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EFFECTS OF FINANCIAL SECTOR LIBERALIZATION ON BANK PERFORMANCE IN NIGERIA: 1971-2011

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ABSTRACT: *The study critically assessed the extent to which financial sector liberalization has affected bank performance in Nigeria. Panel data model was employed for data spanning a period of thirty four years (i.e. 1971-2011). Earnings per share (EPS), Returns on capital employed (ROCE) and Returns on equity (ROE) were used as proxies for bank performance (i.e the dependent variables) while interest rate, real financial savings and exchange rates were used as the proxies for financial sector liberalization (i.e. the independent variables). A number of diagnostic tests were also conducted on the residuals to evaluate the models; these include the Breuch-Godfrey serial correlation Lagrange Multiplier (LM) test, the Ramsey REST test of specification error (i.e. to test for omitted variables, incorrect functional form, correlation between exogenous variables and error term) and the Cumulative Sum (CUSUM) tests of parametric stability, the LM test of serial correlation showed that there was an absence of first order serial correlation in the residuals and cumulative sum tests also showed that observations are more stable during Pre-SAP period than the post-SAP era. The result obtained showed that though the effect of financial sector liberalization on bank performance in Nigeria for the period of study has been significant, especially as measured by the proxies of Earnings per Share and Return on Equity, it has not been significant enough to transform the nations' economy to the desired level. Hence, the study suggests among other things that a precondition for the efficiency of a liberalized financial sector is a stable macroeconomic environment and it is essential to ensure that government fiscal policy is assigned to complement monetary policies not to work against monetary and fiscal policies and help restore domestic and international confidence in the Nigeria banking system.*

KEYWORDS: Financial Sector, Liberalization, Bank Performance, Nigeria

INTRODUCTION

The Nigeria financial system was highly repressed for more than two decades after independence. This was clearly evidenced by the ceilings in interest rates and credit expansion, selective credit policies, high reserve requirements, and restriction on entry into the banking industry (Ikhide and Alawode 2001). The Nigerian government undertook a fundamental economic reform of Structural Adjustment Programme (SAP) in 1986, with the aim of rectifying the prevailing macro-economic and structural imbalances in the nation's economy.

A summary of Nigeria's macroeconomic indicators as shown in Table I reveals a serious decline in all areas of variable until the introduction of the SAP of 1986. The real effective exchange rate, for instance, fluctuated between 326 and 652.3 between the period of 1980 and 1986 but went down drastically to 105.0 by 1987 but then rose to 699 in 1992. Also, the real gross domestic product growth rate revolved between-0.32 and 3 until 1986 when it started experiencing a positive growth rate. Financial sector reforms involve liberalizing interest and exchange rates, thereby promoting a market-based system of credit allocation, enhancing competition and efficiency in the financial system, and strengthening the regulating and supervisory framework.

Government interventions in the financial system have been the basis of the McKinnon-Shaw hypothesis of financial repression in developing countries (McKinnon, 1973; Shaw, 1973). It is, thus, suggested that for sustainable growth to take place, the banking sector has to be effective and efficient to respond favorably to the needs of the productive sector of the economy. In the face of grim reality of the worsening economy of the nation as evidenced in the economic indicators, the Nigerian government undertook a fundamental economic reform of structural imbalances in the nation's economy. The financial sector reform was a major aspect of Nigeria's economic reform programme announced in 1986. Picking the financial sector liberalization as the arrowhead in the new economic policy, the strategy could be ascribed to two main factors. The first was predicated on the primary role of the financial sector in the national economic development. More importantly is the fact that the financial sector promotes economic efficiency and sustainable growth and development (Ikhide 1996).

Financial sector, through intermediation process provides a viable medium of exchange and mobilizing the savings from sectors that generate surplus and channeling them into productive investment, a process which enhances the economy's productive capacity and overall output and employment (Ojo, 1989). The second factor could be related to the historical evolution of financial systems in developing economies. At their elementary stages of development, financial systems are very robust but they tend to lose speed and momentum as government intervention becomes excessive or inappropriate. For instance, the Nigerian financial sector in the pre-SAP period, as argued by Ojo (1989), was said to have witnessed rapid structural changes and regarded to have generally performed satisfactorily. But its growth potential, it was discovered, was limited by several constraints such as inadequate capital base, poor credit policies and especially inappropriate macro-economic policies.

