chi_{13}KSE + \delta_{13}INF + \mu_{13} \qquad (13)$$

V.4   Money and Prices

The last sector to be modeled in this work is money and prices. As in many other aspects of economics, there are competing approaches to modeling money and prices and perceptions about their short and long-term impacts vary widely – the regular monetarist and Keynesian approaches are just few prominent ones among these. In addition to the literature, the Nigerian financial system is growing quickly to become a major segment of economic activities. But a worrisome aspect of the persistent growth in this sector is that it has seemingly been isolated from the real sector, leading to questions about its key drivers and relationship with other segments of the macro-economy.

Consequently, modeling money and prices in a growing, disjointed and complex economy like Nigeria's could be difficult. However, given the purposes of this work, the modeling structure adopted shall be relatively simple and aim to pick up what are considered the most important factors and relating them to the issues under consideration, without unnecessary details about other complex, but relatively irrelevant interrelationships in the economy. As such, the model shall comprise domestic credit divided into: credit to

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[2] In Nigeria, remittances are now the second largest source of foreign exchange after oil. In 2007, total remittances stood at US$18 billion (CBN, 2008)

the private and public sectors; net foreign assets; the stock market; exchange rate; and inflation. Net domestic credit is modeled following the regular money supply identity, while net foreign assets and other assets net are derived as exogenous residuals; the all share price index is demand driven and price equations follow standard determinants in the literature.

a.   Credit to the Private Sector

Until recently, government was a major drain on domestic resources, with its borrowings apparently crowding out private credit. Oligopolistic banking structure and high cost of doing business also meant historically high interest rates post-liberalisation. Other macroeconomic risks worked alongside poor growth of the real sector to keep credit to the private sector relatively subdued. However, with government involvement following the reforms, this trend is largely changing. Equally, remittance inflow go a long way to ease funding constraint and so could be a source of alternative funding for private consumption and investment purposes for a number of households. In this work therefore, credit to the private sector is made a function of deficit financing by government (GDF), output growth (Y), the lending rate (PLR), imports (M), inflation (INF) and remittances (REM) as follows:

$$CREDP = C_{14} + \alpha_{14}GDF + \beta_{14}\Delta Y + \chi_{14}PLR + \delta_{14}M + \eta_{14}INF + \pi_{14}REM + \mu_{14} \qquad (14)$$

b.   Credit to Government

Government borrows from both the Central Bank and deposit money banks with the former acting as first option for many years and later as a lender-of-last-resort. From either source, government borrowing impact on the rest of the economy in a number of ways, including potential crowding out. Depending on the source and use to which the credits are put, they can also be a major complement to private sector development. Government borrowing in the model, therefore, shall be made a function of the size of its deficits, Central Bank portfolio and available deposits in the rest of the banking sector and the lending rates giving:

$$CREDG = C_{15} + \alpha_{15}GD + \beta_{15}NFA + \chi_{15}DL + \delta_{15}PLR + \mu_{15} \qquad (15)$$

Where CREDG is credit to government, GD is government fiscal deficits, NFA is the net foreign assets of the Central Bank, DL is deposit liabilities and PLR is prime lending rate.

c.   Net Foreign Assets

We added net foreign assets (NFA), made up of those of the Central Bank and deposit money banks (DMBs), to other assets net and assume them to be a residual of the monetary identity. For the purposes of this modeling, we assume these components exogenously determined and simply add them to domestic credit to get total money stock.

d.   All Share Price Index

The stock exchange is a major link in the work here. Its growth has attracted significant investment from the rest of the world and not the least Nigerians in diaspora. Also, it has shaped domestic investment in profound ways creating an important alternative to real estate and money market investments. For quoted firms, it has become an important source of financing and for households a major repository for wealth. For long periods, the Nigerian stock market was touted among the fastest growing and the highest in returns world over. Even though indices in the market have stunted and slumped over the last one year, it still remains a significant driver of activities in the economy. An important measure of the health of the market is the all share price index. Performance of quoted firms has understandably been important, but reforms in other parts of the financial services sector have led to significant inflow into the market. Some of these flows cannot directly be related to performance of quoted firms and the sources have been quite diverse. For the present work, the all share price index shall be assumed to be driven by income, the number of listed firms, other money market rates, domestic stability measures and funds inflow captured by foreign portfolio flows and remittances. The equation is as follows:

