

The Impact of Financial Sector Reforms on Non-Oil Export in Nigeria

Enoma Anthony and Isedu Mustafa*

Department of Economic, Ambrose Alli University, Ekpoma, Nigeria

E-mail: aienoma@yahoo.com

**Business School, University of Greenwich, London*

E-mail: isedumus@yahoo.com

KEYWORDS Non-Oil Exports. Financial Sector Reforms. Monetary Policy. Co-integration

ABSTRACT In this study, it was observed that the Nigerian economy has been a mono-product economy relying more on oil export and this has an adverse effect on non-oil export supply. Equally observed are the various financial sector reforms embarked upon by the Central Bank of Nigeria in boosting the productive capacity of the economy. Given these facts, the objective of this study is to empirically examine the impact of current financial sector reforms on non-oil export in Nigeria and estimated non-oil export supply model. The results obtained both in terms of the time series properties and the estimated error correction model was very impressive and satisfactory. It revealed among other things that the hypothesis of financial liberalisation has continued to yield positive results in developing countries. We, therefore, recommend that financial sector reforms should be improved upon and sustained by the monetary in order to fully optimise the gains so far achieved.

INTRODUCTION

Nigerian economy has been a mono-product economy. A closer examination of Central Bank of Nigeria (CBN) Annual report 2007 shows the dominance of oil as the major source of export earnings of the Nigerian economy. Oil accounts for over 90 percent of total export in Nigeria, while non-oil accounts for less than 10 percent of total export. A glance at the Nigerian economy from its export perspective shows that export is disaggregated into two goods: oil and non-oil exports. These are the major sources of her foreign exchange earnings.

The main drivers of growth in the non-oil sector are agriculture, manufacturing and services, essentially driven by Agriculture 7.06 percent in 2005 and 7.17 percent in 2006; Manufacturing 9.61 percent in 2005 and 9.71 in 2006; Telecommunication 29.61 in 2005 and 31.98 in 2006; Banking and Finance 2.75 percent in 2005 and 3.13 percent in 2006 and Wholesale and Retail Trade 13.51 percent in 2005 and 13.73 percent in 2006. Non-oil exports grew by 24 percent in 2006 (Soludo 2007).

The choice of this paper was informed by our deep concern about the risk of overdependence on the oil sector and low contribution of other sectors to the growth of the economy. Empirical studies on financial sector reforms on non-oil sector has barely been researched. Though, a number of empirical studies have been analysed

on trading relations in the non-oil sector (Odularu 2008; Okoh 2004; Usman 2008; Opara 2010). There is a growing need for the information on the impact of current financial sector reforms on non-oil export in Nigeria. Therefore, this study wants to cover this knowledge gap by assessing the impact of monetary policy on non-oil export.

In spite of the growth of export, the poor performance of the Nigerian economy is characterized by low output growth, high unemployment rate and rising inflation especially in recent years. Since 1970s, the Nigerian economy has become more reliant on oil earnings, with negative impact on non-oil sector of the economy, resulting in the sector's declining contribution to GDP. Sanusi (2003) posits that the competitiveness of Nigeria's non-oil sector had been consistently eroded over the last three decades, as evidenced in the declining non-oil export, a low industrial capacity utilization rate and consistent loss of market share in non-oil export.

Obadan (2000) reports that the poor performance of non-oil exports has remained a cause for serious concern, various production/supply continue to bedevil both the agricultural and manufacturing sectors. Besides, there are problems created by conflicting macroeconomic policies such as massive depreciation of currency (naira) and the huge cost of borrowing in the money market. Despite these problems, it is hardly surprising that the package of export in-

centives implemented over the past 10 years have not worked and the necessary infrastructure for non-oil export are absent.

The need to correct this structural imbalance and put the economy back on the path of sustaining growth compelled the monetary authority to organize the 8th Monetary Policy Forum, with the theme "Developing the Non-Oil Sector in Nigeria" (2003).

Aderibigbe (1977) notes that the process of financial sector reform is the movement from an initial situation of controlled interest rate, poorly developed money and securities markets and under-developed banking system towards a situation of flexible interest rates, an expanded role for market forces in resource allocation, increased autonomy for commercial banks and deepening of money and securities market. There are close linkages between financial sector reforms and the conduct of monetary policy. The importance of these linkages becomes more obvious when a country embarks on the transition process from direct control of interest rates and credit to the use of indirect instruments of monetary management.