The financial sector reforms initiated in 1986 sought mainly to reduce excessive controls and regulations and broadly to rely more on market factors in financial management.
Prior to the financial sector reforms that were instituted in 1986 most salient features of repression in the financial sector include:

(i) Restriction on entry into the Banking sector as well as limitation on foreign ownership of domestic financial institutions.

(ii) Imposition of high liquidity and required reserve ratio, the liquidity ratio for Banks remained at 25 percent. Also the use of call-up special deposits and issue of stabilization securities;
(iii)Imposition of interest rate ceilings in lending and deposit rates which resulted inincreased real interest rates and wide margin between deposits and saving rates and
(iv) Imposition of restrictions on the portfolio choices of financial institutions in the form of stimulating the maximum ceilings for required lending to specific activities and rediscounting of credit to real sectors at subsidized rates which resulted in edging out of the most productive investment in favour of the preferred sector (CBN, 1989).

The findings of many studies such as Ikhide and Alawode (1994) Mrak, (1989) Seek and El Nil (1993), Agu (1992) Asogwa (2002) Dinc, (2005), Megginson (2005); Ojo (1993), Soyibo and Adekanbi (1992) revealed that the financial sector in most Sub-Saharan African countries is equated with the banking system and an examination of the roles of the banks in the mobilization of savings for the purpose of bridging the savings/investment gap come naturally with some concern issues like stabilization issues which tend to have far reaching implications and structures and nature of economic imbalances that necessitated the implementation of economic reform in these countries.

Over a period of 15 years, many countries in the Sub-Sahara Africa have undertaken one form of Structural Adjustment Programme or the other with a view to reversing their poor economic performance (Ikhide 1996) In all, about 20 Sub-Saharan African countries have made serious efforts to transform their economies from traditional economy to a market-based economic system, while 15 other countries have adopted some limited form of structural adjustment programmes. Critics of the financial sector liberalization in Nigeria such as Ojo (1989), Alawode and Soyibo (1998) argued that the Structural Adjustment Programme measures were not far reaching enough to solve the root causes of the Nigeria financial sector problem, and that reforms were not geared toward full liberalization of interests' rate policy that militates against the successful functioning of financial markets. Thus, two of the many relevant questions raised and yet to be fully answered include: (i) what are the remaining reforms issues and constraints to bank performance and savings mobilization in Nigeria,? and (ii) to what extent has these policy reforms affected bank performance and savings mobilization? This study attempts to find answers to these questions.

The paper examines the long run effect of financial sector liberalization on bank performance in Nigeria. It analyses the extent to which such factors as interest rate, foreign exchange rate and real financial savings affects bank performance in terms of what the banks get on return on capital employed, return on equity as well as earnings per share.

LITERATURE REVIEW

It took the seminal works of Mckinnon (1993) and Shaw (1993) to highlight the adverse effects of "financial repression" on economic development. Financial repression refers to

the distortion of domestic financial markets through measures such as ceilings on interest rates and credit expansion, selective allocation of credit, and high reserve requirements. McKinnon (1993) and Shaw (1993) pointed out that such misguided policies have damaged the economies of many developing countries by reducing savings and encouraging investment in inefficient and unproductive activities. The reducing savings and recommendation is then that positive real interest rates be established on deposits and loans by eliminating interest rate and credit ceilings, stopping selective credit allocation, and lowering reserve requirements. The true scarcity price of capital could then be "seen" by savers and investors, leading to improved allocative efficiency and faster output growth.These recommendations have been implemented in several developing countries but with mixed results. While some studies have reported that certain countries experienced higher savings and investment following liberalization (Fry, 1978; De Melo, 1986; Khatkhate, 1988), others too have chronicled disasters in other economies that undertook financial liberalization; they include (Diaz-Alejandro, 1985; Corbo and De Melo, 1985; Barandian, 1987; Atiyas, 1989; Larrain, 1989). Countries in the latter category experienced considerable macroeconomic instability, massive capital outflows and widespread bank failures following financial liberalization.