$$ASPI = C_{16} + \alpha_{16}Y + \beta_{16}NOLS + \chi_{16}TBR + \delta_{16}INF + \eta_{16}FPI + \pi_{16}REM + \mu_{16} \qquad (16)$$

e.   Inflation Rate

Given Nigeria's relative openness and the high volume of import in its consumption and production baskets, it is assumed that both domestic and external factors interplay to determine domestic inflation rates. In the literature, exchange rate changes affect domestic prices in two main ways – a direct channel which runs through the price of imports and an indirect channel which runs through domestic wage and other production cost structures (see Hufner and Schroder, 2002; Hampton, 2001; Goldberg and Knetter 1997). It is safe to assume that uncovered interest parity holds in the economy. Meanwhile, given its sheer size, government expenditure is equally critical in determining price changes. Money supply and other price interactions shape movements in overall domestic price levels too. As such, determinants of inflation rate in the present model include oil price and remittances (representing the external sector), government expenditure and broad output (representing domestic influences) and the lending rate and exchange rate (representing other domestic prices). The final price equation is therefore given as:

$$INF = C_{17} + \alpha_{17}Y + \beta_{17}GEXP + \chi_{17}TBR + \delta_{17}ER + \eta_{17}MS + \pi_{17}OILP + \rho_{17}REM + \mu_{17} \quad (17)$$

f.   The Exchange Rate

Post-liberalisation, Nigeria adopted a flexible exchange rate regime. Its experience with exchange rate liberalisation has been that of high volatility. At some point, the country had to adopt guided liberalisation and had different exchange rates for official and private transactions. The parallel market equally emerged to take advantage of arbitrage opportunities and provide source points for sale and purchase of small transactions in the market. As such, there are diversities of opinions as to the best exchange rate to model so as to reflect actual economic activities and what the key determinants of such a rate could be. In the present work, the officially recorded exchange rate is taken to be the

dependent variable, partly on account of the high level of recognition and, partly because reforms in the market have led to significant volumes of transactions with this rate. Given Nigeria's relative openness and the fairly high level of intervention to stabilise the rates, the modelling shall incorporated elements of uncovered interest parity alongside some specific domestic peculiarities that are believed to affect the exchange rate in Nigeria. The exchange rate is therefore assumed to be a function of output growth, inflation rates and government expenditure as domestic variables and oil price and remittances as foreign variables.

$$ER = C_{18} + \alpha_{18}Y + \beta_{18}INF + \chi_{18}GEXP + \delta_{18}OILP + \eta_{18}REM + \mu_{18} \tag{18}$$

V.5   Identities and Closure Rules

There are a total of 14 identities in the model. The closure rules were kept very simple and reflected the uncomplicated and direct purpose of the model – to evaluate remittance flows and relationships. Oil sector was kept exogenous, reflecting the fact that endogenising it within this model will not add much value. So, aggregate production became the sum of oil and non-oil output. Several options were considered in respect of modelling government operations into the rest of aggregate demand. One was constraining its expenditure and debt using changes in domestic tax. Given the small and almost inelastic domestic non-oil tax base, there exists little room for instituting a closure rule by assuming significant changes in the tax structure. Ultimately, therefore, we decided in favour of merging domestic and external debt servicing and letting this be partly determined by the debt stock. In effect, further debt accumulation and lending are considered unsustainable when growth rate (g) is lower than interest rate (r) – the standard financial programming assumption. For the external sector, we merely summed the trade and capital account balances given the estimable and exogenous variables in the model. For money and prices, definitions were obtained for growth rates, government deficits, total credit to the private sector and total net assets among others.

VI.   Findings

Following the unit root and co-integration tests conducted, table 1 presents the model results. The study employed the Engle-Granger two step procedures, which estimated static representations of the relationship between dependent and explanatory variables and thereafter tested for unit root on the residuals. The specifications incorporated the error correction term, following identification of co-integrating relationships in a number of the equations, where applicable. Underneath, we take a look at the block behaviours and key relationships in the model.

The aggregate supply/production block consists of three equations, agricultural value added, manufacturing value added and other non-oil output. Oil output was treated as exogenous in the model and added to the estimated non-oil sector to get the production identity. Beside the three (3) endogenous variables, there are other 11 exogenous variables, bringing the total number of variables in the block to 14. The estimation results of the equations of the model are shown in table 1. Given the structure of production in

Nigeria, the relationship between the block and the rest of the economy was relatively weak. It was not possible, for instance, to find agricultural output responsive to any of the variables in the specification. Being low technology in input, the traditional understanding is that agriculture in the country is driven by rainfall and other forms of input. However, neither rainfall nor credit to the private sector and/or the lending rate could be shown to be important in agricultural productivity, they are rather counterfactual. Even government expenditure, which is considered necessary for input (particularly fertiliser) subsidies, could not be found to be important.

