

# Financial Sector Reforms and Industrial Development in Nigeria

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## Abstract

This research work aims at filling this gap with particular emphasis on Nigeria, by looking at the role of financial sector reforms in enhancing industrial development. It utilizes aggregate annual time series data from 1980-2010. Primary data were collected from CBN statistical bulletin, Economic and financial review, the International Financial Statistics, the World Bank Development index (2003 - 2010). Econometric tools used were unit root test, co-integration test, and error correction model. The empirical results revealed that financial reforms encourage the industrial growth and recommended that policies to be pursued by the government should take cognizance of inflation rate if the effect of financial reform programmes will be desirable. Also industrial development will become relevant only after some policy reversals. For this reason, it is necessary for the federal government to disburse funds with strict monitoring in order to encourage the low levels of development in the industrial sector in the economy.

**Keywords:** Financial sector, Reforms, Industrial development, Nigeria

## Introduction

The empirical study on financial reforms showed that Nigeria's financial system is expanding both in size and complexities. Also, the Nigerian financial system is developing very fast and is generally looked upon to play significant role(s) in Nigeria's economic transformation process. It's aimed at addressing issues such as governance, risk management and operational inefficiencies. Specifically, financial reforms are primarily driven by the need to achieve the objective of competition and consolidation in the financial architecture like other emerging economies Ebong (2006). Financial reforms is also aimed at responding to the challenges posed by some factors and developments such as deregulation, globalization and technological innovations, or acted proactively to strengthen the financial system and prevent systemic problems in the reforms (Imala 2005). It is targeted to reduce the cost of accumulating capital and addresses the problem of financing investment by effectively reducing the cost of borrowing and making it easier for firms and industries to raise capital from the equity market, reduce transaction cost by providing a stable and widely acceptable medium of exchange, encourage savings in financial assets by supplying financial instruments with attractive yields and different maturities, improve efficiency of resource utilization (Chinedu and Muoghalu (2004)).

The Nigerian financial system was repressed, as evidenced by ceilings on interest rates and credit expansion, selective credit policies, high reserve requirements, and restriction on entry into the banking industry. This situation inhibited the functioning of the financial system and specially, constrained its ability to mobilize savings and facilitate productive investment (Sylvanus I. & Abayomi A., 2001). Other sources of financial reforms fragility explored in the studies include a falling growth rate, deterioration in the balance of payments, high inflation, volatile exchange rates, surges in stock market activity and prices, credit booms, weakening performance of export sectors, and deterioration in the terms of trade. In addition, these studies highlighted non-quantifiable indicators of financial reforms fragility, such as deficient banking supervision, inadequate instruments of monetary control, overly generous deposit insurance, inadequacies in the operation of the legal system, overexposure in international financial markets, lack of adequate accounting standards and practices, insufficient financial disclosure, and perverse incentive structures. The Asian crisis has provoked a new wave of financial sector studies, which confirm that macroeconomic shocks to output, exports, prices and the terms of trade, asset price booms, and inappropriate monetary and exchange rate policies, all result in financial pressure and contribute to crises in financial systems that are inherently fragile (Obadan, 2004). The financial reforms crises have been attributed to two main factors, i.e. domestic policy failures and inadequate institutional capacity

are impediments to the growth of the industrial sector in Nigeria.

The problems created by these factors lead to various reform programmes in Nigeria, the introduction of Structural Adjustment Programme (SAP) in July 1986 was an effort to set the macroeconomic policy framework right. One of the components of SAP was the reform of the financial sector, aimed at increasing its efficiency amongst others, and enhanced its competitiveness and capacity to play a fundamental role of financial investment. But the introduction of the programme was on the heels of the rejection of the IMF loan package with its conditionality, the deregulation of interest rates, exchange rate and the liberalization of entry/exit into banking business, establishment of the Nigerian Deposit Insurance Corporation (NDIC), strengthening the regulatory and supervisory institutions, upward review of capital adequacy standards, capital market deregulation, Promulgation of the CBN Act No. 24 of 1991 and the Banks and Other Financial Institutions Act (BOFIA) No. 25 of 1991, Introduction of Prudential Guidelines in 1990, Introduction of Universal Banking, Establishment of More Discount Houses, Removal of Credit Ceilings and the Nigerian Bank Consolidation Programme of 2005. (Nnanna 2008)