Dornbusch and Reynoso (1993) also underscored the importance of attaining macroeconomic stability prior to financial liberalization. They noted that high and unstable inflation often increases the demand for financial liberalization, but this might trigger further increases in inflation especially if fiscal deficits are large and the exchange rate is depreciating rapidly. As the government finances its deficits through money creation, the higher interest rates resulting from financial liberalization would reduce government revenue from money creation; with a given budget, this induces further increases in inflation. The recommendation is therefore that fiscal deficits be substantially reduced and the exchange rate stabilized before financial liberalization is embarked upon. Thus, Dornbusch and Reynoso (1993: 85) conclude that for Latin America, after a decade of financial instability, the path that will return the region to rapid long-run growth is orthodox realistic exchange rates, balanced budgets, and a favourable investment climate.

Thus, they emphasize a return to orthodoxy—stabilization policies as a prerequisite for successful financial reform policies. The issue of sequencing stabilization policies vis-à-vis structural adjustment policies has received a lot of attention in recent times. Smith and Spooner (1992) identified a number of reasons why stabilization measures are expected to precede supply-side measures in adjustment programmes. First, it is argued that the results of supply-side measures take time to be realized. Without demand restraints, the initial increase in balance of payments deficit that accompanies demand-side measures may become explosive and uncontainable, especially where there is a constraint on external inflows. Second, stabilization measures are required to bring about a substantial improvement of the balance of payments. This is made possible by a drastic depreciation of the exchange rate to promote exports in order to provide funds for the importation of essential imports.

In order to sustain the exchange rate adjustment, appropriate monetary, financial and income policies have to be put in place as a prerequisite to the expansionary supply-side policies. Third, to enhance the growth of savings and hence investment, it is necessary to control inflation. The initial impact of devaluation and restrictive monetary policies is in most cases an increase in the level of prices (Crockett, 1981; Porter and Runney, 1982). More often than not, when these policies are combined with huge fiscal deficits, which are inevitably financed by borrowing from the central banks, the result is quite destabilizing.McKinnon (1973) and Shaw (1973), analyzed the benefits of (if not eliminating) Financial Repression, at least reducing its impact on the domestic financial system within developing countries. Their analyses- (sometimes referred to as the Complementarily Hypothesis)- concluded that alleviating financial restrictions in such countries (mainly by allowing market forces to determine real interest rates) can exert a positive effect on growth rates as interest rates rise toward their competitive market equilibrium. According to this tradition, artificial ceilings on interest rates reduce savings, capital accumulation, and discourage the efficient allocation of resources. Additionally, McKinnon pointed out that Financial Repression can lead to dualism in which firms that have access to subsidized funding will tend to choose relatively capital-intensive technologies; whereas those not favored by policy will only be able to implement high-yield projects with short maturity.

Another effect of Financial Repression, to which the original hypothesis made only scant reference, stemmed from the implicit "credit rationing" effect which results from the Feast and Famine consequences of excessive government intervention in money and credit markets in developing countries. Given that real interest rates are prevented from adjusting to clear the market, other "non-market" forms of clearing have to take their place. These can include various forms of "queuing" arrangements to "ration" the available credit such as auctions, quantitative restrictions (for example quotas), as well as different types of "bidding" systems which themselves may be open to nepotism or even outright corrupt practices. In essence, these manifestations of Financial Repression mean that not only is the quantity of savings (and investment) low, or at the very least irregular; it also means that the level of activity which does occur is of poor quality. This is really what the term Financial Repression entails. If the real interest rate is not allowed to clear the money and credit markets, both the overall level as well as the quality of savings and investment will be repressed. The quantity and the quality effects compound each other. In a Feast and Famine environment, the typical borrower may borrow too much (too little) and this very tendency will reinforce the Feast and Famine problem itself.

The early hypotheses of McKinnon and Shaw (1973) assumed that liberalization, which would be associated with higher real interest rates—as controls on these are lifted—would stimulate savings. The underlying assumption is, of course, that savings is responsive to interest rates. The higher savings rates would finance a higher level of investment, leading to higher growth. Therefore, according to this view, we should expect to see higher savings rates (as well as higher levels of investment and growth) following financial liberalization.