Table1: Aggregate Supply

	PLR	RAIN	CPN	MI	YON	NER	GEXP	REM	CPS	M	ECM	R^2	DW
AVA	-0.00171 (-0.72)	0.00048 -1.71	Lag 1 0.000809 -0.6									0.07	2
		Lag 1 0.00074 -1.23											
		Lag 3 0.00081 -1.39											
MVA	Lag 1 -0.51526 (-2.85)		Lag 2 0.109789 -1	0.070298 -2.15							-0.00002 (-2.47)	0.22	2.62
				Lag 3 -0.07154 (-2.18)									
YON					Lag 1 0.47413 -5.25	Lag 2 -0.05015 (-1.20)	Lag 4 0.28096 -3.13	Lag 1 0.03753 -1.09	Lag 1 0.09921 -1.52	Lag 2 0.00212 -2.57	-0.000003 (-2.15)	0.56	1.78
						Lag 4 -0.12988 (-3.07)		Lag 2 0.02241 -0.69					

Reported values are the coefficients while the calculated t-statistics are in brackets.

In contrast, manufacturing value added is determined by the cost of credit (captured by the prime lending rate) and import of intermediate goods. This is consistent with import-dependent characteristic of the manufacturing sector in the country. Manufacturers regularly refer to finance and the cost of credit as critical impediments to the growth of the sector. However, electricity production, which is equally regularly blamed for poor performance of the sector could not be confirmed as significant nor were other variables from the external sector. For other non-oil output (particularly those in the services sector), nominal exchange rate and government expenditure were critical in defining growth. Here, import equally played positive and prominent role. The error correction term remained insignificant in the agricultural equation and had to be dropped. For the other two sectors, adjustment rate to short-run changes in the equilibrium values of the dependent variables was low (less than 1 per cent in both manufacturing and other non-oil output), but significant.

The inclusion of remittances showed only marginal effect in the other non-oil output equation, after one quarter lag. By implication, despite their sizes, remittances do not yet play direct roles in production in the domestic economy. This can partly be due to the fact that the surge in remittance numbers is a recent phenomenon and their relative relevance can only be captured with samples beginning from the early 2000s as opposed to the current sample which runs from 1990. The results obtained may also reflect the relatively low proportion of the total population that receive remittances and the sectors of the economy where they put the resources to use. In this case, where they consist only a small proportion of the population who hardly use these in direct productive activities, it will be understandable that such direct activities as agriculture and manufacturing, among others, benefit directly – which seems to be the case in Nigeria.

Table 2: Aggregate Demand

	PC	Y	INF	PLR	REM	INV	GEXP	ECM	R2	DW
PC	Lag 1 0.689952 (6.68)	Lag 4 1.347074 (3.33)	Lag 1 0.013228 (2.04)	Lag 1 -0.060129 (-1.11)	Lag 4 0.028255 (1.64)			- 1.28E-06 (-2.07)	0.51	2.38
INV		26.56805 (4.49)	Lag 1 -0.102603 (-1.65) Lag 3 -0.077828 (-1.34)	Lag 2 -0.529096 (-1.06)		Lag 1 0.562079 (4.03)	Lag 4 0.720511 (1.62)	- 7.43E-06 (-0.71)	0.39	1.89

	GREV	Y	TAR	GEXP	INF	CGA	TDS	TDSK	NER	ECM	R2	DW
GREV	Lag 1 0.536060 (5.44)	Lag 4 4.566060 (5.38)	Lag3 0.005199 (1.14)								0.43	2.09
GEXP	1.039310 (13.34) Lag 4 0.368630 (5.85)	Lag 4 1.531920 (3.20)		Lag 1 0.173504 (3.19)	Lag 1 0.008967 (1.43)	Lag 1 0.003697 (0.69)				- 1.96E-06 (-1.77)	0.91	1.29
DEBT							Lag 1 0.997841 (164.74)	lag 4 1.060675 (2.70)	Lag 1 0.335226 (1.33) Lag 3 0.273140 (1.06)		0.76	1.61

Reported values are the coefficients while the calculated t-statistics are in brackets.