### Objectives of the Study

The main objectives of the study are

1. To determine the impact of financial sector reforms on industrial development
2. To determine what kind of relationship exists between financial reforms and industrial development

### Research Questions

The research questions seek to find answers in order to aid policy formulation and economic analyses are;

- (1) What is the extent of the impact of financial sector reforms on industrial development?
- (2) What kind of relationship exists between financial reforms and industrial development?

### Hypothesis of the research questions

In an attempt to provide tentative and testable guide for this study the following hypothesis are formulated.

- (1). Ho: Financial sector reforms do not have any effect on industrial development in Nigeria.  
 Hi: Financial sector reform has effect on industrial development in Nigeria.
- (2). Ho: There is no long-run relationship between financial sector reforms and industrial Development in Nigeria.  
 Hi: There is long-run relationship between financial sector reforms and industrial Development in Nigeria.

### Theoretical Framework

The need for financial reforms could be traced to Mckinnon [1973] and Shaw [1973] argument that financial repression reduces the rate of growth and the real size of the financial sector. In order to properly estimate the impact of financial system relative to non-financial magnitude. Here, it posits that in all cases, this strategy has stopped or gravely retarded the developmental process. The Mckinnon- Shaw hypothesis shows that banks allocate credit not according to expected productivity of the investment projects, but according to transaction cost and risks of default. Here, quality of collateral, political pressure, name and covert benefit to loans officers also play major roles in the allocation of loans. The consequence of all these is the reduction in the average efficiency of investment as the loan rate ceiling is lowered because investment with lower returns now becomes profitable. This occurs when the interest rate is set too low, thus resulting in credit rationing. Such interest rate ceiling distort the industrialist ability to obtain all funds they want at low loan rates for capital intensive projects on the contrary, raising the interest rate ceiling towards is competitive free-market level increases both saving and investments. Given the foregoing, we employed a standard model of financial sector reforms in which economic growth is determined as the outcome between the interactions of financial sector and industrial development. The variables for the model include financial deepening, fiscal stabilities, real gross domestic product growth, real interest rate, financial openness, inflation rate.

### Model Specification

Based on the above analysis, econometric model developed to capture the relationships between financial reforms and industrial development is specified as follows;

$$INDG = f(FINAD, FISTA, RGDPG, INTR, OPEN, INFL) \dots \dots \dots 1$$

The linear expression is specified as follow;

$$INDG = a_0 + a_1FINAD + a_2FISTA + a_3RGDPG + a_4INTR + a_5OPEN + a_6INFL + Ut \dots \dots \dots 2$$

The presumptive a prior signs are

$$a_1 > 0, a_2 > / < 0, a_3 > 0, a_4 > 0, a_5 > 0, a_6 > / < 0$$

Where

FINAD	=	Financial deepening
FISTA	=	Fiscal stability
RGDPG	=	Real gross domestic product growth
RINTR	=	Real interest rate

OPEN	=	Financial openness
INFL	=	Inflation rate
Ut	=	Stochastic error term
INDG	=	Industrial growth.

The linearized version of equation 2 in a natural log form is given as

$$\ln INDG = a_0 + a_1 \ln FINAD + a_2 \ln FISTA + a_3 \ln RGDPG + a_4 \ln INTR + a_5 \ln OPEN + a_6 \ln INFL + U_i \dots 3$$

The error correction specification incorporating the long run equilibrium relationship and short run dynamics for the model is given as;

$$\Delta \ln INDG = d_0 + d_1 \Delta \ln FINAD + d_2 \Delta \ln FISTA + d_3 \Delta \ln RGDPG + d_4 \Delta \ln INTR + d_5 \Delta \ln OPEN + d_6 \Delta \ln INFL + \sum d_7 \Delta \ln INDG + d_9 U-1 + e_i \dots 4$$

Where

$U-1$  = lagged residual from the long run equation 4

$d_i = 1 \dots 6$  short run responses of industrial growth to the exogenous variables.