METHODOLOGY

Model Specification

The model tested in this study is rooted in the financial repression hypothesis as stated in the McKinnon-Shaw hypothesis, McKinnon (1973) and Shaw (1973).The theory sometimes referred to as the financial complementarily hypothesis, states that alleviating financial restrictions i.e allowing market forces to determine real interest rates as interest rates rise toward their competitive market equilibrium.

The simple model for the study therefore hypotheses that bank performance is significantly affected by measures of financial liberalization:
Bank performance = f (financial liberalization)
In the case of bank performance is proxies by Return on earnings (ROE),Return on capital employed (ROCE), and Earnings per share (EPS); while Financial liberalization is peroxide by Interest Rate, Exchange Rate and Real Financial Savings.
Therefore the reduced form equations of the model are stated as:

$ROE = f(INTR, EXR, RFS)$ …… (3.1)
$ROCE = f(INTR, EXR, RFS)$……. (3.2)
$EPS = f(INTR, EXR, RFS)$ ……. (3.3)

The regression form of the above equations of the model is given as follows:

$ROE = \alpha + \beta_1 INTR + \beta_2 EXR + \beta_3 RFS + \mu$ …… (3.4)
$ROCE = \alpha + \beta_1 INTR + \beta_2 EXR + \beta_3 RFS + \mu$……..... (3.5)
$EPS = \alpha + \beta_1 INTR + \beta_2 EXR + \beta_3 RFS + \mu$……..... (3.6)

Where:-
ROE = Return on equity
ROCE = Return on capital employed
EPS = Earnings per share
α = Intercept
$\beta_{1, 2, 3\ldots}$ = slopes
INTR = Interest Rate
EXR = Exchange rate
EFS = Real financial savings
μ = Error term

The theoretical a priori expectation assumes that only real financial savings (RFS) shows a positive relationship with bank performance, while interest rate and exchange rate have negative effect on bank performance. That is: Bank Performance = $\alpha + \beta_1 - \beta_2 - \beta_3$

In other words, the higher the real financial savings for the banks, the more the loanable funds and the higher the capacity to create more money which by implication will increase bank performance.

As the rate of interest increases, more investors and potential investors are expected to be discouraged from seeking loans from the bank which will thereby adversely affect bank performance. It should be noted that the main source of banks' money creation is through issuing of loan, therefore the more loans are issued, the more profits are made and the

better for banks to perform. Exchange rate is the price paid by a country to obtain another currency. Banks purchase foreign currency on behalf of their customers in which they also make profit. Therefore, the higher the exchange rate the lower their customers' patronage and the lower the profit made by the banks on such transactions. In a nutshell, the higher the exchange rates the lower bank's performance.

Model estimation Technique

The study therefore employs both the co-integration and panel data techniques. The co-integration technique is in three stages, the first stage involve establishing the time series properties of the variable using the Dickey fuller of Philip Peron unit root test. The other stages involve the co-integration test and the error correction modeling as discussed in the next section. The use of co-integration in this study allows us to examine the long-run equilibrium relationship between the variables. This unit root test also rule out the possibility of spurious regression. The question in mind for carrying out this test is "How does each variable behave with time? That is to know whether the variables are stationary or non-stationary. ZIvot and Andrew (1992) employed this form of dynamic analysis in their models of effect of financial liberalization on bank performance. Their model was based on Peron (1989) which includes both intercept and trend in their regression equations.

CO INTEGRATION TECHNIQUE: THE UNIT ROOT TEST

This is the formal Statistical test for non-stationary. If a series is I (1), it is said to have a unit root. In general, a series with I (d) is said to have d unit roots. The Dickey Fuller (DF) or Philip Peron (PP) Test is used to test for the presence of a unit root in a series for example.