Source: Author's Estimates

The aggregate demand block has five equations – private consumption and investment, government revenue, expenditure and debt service. There are another 11 exogenous variables in the block, bringing the total number of variables to 16. Model output for the

block are shown in table 2. Expectedly, the lag of private consumption was quite critical and highly significant in determining its present value – a ratchet effect acknowledged by most literature on consumption. Other important determinants included inflation and output. Domestic cost of credit (proxied by the prime lending rate) could not be confirmed to have significant impact on consumption. This was probably on account of the fact that though growing in relevance, development of money market instruments and the credit system in consumption is still a recent phenomenon and may not have reflected long enough in the data to impact the outcome of the modelling on consumption. The same applies to remittances, which was significant only at the 10 per cent level. Adjustment rate for disequilibrium in the relationship between consumption and its determinants were equally lower than 1 per cent. Private investment was slightly less responsive to the specified determinants. With the exception of output and its own lag, most other variables were only marginally relevant. These included government expenditure with a probability level of 11 per cent and inflation with a probability of 10 per cent. The lending rate was much weaker. Remittances could not feature as important determinant of private investment.

Public sector variables were also weakly related to the real economy. This was with the exception of government expenditure whose estimates indicated partial effect of output. On the other hand, Government revenue is simply a function of its own lag, output and tariff, which determines indirect revenue from imports. Beside output, which has been referred to earlier, government expenditure is determined by its own lag and revenue. Evidence indicated that government ratchets up its expenditure with revenue increase. Other factors like credit to government and inflation rate did not show up with significant coefficients. Debt service on the other hand responded only to its own lag and the total debt stock, with the first being the most critical variable. Again, this is consistent with the history of the country's debt payment and servicing, particularly all through the 1990s where the government simply determined how much it could service its debt was based on the amount spent in the previous year for same purpose. For most of those years, penalties on unpaid principal and interest charges shot up the overall value of the country's debts, particularly for external debts. Bilateral exchange rate of the naira with the US dollar was not significant probably because of the consolidation of both domestic and external debt services in the equation with the former dampening its impact.

C.   The External Sector

Five equations were equally estimated for the external sector. These include exports, imports, foreign direct investment, foreign portfolio investment and remittances. The block has 14 exogenous variables to bring total number of the variables to 19. Estimation outputs for the block are presented in table 3. Exports are driven by oil price and nominal exchange rate, both of which are very significant with probabilities of less than 1.0 percent each. This is in addition to the lag of the dependent variable. Given that over 98.0 per cent of total exports from the country consist of oil, this is not surprising. The significant impact of the nominal exchange rate may not imply changing export volumes in tandem with changes in the exchange rate; it might simply reflect the fact that what is modelled

here is the value of exports, which is translated to domestic currency using the exchange rate.

Table 3: External Sector

	X	PO	NER	M	PLR	REM	Y	INF	IRD	ASPI	RER	PC	ECM	R2	DW
X	Lag 4 0.2179 -2.46	0.6565 -3.97	0.346418 -3.17										-8.88E-06 (-2.39)	0.38	2.13
M			Lag 4 -0.37118 -2.13	Lag 1 1.00201 316.19	Lag 1 -0.57819 -1.55	Lag 3 0.407093 -3.25							-1.60E-05 (-2.14)	0.35	2.37
FDI							11.8167 -1.51	Lag 3 -0.18613 -1.88					-5.01E-05 (-5.70)	0.36	2
FPI							21.0856 -1.65	Lag 4 -0.1491 (-1.00)	Lag 4 1.06144 -1.41	Lag 2 0.58456			-5.09E-06 (-1.94)	0.15	2.74
REM			-0.80906 (-4.31)	0.00338 -1.57		Lag 1 -0.58261 (-6.37) Lag 2 -0.50827 (-4.98) Lag 3 -0.48555 (-3.95) Lag 4 -0.374 (-3.86)				0.16851 -1.17	-1.49237 (-4.63)	Lag 4 0.53277 -1.23	-0.00018 (-5.19)	0.64	1.58

Reported values are the coefficients while the calculated t-statistics are in brackets.