#### Method of data analysis

Time series data is employed in this study. This is in order to properly investigate and find out the effect of financial sector reforms on different policy and it's impacted on the Nigeria industrial sector. In order to present the findings most appropriately, both statistical and econometric approaches will be adopted. Evaluation of time series properties of the data by adopting Augmented Dickey Fuller (ADF) to determine the stationarity of the variables. Co-integration econometrics technique was employed for the estimation of due bias, and causality was tested to examine the direction of causality between the variables in the co-integrating equation. Justification for adopting the co-integration technique is that it has certain advantages over the traditional partial adjustment model i.e. it is central to econometric modeling of integrated variables, data consistency will be achieved given that the variables used in the study are integrated of the same order, An Error Correction Mechanism (ECM) which will enable us to link the long run and short run relationships involved (Oluranti, 1996). Further, the simplicity of this technique is an attraction to the study and the estimation process will be done using the micro fit 4.1 econometric software.

Result

#### The Unit Root

The unit root test performed considers the null hypothesis of a random walk with a drift and trend. Table 2 show the results of the stationary test using the Dickey Fuller and Augment Dickey Fuller test of unit root test. from the result it can be referred that the variables were virtually non-stationary at levels, since the reported observed t-statistics for most of the variables were smaller than the 5% critical t-value of -2.9499 for the unit root test process without trend and -3.5469 for the unit root test process with a linear trend. It was noticed that all the variables were of the I[1] series, that is, they were non-stationary because their specified critical t-values. With a closer insight into the values of the ADF test statistics result, hence there is the need to difference to obtain stationary.

Differencing the variable once shows that the variables are stationary of the I[0] series. This is because the computed t-statistics are greater than the critical values of -2.9528 for the unit root test without trend at the first difference. And the values of -3.5514 for the unit root with a trend at the first difference. The researcher discovers that all the variables were stationary at levels. An immediate conclusion draw from this is that any dynamic specification of the model in the levels of the series is mostly appropriate and cannot be plagued by the problem of spurious regression. Adams [1992].

Table 3 above show the presentation of result of the unit root test of variable at the second difference indicates that after differencing once, all the variables were stationary at all levels. In other words, they are of the I[0] series, since their Dickey Fuller and Augment Dickey Fuller statistics observed values are greater than their critical values.

#### Co-integration test

The satisfactory results obtained from the unit root and co-integration tests motivated the estimation of an over-parameterized model using three [3] lags or each variable in the equation. Redundant variable were eliminated using the variable redundancy test. The resultant parsimonious error-correction model estimated is presented in the table below. However, as a necessary but not sufficient condition for co-integration, each of variables must be integrated of the same order, where the order of integration must be greater than zero. Having examined and established the order of integration, we proceed to investigate the existence of any unique equilibrium relationship among the stationary variables of the same order of integration. The results are presented in table four below. This co-integration test was done adopting the assumption that allowed for the linear deterministic trend in data, no intercept or trend in co-integrating equation. Following the findings in table 3, that all of the variables are I(0) series, which means they are stationary, the researcher has to test for the possibility of co-integration among these variables. Adopting the Engel and Granger's two step method, we first estimate the long-run relation of inflation by ordinary least square method and then test for the stationarity of the residuals.

This permitted the researcher to test whether a postulated equality in the long-run relationship between industrial development and its determinants gives a stationary error.

Also, the Dickey Fuller and augmented Dickey Fuller statistics tests were employed to test for the co-integrated variables. The results of the co-integrated test are reported in table 4 below.

Table 4 presents the unit root test for the residuals both the DF test and ADF test showed that there are long-term equilibrium relationship between change in industrial development and its arguments, namely financial Deepening, fiscal stability, financial openness, inflation rate and interest rate.

The result obtained shows the existence of co-integration (long-run) relationship among the variables in the model on the basis of the DF and ADF test, an error correction model for the effect of the financial reform on industrial development was suggested, specified and estimated as expressed in the questions in chapter three. Therefore the result from the error correction model is reported in the 4 and 5 below.