Thus, a major objective of financial sector reforms is to develop an efficient framework for monetary management. This encompasses efforts to strengthen operational capacities of the banking system, foster efficiency in money and securities markets, overhaul the payment system and ensure greater autonomy to the central bank in conducting macroeconomic stabilization policies.

According to Mbutor (2007), the impetus for the reforms follows from the understanding that a sound financial system will render monetary policy more effective and also support growth in the real sector of the economy. This belief that the existence of sound banks will help to effectuate monetary policy therefore, must be a consequence of the conviction that there exists a definite link between monetary policy action and the lending behaviour of the deposit money banks.

In the light of above discussion, this paper examines the impact of current financial sector reforms on non-oil export supply in Nigeria. The remaining sections are arranged as follows: Section two presents the literature review, while the third section focuses on the theoretical framework and model specification. Section four includes data analysis and interpretation of results, and the final section presents the summary and conclusion.

METHODOLOGY

We utilise in this study data obtained from Central Bank of Nigeria various issues. We study the period 1986 to 2009 in this study; the essence is to capture the period of financial sector reforms and to have a considerable degree of freedom.

Theoretical Framework and Model Specification

The theoretical bases for this paper is derived from the classical work of Mckinnon (1973) and Shaw (1973) who presented the first systematic attempt at taking into account some of the specific characteristics that impair the performance of financial system in developing countries. They argued that the financial sector in most developing economies is repressed by series of government interventions that have the effect of keeping the interest rate low or negative. The repression takes different forms, such as ceiling of interest rate, imposition of trade restriction and barriers to free movement of goods and services across countries as well as imposition of larger reserves and liquidity requirements. In addition to these, there are restrictions that constraint banks to engage in certain types of lending and prohibit them from acquiring some financial assets. According to Mckinnon and Shaw hypotheses, the effect of this repression would inevitably be adverse on investment and growth of the economy.

Central to the argument of Mckinnon and Shaw is the idea of financial sector liberalization. Orok- Duke (2009) posited that financial liberation involves the elimination of credit controls, deregulation of interest rate, development of capital markets, proper regulation and supervision and liberation of international capital flow. In the case of Nigeria, the financial sector was under serious repression which led to the Central Bank of Nigeria (CBN) to embark on financial sector liberation between 1986 and 2004 through the Structural Adjustment Programme (SAP). The idea was to allow the market to determine the rate of interest and increase the competitiveness of banks in the country. The effect of the liberalization was to enable the financial sector facilitate among other things, the development of non-oil export in the country. What is not yet certain in this case is whether this sector

has so far performed adequately in developing the non-oil export in the country, this form the subject matter of this study.

Model Specification

The specification of this study takes a lead in the models developed by Iyoha (2001), Enoma (2004) Usman and Salami (2008), and Chukuigwe and Abili (2008). Specifically, Chukuigwe and Abili (2008) investigated the impact of monetary and fiscal sector variables on non – oil performance in Nigeria. In Chukuigwe and Abili's (2008) study, model interest rate, exchange rate and budget deficit, were regressed on non – oil export. Their complete specification is given as

$$N = b_0 + b_1IR + b_2ER_t + b_3BD_t + U$$

Where:

N = non – oil export

IR = interest rate

Ex = exchange rate and BD is Budget Deficits.

Since fiscal policy is not our concern in this study, we ignore the budget deficit variable and replace it with broad money supply (M_2). Thus, we present a macroeconomic model of non-oil supply model as follows: function in this case is specified as follows:

$$XNoil = a_0 + a_1PXNoil + a_{2Ln}M_{st} + a_{3Ln}EXR + a_{4Ln}INTR + UXNoil$$

Where:

$XNoil$ = non – oil export

$PNPoil$ = price of non – oil

M_{st} = money supply

EXR = exchange rate

$INTR$ = interest rate

a_0 is the intercept of constant term

Ln is the natural log

a_1 to a_4 are the coefficient of the independent variables.

$UXNoil$ is the error term that is expected to be zero.

Assumption of the Model

Based on economic theory and empirical literature, the expected sign or presumptive sign of the parameter estimates are: $a_1 > 0$, that is, the price of non – oil is expected to have a positive sign indicating that as the price of non – oil increases, non – oil supply will increase, this assumption is evidence in the works of Iyoha (2001) and Enoma (2004).

$a_2 > 0$ is the money supply, the relationship between money supply and non- oil export supply is positive. An increase in money supply leads to fall in interest rate, as some non – oil firms will have access to credit facilities to finance their businesses which will lead to increase in export supply for detail (see Chukuigwe and Abili 2008).