Even much more than exports, imports are temporally dependent and previous values of imports impact very significantly on present values. The exchange rate is equally significant. Interestingly, the same could not be said of several other domestic real, monetary and external variables including income, tariff, cost of credit and terms of trade. In particular, standard models bear out income and tariff as the quantity and price variables in import demand. But it seems imports in Nigeria are inelastic to any of these. The prime lending rate was included to reflect the fact that an assumed sizable proportion of credit to the private sector goes into wholesale and retail trade of imported goods[3]. However, we could not confirm that it is significant as the estimate turns up with a 13 percent probability level. In contrast, remittances are very significant in determining imports. This presents a very interesting perspective to the discussion on leakages of

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[3] Given the relatively high turnover of imports and trade activities which favours short term loans, banks often favour loan applications from these activities. Meanwhile, most agents in the real sector are not able to find profitable investments that can give enough returns to match the high interest rates. Besides, high gestation periods for loans in the real sector often imply higher risks for loans and this equally is unattractive to banks. Therefore formal lending decisions are often in favour of importers and traders.

remittance proceeds. The significance of remittances relative to a number of classical determinants shows the rising importance of the variable in the economy, which itself is highly import-dependent.

It was quite difficult to model foreign flows into the economy. This seems to reflect the widely-held view that foreign capital goes to where it wills independent of the actions or inactions of the domestic economy – a fact reflecting in the very high flows to China despite some very austere policies and the low flows to other developing economies despite FDI and other flows promoting policies. Not even the lags of the dependent variables were significant in determining foreign direct investment and foreign portfolio flows. The inclusion of foreign interest rates or interest rate differential equally made little difference. Neither of the flows was responsive to domestic output and macroeconomic variability captured by inflation rates equally did not make any difference. Foreign portfolio investment in particular was not driven by movements in the all share price index and we could not immediately lay hands on data on government instruments to try this as well. It is important to add here that this experience has been the same in successive modelling experiences. Two potential reasons can account for this. It is common knowledge for example that most FDI flows into Nigeria goes into the oil sector and hardly fluctuates with trends in the macro economy. The other reason is equally about the sectoral distribution of flows but somewhat related to data. There is hardly data on portfolio investments into government securities from the rest of the world and flows into private services sectors are recent and not fully captured in the data available to us.

Remittances equally exhibit an interesting trend in its determination. Most of the domestic variables included in the specification and assumed to drive remittances, including income (later subdivided into consumption and investment), the all share price index and imports, are all positively related to but only marginally significant in driving remittances. It seems the critical determinant of remittances is its previous value. However, such previous value affects the present value of remittances negatively implying that high values of transfers at one point leads to lower values in current periods. But equally the nominal exchange rate impacts on remittance values. The same explanation given to exports/imports equation could apply here, but in addition, this reflects the fact that Nigerians abroad are very sensitive to the value of the exchange rate and exchange rate differentials are important reasons why many Nigerians decide to leave in the first place. Often referred to in everyday parlance as "earning money in hard currency", the understanding is that even what is considered low income in other (particularly developed countries) can translate to substantial values in naira terms making the income earner rich in relative terms. This equally shows up in the impact of real exchange rate appreciation significantly leads to more remittance inflows with probability level of less than 1 per cent. It would definitely have been informative to evaluate the impact of stock of emigrants, but time series data on this could not be obtained. On the whole though, the implication is that domestic income, consumption and imports are positively related to remittances but are not the primary drivers of remittances. The flows just keep coming despite trends in these variables.

D.   Money and Prices

	CPS	YN	PLR	INF	CGA	NFA	FDA	TDL	ECM	R2	DW
CPS	Lag 1 0.357230 (2.82) Lag 2 0.258049 (2.31)	Lag 2 0.907790 (1.19)	-0.609914 (-3.17)	Lag 1 0.028274 (1.31)					-1.02E-05	0.32	2.02
CG			-0.806088 (-1.21)		Lag 1 -0.324852 (-3.01)	-0.762704 (-3.36) Lag 4 -0.434814 (-1.90)	Lag 3 -0.931498 (-2.38) Lag 4 0.927884 (2.38)	Lag 3 2.272017 (3.92) Lag 4 0.808064 (1.46)	-8.58E-06 (-2.42)	0.45	2.14

	YN	NOS	TBR	REM	CPS	NER	Y	PO	INF	GEXP	ECM	R2	DW
ASPI	Lag 1 1.043790 (1.28)	Lag 2 1.553487 (1.43)	-0.086415 (-1.14)	0.173315 (2.06) Lag 1 0.130422 (1.68) Lag 4 0.076146 (1.09)	Lag 3 0.242951 (1.85)	Lag 2 -0.202828 (-2.37)					-8.48E-05 (-3.77)	0.31	2.60
INF						Lag 4 1.247103 (3.05)	Lag 3 10.15897 (1.38)	Lag 4 0.857570 (1.63)			-0.007321 (-1.75)	0.22	1.93
NER							-2.794393 (-1.28)	-0.418296 (-2.93)	0.032697 (1.05)	0.367906 (1.69)	-0.001296 (-1.61)	0.23	1.93

Reported values are the coefficients while the calculated t-statistics are in brackets.