### **The Error Correction Model**

Considering the error mechanism, the variables in the error correction model, presented in equation three were lagged equally at the second periods in order to ensure the dynamics of the model have not been constrained by a lag that is too short in length.

From table 5 above, the result shows that the regression has significant effect on all the variables in the model;

(1) Therefore, the levels of industrial development shows that the first lag was about 0.713 units of reductions in the present rates of industrial development, although the second lag shows related result, there clear indications that reduction effect was minimized to about 0.396 units less than half. Although these reductions are small, they go a long way to show that at the moment, all forms of financial reforms put in place by the government in order to foster industrial development have been unfruitful, while the attempts for industrial sector to help itself has been considerably very slow but there has been reasonable in the right direction to improve industrial output.

(2) Statistics shows that financial deepening which was represented in the model by FINAD ratio has a positive impact on industrial growth in the economy. This shows that developments in the financial sector have relatively had a shift impact on the rate of industrial development in the country.

(3) The budget deficit/GDP used by the researcher to represent fiscal stability in the model, a variable that measure the efficiency of fiscal policy in the economy over the period of observation, was found to have a positive relationship with industrial development in the economy. This implies that fiscal policies geared toward industrial development in Nigeria have added significant to present rate of development in the industrial sector. Basically, thus rate of development is slow and such policy need to be modified to meet present challenges.

(4) The financial openness variable reflects the fact that foreign donors, investors and business have a strong influence on the rate of industrial development in the economy. The positive nature of this variable indicates that foreign supports have encouraged industrial development in Nigeria.

(5) The high negative value indicated by the rates of inflation in the table shows that the persisting rate of hyper-inflation in the country has done much damage to the rate of industrial development in the economy.

(6) The rate of interest issued by the bank and other financial institution have not been friendly to industrial development because statistics state has a negative effect on the rate of industrial development in the country.

Therefore, it is necessary to compute for the error correction mechanism and simplify the model to make it more parsimonious and essay to interpret consequently, the results of the Schwarz Bayesian criterion Error Correction Mechanism can be represented as follows;

The results show that short-run changes in the regression have significant effect on all the rates of investment are about 0.396 of the discrepancy between the actual and long-run, or the equilibrium value of the levels of financial Deeping, fiscal stability, financial openness, inflation rate and interest rate variables are corrected each year.

From the error correction model mechanism in table 5, it can be deduced that;

(1) There was a significant positive relationship between the present values of industrial development and its one year lag value. This implies that in the industrial sector in Nigeria, previous years activities have a positive impact on the nature of development in the industrial sector. Although the outcome of the said relationship is low, it can be clearly noticed that the industrial sector contributes significantly towards its own development program.

(2) The impact of the financial deepening on the Nigeria economy was evaluated by the measure of the broad money supply (M2) as a ratio of GDP in the economy during the period observed. This variable has a positive relationship with industrial development. This indicates that a unit increase in financial deepening will invariably increase total value of industrial output in the domestic economy, thereby causing an increase in the present rate of industrial development. This positive impact which financial deepening have on current rate of industrial development can be explained by the various monetary mechanisms which the government had put in place to enhance the low rate of industrial output prevalent in the economy.

(3) The budget, gross domestic product ratio variable FISTA used by the researcher to capture the behavior

of fiscal stability in the model, equally representing public sector balance, gives an insight into the efficiency of fiscal policies in the period under observation. Therefore, it was observed that there are significant positive relationship between fiscal stability and the present rate of development in the industrial sector in Nigeria. Invariably policies put in place by the federal government over the year in order to stabilize the economy have significantly favorable to the slow but sensitive levels of development in the industrial sector of the economy.

(4) There was a highly significant relationship between the present values of financial openness and industrial development in the economy. This goes a long way to explain how foreign investors have played significant roles in injecting funds into the industrial sector of the country and such funds have contributed immensely to the development of the industrial sector in Nigeria.

(5) The persisting rate of inflation in Nigeria economy was found to have a serious negative impact on the rate of industrial development in the economy. This negative sign of the coefficient of the rate of inflation shows that continuous increase in the price of industrial inputs seriously curtails the rate of development in the industrial sector since most of their income are spent on expenses that have been over valued by inconsistencies in price variations which are in continuous increase in the economy.