$a_3 < 0$, that is, the relationship between exchange rate and non – oil export supply is negative. Reason the value of domestic currency appreciates when exchange rate rises, implies that non-oil export will be more expensive to the foreigner and consequently the demand will fall. In another view Chukuigwe, and Abili (2008) assert that high foreign exchange will lead to high cost of raw materials, spare parts, etc. which will contract the export supply in the economy.

$a_4 < 0$, which implies that interest rate is negatively related to non-oil export supply in the economy. A fall in interest rate will encourage firms in non- oil export to borrow more money thereby increasing the output produced and supplied. This again is evident in the works of Iyoha (2001), Enoma (2004), and Chukuigwe and Abili (2008).

Estimation Technique

The estimation techniques of investigating the model are in four stages:

First, Time series is stationary when the mean $E(x_t)$ of time series (x_t) does not depend on t , and the variance, $E[x_t - E(x_t)]^2$ does not vary systematically with time. A stationary process has the property that the mean, variance and autocorrelation structure do not change over time (for details see Engineering Statistics Handbook 2009). Stationary data depends on whether it has a unit root. Non- stationary data has stochastic or random trends and as such they are non-deterministic.

Therefore, when unit root is present, it implies that the time series data are non- stationary. The standard approach to investigate the stationary of time series data is the unit root test. The most commonly used is the Augmented Dickey – Fuller (ADF) test proposed by Dickey and Fuller (1981). Basically, this step seeks to establish whether a particular time series data is stationary or non-stationary. If it is non – stationary, then it has to be differenced either once or twice. To carry out this test, we test the null hypothesis of a difference stationary against the alternative

hypothesis of a trend stationary (Gbadebo and Oladapo 2008). Thus,

$$H_0: Y_k \sim 1 \quad (1)$$

$$H_0: Y_k \sim 1 \quad (0)$$

Second, the variables are tested for co integration, to find their convergence status. This is because variables that fail to converge in the long run may be hazardous to policy making. The theory of co-integration pioneered by Engle and Granger (1987) addresses this issue of integrating short-run dynamics with long-run equilibrium.

Thirdly, we estimate the model to evaluate the performance of the monetary policy on non-oil export. The estimation is carried out by using the ordinary least squares (OLS) technique, which is regarded as the best linear unbiased estimator (BLUE) that can be used in evaluating models of this nature (Gujarati 2002). The estimation, however, presupposes that the variables possess desirable empirical properties of stationarity and convergence (co-integration). However, if these desirable properties are not achieved we use the Error Correction specification to estimate the equation before using the ordinary least square technique.

EMPIRICAL RESULTS AND INTERPRETATION

The time series properties of the variable equations and the estimated equations are examined.

Time Series Properties of the Variables

The time series properties of the variables are evaluated.

Stationarity Test: The results are presented in Table 1

Table 1: Results of test for stationarity of variables

Variables	ADF	Order of integration
$\Delta XNOIL$	-3.79349	1 (1)
$\Delta XPOIL$	-3.99539	1 (1)
ΔM_{st}	-4.55524	1 (1)
ΔEXR	-3.7958	1 (1)
$\Delta INTR$	-3.7972	1 (1)

Note: Δ = indicating first difference

ADF critical value 95 percent = -3.6331 including constant and trend.

The results in Table 1 shows that the variables are stationary at the first difference and are inte-

grated of order one. Thus, based on Engle and Granger (1987), the error – correction model using first differences of the variables are estimated. We did not present the variable stationary at level because the variables were not stationary at level as the critical value of 5 per cent was greater than the calculated value.

Co-integration Test: Table 2 presents the co integration test.

Table 2: Co-integration test result (ADF)

Dependent variable	Explanatory variable	Unit root coefficient	t-statistics
XNOIL	XNPOIL	0.08	2.26*
	M_{st}	0.09	3.19**
	EXR	0.07	2.19*
	INTR	0.06	2.01*

Note: * significant at 5 per cent

** significant at 1 per cent level.

Having established that the variables are integrated of order one, we proceed to test for co integration. Co-integration analysis helps to test for the existence of long run relationship among or between variables. Individual series might not be stationary, but a linear combination of these series could be stationary. This means that the variables are co-integrated. From the results in Table 2, the unit root coefficients are all significant at 5 per cent or 1 per cent level as indicated by the t-statistics. This implies that all the explanatory variables in the model co integrate with the dependent variables. In other words, they possess the characteristics that would cause them to converge in the long-run.