The money and prices block consists of five equations – credit to the private sector, credit to government, all share price index, inflation and the nominal exchange rate. There are 16 other (exogenous) variables in the block bringing total number of variables in the block to 21. Estimation results for the block are presented in table 4. Credit to the private sector is principally driven by its own lag (significant up to two quarters) and the prime lending rate. Income and inflation rates showed relatively weak coefficients even though they are both positive. Again, this underscores the weak relationship between formal credit to the private sector and overall output and financial variables. A constant reference to the weak structure of linkages between the financial and real sectors has been the growth of the banking industry and the declaration of huge profits in the midst of comatose real sector. Credit to government on the other hand is determined by the net foreign assets of

government, which expectedly leads to lower recourse to the domestic banking sector, the size of fiscal deficits of government and total deposit liabilities of the banking sector. Again, the impacts of most of the variables come with substantial lags (often between 3 and 4 quarters). The impact of total deposit liabilities generally reflects the size of government credit absorption, which naturally weighs heavily on bank deposit liabilities and in part signals crowding out of private sector credit. But equally, it reflects the fact that the government is more liable to the stronger (more deposit cumulating) banks than the weaker ones.

Interestingly, remittances impact heavily on the all-share price index. This effect is significant even when the stock market is modelled using stock market capitalisation. It is important to note here that substantial flows into the country apparently contributed to the surge in all share price index between 2003 and 2008. This partially implies that while remittances could not be shown to be very important in determining investment in the real sector of the economy, it definitely is important in determining investment in the capital market. Two other monetary variables show up strong in determining all share price index – the nominal exchange rate and credit to the private sector. The first partially reflects external influence (of remittances and possibly other foreign flows) while the second though relatively less significant (at 7 per cent) reflects a growing trend of increasing use of margin facilities for purchase of stocks, a phenomenon that may partially account for the stock market crash. Most other variables, not the least number of listed securities, domestic income and lending rates were all rightly signed, but far less significant in the estimated coefficients. The latter was particularly brought into the equation to try to capture the potential trade-off between investment in money market instruments and capital market opportunities. While the results indicate existence of some trade off, it could not be confirmed as being significant.

It is often argued in the literature that inflation is a monetary phenomenon. The results from the inflation equation seem to confirm that the most significant driver of domestic inflation is nominal exchange rate and not necessarily domestic production. Most probably though, it is possible that disaggregating domestic production could have raised the impact of one aspect, for instance the non-oil non-tradable sector, but we are not able to do so immediately. The results seem to indicate high pass-through of the exchange rate into domestic price determination. Given large depreciations over the last decade and a half combined with high import dependence, this might not be difficult to understand. Oil price is marginally significant (with probability of about 11 percent). Surprisingly, such variables as government expenditure, interest rates, money supply and remittances did not have impact on domestic inflation. The exchange rate, on the other hand, is critically affected by oil prices. This implies that the influence of oil prices on domestic prices is mainly through the exchange rate in the course of monetisation of oil proceeds in the Federation account. Feedback impact of inflation rate on the exchange rate could not be confirmed, reflecting high consistency in the model estimates. Government expenditure on the other hand shows up a lot more significant in determining exchange rate (at 9 per cent) than it was in the inflation model, again apparently confirming initial impact on the exchange rate through monetisation and thereafter into domestic prices.

Other factors incorporated into the exchange rate model, including domestic output and remittances were not significant.

VII.   Remittances and the Nigerian Economy: Relationships and Limitations

It is always difficult to come to strong conclusions about the behaviour of specific macroeconomic relationships on the basis of one study. However, we at least have specific trends and messages from the study that would be useful to serialise and which could point to areas for further investigation.

First, the link between remittances and performance of the real sector in Nigeria is still very weak. There is no paucity of studies indicating that remittances offer substantial buffer to the micro household in consumption, savings and investment (particularly micro investments) in many developing countries – including Nigeria (Osili, 2001; Chukwuone et al, 2007; Ratha 2007, among others). What this amounts to in terms of input into productive activities at the macro level is questionable. For a country like Nigeria with documented evidence of Dutch Disease and poor performance of the real sector, this is even more the case. While remittances have been growing, the real sector has not been performing creditably. With an enclave oil sector, extremely infrastructure-constrained manufacturing sector, and low-technology driven agricultural sector, investments in real sector activities from remittance proceeds are relatively not strong enough to drive developments in the real sector. However, the services sector comparatively benefit more from remittances though taken alongside other major drivers like government expenditure, its impact is relatively weaker. But at least, there is evidence that remittance flows into and overall impact on the services sector is relatively more than in agriculture and manufacturing.