(6) The present rates of interest issued by banks on credit to investors in the economy have a negative effect on industrial development in the country. Although this is not expected a priori, it goes a long way to reflect the that policies put in place by monetary authorities in order to manipulate the interest rate to discourage and control the fluid nature of cash. This has obviously impacted negatively on fluids to the industrial sector which has directly leads to hindrance in the development of local industries in the economy.

(7) It is necessary to note that the coefficient of the ECM captures the short run impact which is tied to the long run relationship between co-integrating variable through the feedback mechanism. The ECM coefficient had the expected negative sign and it was found out by the researcher that the model passed the test of statistical significance at the one percent level; this means that the effect of the error correction mechanism in the economy as shown by the ECM coefficient is quite fast. This implies that inflation reverts back to long-run elasticity's of the identified variables that determine and explained industrial development through the period under observation.

(8) The result of the summary statistics shows that the model has a good fit. The R-square value of 0.812 and the R-bar square value of 0.754 indicate that over 81 % systematic variation in industrial development can be explained by the model, leaving out a value much less than 18% to the error term.

(9) In support of the R-square value is the F-statistics value of  $(7.23) = (14.161)$ , which easily passed the test of statistics significance at 1% level of statistical significance. This is because the observed F-statistics value expressed earlier is much greater than the critical F-statistics value of  $F(0.01)(6.28) = 5.71$  indicating that all the slope coefficient are simultaneously significantly different from zero.

(10) The Durbin Watson (DW) statistic value of 2.2 shows that the model is free from the presence of the first order serial correlation. Overall, the model has a very good fit and can be used to draw serious conclusion on the industrial development situation in the Nigeria economy, taking into consideration the effect of financial reforms.

#### **Test of Hypotheses**

(1). Ho: financial sector reform does not have a significant relationship with industrial development in Nigeria.

Hi: Financial sector reforms have no significant relationship with industrial development in Nigeria.

The result shown in table 4 indicates that there is a significant relationship between financial sector reforms and industrial development. Hence, financial sector reforms have some effect in Nigeria. Therefore, we reject the null hypothesis [Ho] and accept the alternative hypothesis.

(2). Ho: There is no long-run relationship between financial sector reforms and Industrial Development in Nigeria.

Hi: There is long-run relationship between financial sector reforms and Industrial Development in Nigeria.

From table 5; an ECM of the impact of financial sector reforms on Industrial development, it can be deduced that financial sector reforms have a long-run relationship with industrial development. Therefore we can now conclude that financial sector reforms have effect on industrial development in Nigeria as such rejecting the null hypothesis and accepting the alternation hypothesis [H1].

#### **Conclusion**

This study found that strong financial reforms encourage the industrial sector. Financial deepening, fiscal stabilities, real gross domestic product growth, and financial openness have perform better in promoting industrial development in Nigeria. Moreover, it was found that the persisting rate of inflation and interest rate were detected to have harmful influence on the level of industrial development in Nigeria within the period of

observation.

This suggests that policies to be pursued by the government should take cognizance of inflation rate and interest rate if the effects of financial reform programmes will be desirable and industrial development will become relevant only after some policy reversals.

For this reason, it is necessary for the federal government to disburse funds with strict monitoring in order to encourage low levels of development in the industrial sector in the economy.

#### **Policy Recommendation**

The policy implications of the empirical findings are outlined as follow:

1. There should be provision an efficient system of contract enforcement which geared towards industrial development.
2. There should be a complete inflation rate regulation since the persisting of hyper inflation rate was found to be unfavorable with negative effect on industrial development in the economy.
3. There should be liberalization of the financial sector, including the removal of barriers to entry which can improve industrial growth in Nigeria.
4. Price stability and confidence in the consistency of future economic policies which are necessary for establishing an environment conducive to investment and will enable government to modify these policies to meet present challenges.