$$ROE_t = \alpha + \alpha_1 + ROE_{t-1} + \varepsilon_t$$

By finding the first difference we have

$$ROE_t - ROE_{t-1} = \alpha_0 + \alpha_1 ROE_{t-1} - ROE_{t-1} + \varepsilon_t$$

$$\delta ROE_t = \alpha_0 + (\alpha_1 - 1) ROE_{t-1} + \varepsilon_t$$

$$\delta ROE_t = \alpha_0 + yROE_{t-1} + \varepsilon_t$$

Where $y = (\alpha_1 - 1)$

If $\alpha = 1$ so that there is a unit root, then $y = 0$. But the presence of the error term ε_t does not allow y to be identifiably equal to Zero. The procedure is to estimate Y using simple regression and then compare with the critical value of the t-statistic following Fuller (1976). This t statistic is denoted by T. But It does not have a normal distribution that is why it is inappropriate to use the conventional normal or't' table. The hypothesis is

H_0: Y = 0 i-e- $a_1 = 1$

Ha: y = 0 i.e. $\alpha < 1$

The critical values are negative. If the sample values are more negative than the critical values the null hypothesis is rejected in the direction of the one-side alternative which is accepted. That is there is no unit root. A sample value less negative than the critical value implies non-rejection of the null hypothesis i.e. there is unit root; the series is I (1). Also a positive value of the sample would imply non-rejection of the null.

Given the inherent weakness of the unit root test to distinguish between the null and the alternative hypothesis, the 'Augmented Dickey - Fuller (ADF) is preferred. The DF test restricts the series to an AR (1) model which may not adequately describe the more complex patterns exhibited in actual economic time series. The ADF uses the AR (p) process where it corrects for any serial correlation by incorporating-lagged changes of the residual. Lag lengths have been reportedly chosen by using information criterion by many literatures. The Akaike (1974) and the Schwarz (1978) information criteria are popularly used because of its right sample performance in choosing the right model. (This is programmed into commercially available econometric software or the E-view).

The co-integration regression is specified above. After assessing the order of integration of each variable (i.e. ROE, ROCE, EPS, INT, EXR, and RFS.), any variable that is integrated of the same order with the dependent variables meets the condition for the regression equation above to be co-integrated. For example if ROE_t and INR are each 1(1), then they are co- integrated. Having arrived at this conclusion, we then assess the properties of ε_t. if it is I (1) the regression is not a co integrating regression, whereas if it I (0) it is a co integration regression. More precisely we say it is consistent with the hypothesis that it is a co integrating regression. What this means is that the regression equation makes sense because ROE_t and INT do not drift too far from each other over time. Thus there is a long-run equilibrium relationship between them. The procedure described here is due to what Engle and Granger (1987) referred to simply as EG.Note that ε_t is unobservable; any test will be based on the estimator of ε_t equation (5) is often referred to as EG regression in levels of 1(1) variables sometimes this is called the 'static' or 'levels' because it ignores any dynamic adjustments that may be present in a complete model.

The next step is to assess whether the residuals $\hat{\varepsilon}_t$ are consistent with I (I) process. This is done, as usual, by carrying out an ADF test on the $\hat{\varepsilon}_t$. The regression equation is

$$\hat{\varepsilon}_t = \Phi \hat{\varepsilon}_t - 1 + \mu_t$$

If augmented by P lagged value $\Delta\hat{\varepsilon}_t$ to ensure that the estimated μt are free from serial correlation the –maintained regression is specified as follows:

$$\delta\hat{\varepsilon}_t = y\,\hat{\varepsilon}_t - + \sum_{i-1}^{p} \alpha_t \Delta\hat{\varepsilon}_{t-1} + \mu_t \,, \ldots\ldots \text{(3. 14)}$$

P' is the optimum number of lags needed to obtain 'white noise'. This is referred to as co integrating ADF or PP (P) regression. The test statistic is the estimated 'τ' statistic on y. The test statistic hypothesis is as follows:

H_0: $\Phi_1 = 1$ i.e. $y = 0$ non-co integration

Ha: $\Phi < 1$ i.e. $y < 0$ co integration

In summary, Non-rejection of the null hypotheses y = 0 using the critical value of the ADF or PP test is non-rejection of the hypothesis that ε_t is I (1) the ROE_t and INR do not co integrate. Rejection of the null hypothesis y < 0 is rejection of the hypothesis that ε_t is I (1) the Y_t and X_t co integrate. A sample value more negative than the critical value

leads to rejection of the null hypothesis of non- stationary in the residual is therefore, evidence in favour of the hypothesis of co integration.