Brought closer to private consumption, the results largely reflect those of surveys, but with impacts diluted by a large population of non-remittance recipients included in the macroeconomic activities under consideration. In gross consumption, which includes consumption of domestically produced goods, again, overall impact of remittances is positive but marginally significant at 10 percent. In contrast, remittances have no impact on private real investment, but significantly important in – in fact, one of the few critical determinants of –imports. Ostensibly, remittances have tended to favour imports over time. This is understandable given that imports of consumer goods have ranged between 45 and 48 per cent between 2005 and 2007 and have been higher in some years prior to those. Indeed, it is most probable that should imports consumer goods be separated from the rest of imports, this impact might be much higher. This takes the discussion back to the point raised in Grabel (1998) following Kapur (2004) on the nature of remittance induced consumption. Given Nigeria's weak productive base and the structure of consumption basket of the middle class, which receives the highest proportion of remittances, this channel of leakage might well be partly responsible for the overall low impact of remittances on domestic production. A vicious cycle is then established where high imports leakages (on consumer goods) lead to low domestic value addition from remittance receipts and thereby reinforce the dependence of remittance recipients on imported products. Breaking this cycle is not usually very easy and, so far, there are little indications the government has even seen this as a serious dilemma or presently has any policy aimed at possibly tackling this.

Turning attention to the domestic financial and price variables, we see yet another significant relationship. Remittances impact the all share price index significantly. As noted earlier, significant proportion of recent growth in the Nigeria stock market arose from flows from outside the economy. Much of this flows were by Nigerians living outside who for sundry reasons, including nationalistic and hedging purposes (Agrawaal and Horowitz's, 2002 *altruism and insurance concepts*), sent money to their relatives to invest on their behalf. The listing of many bank shares and the public offers, following the consolidation mandate of the Central Bank of Nigeria definitely gave rise to a flurry of flows as agents worked to maximise both holdings and returns from the stock market. But even prior to then, it is common knowledge that since investments in most productive activities would imply regular oversight involving the kind of time and resources not available to most emigrants, they often prefer investments in housing and the capital market. Interestingly though, it could not be confirmed that remittances lead to changes in either the exchange rate or domestic prices. This makes remittances potentially useful as a macroeconomic management tool. Encouraging remittances do not lead to price instability possibly on account of the nature of the flows or the nature of uses to which it is put. Whatever the case though, it signals less harmful effects than some other flows. Compared in particular to the more volatile foreign direct and portfolio flows, this makes remittances more desirable.

Informal remittance services provide an interesting perspective that could further aggravate the leakages in the macroeconomy. While activities of informal remittance service providers are difficult to measure, it is estimated to possibly transact as high as between 30 and 45 per cent of total remittance flows into the economy (Agu 2009). Such remittances are not only sent as cash through travelling individuals but also as valuables such as jewelries, electronics, cars, clothing, among others. Besides travelling acquaintances, there are also private merchants who sometimes charge money to do such business. The interesting aspect of such merchants is that most of them are importers. A classical case is that of a clothing/jewelry shop that simply receives money either from outside or within the country on behalf of relatives and puts a call across to his trading partner, also a Nigerian, who pays the next minute. The trading partner uses the money to buy goods for him which he sells. In effect, all such transfers are used to purchase goods outside the country and sold within. Much of these transactions do not enter the formal data, but significantly impact the leakages and define the sectors into which remittance receipts are put.

VIII.   Conclusion and Recommendations

This study sets out to evaluate the relationship between remittance flows and the rest of the economy. To do so, it specified and estimated a four-sector medium-scale macro model with 49 variables comprising of 18 endogenous variables, 31 exogenous variables and 14 identities. It found very weak link between remittances and the real sector as well as components of aggregate demand with the exception of private consumption for which impact is marginally significant. Estimates indicated significant leakages for remittance proceeds through imports, possibly accounting for the weak relationship

between remittances and the rest of the domestic economy. This also implies that relative spill-over effects of remittances on domestic output and employment might remain weak if not redirected using specific policies. There are indications that non-subsistent remittances are channelled into the stock market, further entrenching the financial supermarket tendencies in the Nigerian economy. Interestingly, such relationships do not seem to impact prices. In turn, however, it could not be confirmed that any of these macroeconomic variables drive remittances.