Error Correction Representative or Estimation

Since it was found that the time-series variables were stationary only after first or second differencing, applying the difference variable for regression would imply loss of valuable information about the long run relationship among the variables. In order to correct for such loss of information, the error correction estimation is used so as to integrate short-run dynamics with long run relationship (for details see Maddala 1992) and, Iyoha and Ekanem 2001). The error correction estimation yields the following result.

An examination of Table 3 shows that the short-run result overall goodness of fit is satisfactory at the level of R-squared (R^2) of 77 per cent and adjusted ($\bar{R}^2$) of 76 per cent. The F-sta-

tistic was significant at 1 per cent level and the Durbin Watson (DW) was 2.3 showing an absence of autocorrelation in the series. The individual variable *t*-statistic shows that oil price and money supply are significant at 1 per cent level of significance, while interest rate and exchange rate are significant at 10 per cent level of significance. All the presumption signs of the variables were correctly signed.

Table 3: Error correction representation

Dependent variable	Explanatory variable co-efficient	<i>t</i> – stat	Diagnostic
dXNoil	d PXNoil 1.7 ^x	–3703	R
	d M _{st} 6.1 ^x	.0895	R ² = 76
	d EXR – .39 ^{xxx}	–.1444	F- Stat. = 14.2
	d Intr – .39 ^{xxx}	–.6234	DW = 2.3
	Emc t-1 – .26 ^{xxx}	– 1.000 ^x	DW = 2.3
	D constant – .3000		

Note: x = significant at 1 per cent
xx = significant at 10 per cent

The short run impact of error correction representation is significant at 1 per cent and the coefficient of adjustment is 100 per cent as indicated by the coefficient of the ECM. The ECM provides useful information about the speed of adjustment in response to deviation from long – run equilibrium which can be used for policy analysis. All the repressors, except the error correction term are expressed in the first difference form. Error correction is nothing more than one year lag residual obtained from the co-integration equation. Having estimated the short run dynamics, we now present below the ordinary least square estimation showing the long run relationship of the variable equation. This is presented below thus.

Long – Run Estimation of Variable Equation

It is presented below the ordinary least square estimation. Thus:

From Table 4, the estimated equation was largely satisfactory both in terms of the signs and statistical significance of the explanatory variables. For example, we note that the interest rate sign and exchange rate sign are negative and the money supply sign is positive. These signs could be explain by the fact that financial sector reform within the specified period is able to facilitate non oil export supply in the economy. The non- oil price has the expected sign and highly

Table 4: Long run model estimation

Dependent variable	Explanatory variable co-efficient	<i>t</i> – stat	Diagnostic
XNoil	PXNoil 2.3 ^x	1.7	R ² = 95
	M _{st} .15 ^x	7.1	R ² = .94
	EXR –1.0 ^{xx}	0.39	F-stat = 87.3
	INTR 7.6 ^{xx}	0.2	
	Const –1.3	– 0.4	DW = 2.3

Note: x = significant at 1 per cent.
xx = significant at 5 per cent

significant at one per cent level of significance. Money supply was equally significant at 1 per cent, while interest rate and exchange rate were significant at 5 per cent.

The diagnostic tests obtained from our regression are quite impressive. For example the R-square are 95 and 94 per cent in the model. The F-statistics is significant at 1 per cent, the Durbin– Watson statistics shows an absence of auto correlation in all the model.

CONCLUSION

The present study revealed among other things that the Mckinnon and Shaw hypothesis of financial liberalisation has continued to yield positive results in developing countries. In the case of Nigeria, the empirical results have given support to financial sector liberalisation.

In Nigeria, the financial sector variables have yielded positive results both in terms of presumptive signs and level of significance.

This result is supported by early study of Chukuigwe and Abili (2008). There exists long run relationship between non-oil export supply and financial sector parameters namely, money supply, exchange rate and interest rate. The short – run dynamic of the estimated equation has given an adjustment of 100 per cent in the coefficient of the error correction specification. This result corroborates with the result of Iyoha (2001) and Enoma (2004).

In the light of these results, the financial sector reforms embarked on by the Central Bank of Nigeria should be sustained and strengthened to provide the needed boost on the development of the production sector of the economy.

REFERENCES

- Aderibigbe JO 1997. Monetary policy and financial sector reform. *Bullion Publication of the Central Bank of Nigeria*, 21(4): 69-81.