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**Table 2: Augmented Dickey-Fuller unit root test**

variables	Dickey Fuller	AD[1]	Critical value	decision
LFINAD	-3.8796 [-1.3690]	-3.2556 [-1.4182]	-3.5468 [-2.9499]	1[1] 1[1]
LRGDP	-1.2338 [-0.1403]	-1.4494 [-0.4166]	-3.5514 [-2.9528]	1[1] 1[1]
LOPEN	-2.5311 [-2.4590]	-2.3006 [-2.4607]	-3.5468 [-2.9499]	1[1] 1[1]
LINFL	-2.5321 [-2.4599]	-2.3014 [-2.4637]	-3.5468 [-2.9499]	1[1] 1[1]
LRINTR	-1.9755 [-1.40228]	-1.6057 [-1.2101]	-3.5466 [-2.9499]	1[1] 1[1]
LFISTA	-1.1984 [-0.8564]	-2.0822 [-0.9414]	-3.54568 [-2.9499]	1[1] 1[1]

*See Appendix B1 TO B6*

**Table 3: the result of the unit root test at first difference**

variables	Dickey Fuller	AD[1]	Critical value	decision
DLFINAD	-7.6936 [-7.5009]	-5.2889 [-5.0519]	-3.5514 [-2.9528]	1[0] 1[0]
DLRGDP	-5.0150 [-5.0114]	-3.5820 [-3.4038]	-3.5514 [-2.9528]	1[0] 1[0]
DLOPEN	-6.6005 [-6.2290]	-5.2179 [-4.6805]	-3.5514 [-2.9528]	1[0] 1[0]
DLINFL	-6.6016 [-6.2299]	-5.2258 [-4.6868]	-3.5514 [-2.9528]	1[0] 1[0]
DLRINTR	-6.774 [-6.8410]	-5.5749 [-5.6116]	-3.5514 [-2.9528]	1[0] 1[0]
DLFISTA	-5.0760 [-4.8740]	-3.9549 [3.8387]	-3.5514 [-2.9528]	1[0] 1[0]

*Source ; computed*

*Note; the values in parenthesis are for test without trends. Critical values for the Dickey Fuller at the 95% confidence criteria*

**Table 4 the unit root test of the residuals of DLINDG on the repressors**

variables	DF	ADF	Critical value	Co-integration
DLINDG on DLFINAD, DLOPEN, DLINFL, DLRINTR, DFISTA	-7.607	-6358	-5.251	Accept

*Source; Computed*

**Table 5: An ECM of the impact of financial sector reform on industrial development**

Regressors	coefficient	t-value
DLINDG (-1)	0.39556	0.18035
DFINAD	5.5588	8.0200
DFISTA	24.0179	13.6083
DLOPEN	324.9398	1.5372
DLINFL	-32.7895	12.1069
DLRINTR	-5.4895	1237.0
INTP	-5.1077	4.0039
R-Square	0.812	
R-bar-square	0.754	-
F-stat (7,28)	4.161	0.000
D-W statistics	2.16	
S. E. E.	13.149	
ECM (1)	-2.1083	0.31968

Source: Computed

**Table 5; The Schwarz Bayesian Criteria (ARDL (2) )**

Regressors	coefficient	t-value	p-value
DLINDG (-1)	-0.71270	-0.34770	0.002
DLINDG (2)	-0.39556	-2.1933	0.039
DFINAD	5.5588	0.69321	0.495
DFISTA	24.0179	1.7649	0.091
DLOPEN	324.9796	0.21114	0.835
DLINFL	-324.7808	-0.21130	-0.835
DLRINTR	-5.45895	-4.5342	0.654
INTP	-5.1097	-1.2765	0.215
R-Square	0.440		
R-bar-square	0.270	-	
F-stat (7,28)	2.58		0.040
D-W statistics	2.16		

See Appendix E1 to E2.3

**Table 6: the Long-run estimates of the effect of financial reform on industrial development.**

Repressors'	coefficient	t-value
DFINAD	2.6367	0.69480
DFISTA	11.392	1.7402
DLOPEN	154.1468	0.21167
DLINFL	-154.0515	-0.21167
DLRINTR	-2.6038	-0.2146
INTP	-2.424	-0.4454

Source; Computed



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