A survey on the remittance industry (Agu 2009) indicated that the remittance industry is oligopolistic, with global money transfer operators (MTOs) – Western Union, Moneygram and Cash for Africa among others – as key players. Banks feature in the industry, but mainly as agents to the global money transfer firms. Most other channels of transfers (including account-to-account transfers) are operated with foreign banks and can be quite costly for small transfers, which consist the bulk of remittances. Most banks equally operate under exclusivity agreements with the MTOs, further strengthening the oligopostic structure of the industry and increasing difficulties associated with remittance transfers. Fees can be as high as 20 per cent of the value of the funds transferred and almost exclusively determined by the MTOs. So there is room for access improvement and cost reduction in the remittance industry. Definitely, this could come through licensing of bureau de change and inducement of independent service provision by banks, among other measures.

Much beyond this, it is not known that there is any incentive towards more productive use of remittance proceeds. The general idea is that remittances are purely private flows (Osili, 2001 and Orozco and Millis, 2008)– but so are foreign direct investment and foreign portfolio flows. Yet, while a number of incentives are lined up for FDI and FPI, there is none for remittances, which is not only more stable, but also emanating from Nigerians and, therefore, have significant potentials for higher developmental impact. The challenge facing improved impact of remittances on economic growth is not only related to increase in flows, but to effective utilisation of the proceeds. While it is not debatable that consumption uses are critical for many families at the lower rungs of the income ladder, there is the danger that Nigeria (and many other developing countries) waste the opportunity to harness what is potentially a great source of development capital. There is definitely a case for improved channeling of the use to which remittance funds are put. As such, leaving entire remittance proceeds to be put into present consumption is ostensibly sub optimal. Here, the government can provide matching grants for small and medium scale investments in the real sector. It is clear that the Small and Medium Enterprise Equity Investment Scheme of the Central Bank has been largely underutilised for many years. This is a potential source of funds for such matching grants for investments in the real sector using remittance proceeds. Glytsos (2002) and Adams (2006) confirm that physical capital investments increase (or at least ought to increase) with remittances. Nigeria is no different.

It was also found in Agu (2009) survey that the link between remittance services and other banking services is near zero. Many banks simply provide a desk where recipients come to pick money. But clearly, they can market other services to these recipients. There are

potentials for remittance-related specific instruments that ought to and can be packaged for remittance patrons. For example, Kimani (2007) notes that in response to Obasanjo's Nigerians in Diaspora Organisation (NIDO)[4], UBA has designed a "non-resident Nigerian" banking service offering such products as local account maintenance, loan facilities for real estate development, asset management products, and private equity facilities. However, it is not evident that at the end of President Obasanjo's tenure, either NIDO or such banking services have received significant impetus from the government. Nor are there evidence that such programmes are being undertaken by other banks with support from the government. Remittance transfers need not be treated as one-off transactions on every occasion, which is the case now. The recipient can be made to maintain a regular account on a more regular basis with charges similar to other banking services of like nature. Working together with the Central Bank and Mortgage institutions, such remittance patrons can be given an array of options and incentives for investment including diaspora bonds, repatriable foreign exchange accounts, etc (Adenuga and Bala-Keffi, 2005).

Finally, while in the short run it might be difficult to curtail import-related leakages from remittance flows, it is possible to have a long term plan to do so. Here again, the key language should be that of incentives. Of course, it will make little sense to use incentives to encourage purchase of domestically produced goods with remittance proceeds if the productive base is not enhanced. As such, it becomes a matter of long term planning on improving broad infrastructure and access to finance for the domestic manufacturing sector. It is important to signal that there is absolutely nothing wrong with financial investments from remittances which seem to be the more pronounced channel. But a development option, which emphasises real sector productivity and retention of inflows in the domestic economy will definitely be more useful for employment purposes and ultimately enhance social stability while creating room for economic growth. For now, the idea of a financial supermarket is not exactly very appealing for a country at Nigeria's level of development and with the country's social and human development.

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[4] The erstwhile President of Nigeria, Chief Olusegun Obasanjo instituted a process for Nigerians abroad to contribute more closely to the development of the country. NIDO was the umbrella organisation that worked to bring this vision to reality.

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