- Central Bank of Nigeria 2007. *The External Sector Annual Report and Statement of Accounts. For the Year Ended 31st December*. Publication of the Central Bank of Nigeria, pp. 99 – 117.
- Chukuigwe EC, Abili I D 2008. An Econometric Analysis of the Impact of Monetary and Fiscal Policies on Non-Oil Exports in Nigeria. From <www.medwelljournals.com/fulltext/ibm/2008/85-90> (Retrieved 16 October, 2009).
- Dickey DA, Fuller WA 1981. Likelihood ratios for autoregressive time series. *Econometrica*, 49(4): 1057-1072 (1).
- Engineering Statistics Handbook 2009. Stationarity . From <http://itl.nist.gov/div898/handbook/pmc/section4/pmc442.htm> (Retrieved 16 October, 2009).
- Engle RF, Granger CW 1987. Co-integration and error-correction representation, estimation and testing. *Econometrica, Economic Society*, 55(2): 251-276.
- Enoma AI 2004. *The Relative Potency of Monetary and Fiscal Policies for Counter Cyclical Output Stabilization in Nigeria: Some Simulation Results*. PhD Thesis, Unpublished. Department of Economics and Statistics, University of Benin, Nigeria.
- Gbadebo O O, Oladapo A O 2008. Modelling the Impact of Financial Innovation on the Demand for Money in Nigeria. *African Journal of Business Management*, Vol.3.No.2. From <www.academicjournals.org/AJBM/.../Odularu%20and%20Okunrinboye> (Retrieved 16 October, 2009).
- Gujarati D N 2002. *Basic Econometrics*. London: McGraw Hill International.
- Iyoha MA, Ekannem OT 2001. *Introduction to Econometrics*. Benin City: March Publishers
- Iyoha MA 2001. Policy simulation with a macro-econometric model of the Nigerian economy. *The Nigerian Economic Financial Review*, 6(1): 29-56.
- Maddala GS 1992. *Introduction to Econometrics*. 2nd Edition. New York: Macmillan Publishing Company.
- Mbutor OM 2007. Lending channel of monetary policy transmission in Nigeria: Vector Autoregressive (VAR) Verification. *Central Bank of Nigeria Economic and Financial Review*, 45(1): 57-75.
- Obadan MI 2000. External sector performance and the external sector policy measures in the year 2000 Federal Budget. *Bullion Publication of the Central Bank of Nigeria*, 24(2): 32- 69.
- Odularu GK 2008. Nigeria – U.S Trade Relations in the Non – Oil Sector. From <www.dissertation.com/book.php?method=ISBN&book> (Retrieved 15 October, 2009).
- Okoh BC 2004. Global Integration and the Growth of Nigeria's Non – Oil Export. A paper presented at the African Conference Oxford, UK. From <www.csae.ox.ac.uk/conferences/2004.../> (Retrieved 15 October, 2009).
- Opara BC 2010. Nigeria firms' non- oil export involvement: An economic transformation paradigm. *European Journal of Scientific Research*, 40(4): 547-556.
- Oresotu MO 1993. Implementation of indirect monetary control in Nigeria: Problems and prospect. *Central Bank of Nigeria Economic and Financial Review*, 31(3).
- Orok-Duke OE, Edu BE, Ekot GA 2009. Critical Review of Financial Sector Reforms and Financial Liberation in Developing countries (A Practical Discussion in Nigeria Context). From <http://ssrn.com/abstract=1483477> (Retrieved 15 October, 2009).
- Sanusi JO 2002. The evolution of monetary management in Nigeria and its impact on economic development. *Bullion Publication of the Central Bank of Nigeria*, 26(1): 1-11.
- Sanusi, JO 2003. Developing the Non – Oil Sector in Nigeria. Central Bank of Nigeria, 8th Monetary Policy Forum August 7. From <www.cenbank.org/out/Speeches/2003/Govadd-7Aug> (Retrieved 15 October, 2009).
- Soludo CC 2007. Macroeconomic, monetary and financial sector developments on financial and payment system reforms in the country. *Economic and Financial Review*, 30(1): 32-69.
- Usman OA, Salami AO 2008. The Contribution of Nigerian Export – Import (NEXIM) Bank Towards Export (Non – Oil) Growth in Nigeria (1990-2005). *International Business Management* 2(3). From <www.medwelljournals.com/fulltext/ibm/2008/85-90> (Retrieved 15 October, 2009).