VECTOR CO INTEGRATION

Since the models specified in this study are multiple regression models, the vector co integration analysis is applicable.

The vector co integration test commenced with a test for the number if co-'integrating relation or rank (r) of □ using Johansen's maximal Eigen value of the stochastic matrix and the likelihood Ratio (LR) test based on the trace of the stochastic matrix n which is the long - run multiplier matrix of m x n that is the matrix of the coefficients. Note that the Eigen value of л 1 are the roots of the kth order characteristic polynomial $|□_1$-v1| obtained by solving the characteristic equation

$|□_1$-v1| =0 ..... (5.1)

The number of non - zero Eigen value is the rank of the matrix □.

Also, the trace statistic suggested by Johansen to determine the co-integration rank in a multivariate model is based on the ordered (estimated) Eigen values in the following relation.

$$\textit{Trace}\ (r_0 lk) = -T \sum_{Ir=r_0+1}^{k} in\ (1 - □_i) \ldots \ldots\ldots\ldots \quad (4.5)$$

Where □i = ordered (estimated) Eigen value.

This is the relevant test statistic for the null hypothesis $r \leq r_0$ against the alternative $r \geq r_0 + 1$ following a sequence (This sequence has been fully discussed under chapter three) □ matrix (the matrix of the coefficient in the VAR models) is a product of two matrices a and □ . Let Y denote an n x 1 vector of the (1) variables the rank of n which is r, determines how many linear combination of the variables in the levels are stationary. If r = 0 such that □ = 0, none of the linear combination are stationary, □ can be factored, that is □ = a□. Both a and □ are n x r matrices. While □ contains the co-integrating vector (the error - correction mechanism in the system), a is the adjustment parameter.

ERROR CORRECTION MECHANISM (ECM).

If the variable in our example i.e. ROE_t and INR for example, are found to be co integrated then there must exist an associated Error-Correction Model (ECM) according to Engle and Grander (1987). The usual ECM may take the following form:

$□ROE_t = \sigma e_{\ j-i} + \sum \sigma\sigma_j\ □INR_{t-j} + \sum \Phi\ □ROE_{t-ji} + □ROE_{t-1} + V_t$...()

Where □ denotes first difference operator, et.i is the; error correction term, T is the number of lags necessary to obtained white noise and V_t is another random disturbance term. The Error Correction Model (ECM) describes the short-run dynamics of the co integrated regression model. This is known as the Granger representation theorem. If the absolute value of the coefficient of the ECM term i.e. (o_0) is significantly different from zero, then ROE_t and INR_t will have a long-run relationship. The error-correction term (e_t-i) depicts the extent of disequilibrium between them. ROE_t not only

depends on lagged changes in INR_t but also on its own lagged changes. It is appealing due to its ability to induce flexibility by combining the short-run and long-run dynamics in a unified system. Also the estimates of the parameters of the ECM are generally consistent and efficient (Henry and Richard, 1983, 1999). The error correction mechanism is in form of an over-paramatised and parsimonious (data reduction) models.

THE VECTOR ERROR CORRECTION MODEL

The speed with which the short - run elasticity analyzed the above model converges to equilibrium is shown by the ECM coefficients. The vector of interest in this study is the ROE equation. The results show that the coefficient of ECM (-1) is - 3.78xl8"[8] It is properly signed and highly significant indicating that the adjustment is in the right direction to restore the long - relationship.If the magnitude of the ECM (-1) is low, this indicates that the speed of adjustment is quite low. The interpretation of the VECM is further explained as follows. Bank performance is changed,

 $ROE_t \neq 0$ if either there was a disequilibrium last period (ECM $\neq 0$) in which case some changes in bank performance is necessary to restore equilibrium, or there was a change in the exogenous variables in the current period which, because of the equilibrium condition (as shown in the co integration equation) implies that bank performance (ROE) should also change. The anticipated signs and magnitudes of the coefficients are as follows: The coefficient of ECM is the error correction or disequilibrium correction -i coefficient. If the ECM coefficient is greater than zero it means there is a "surplus" of Bank performance hence a reduction in it is required to restore equilibrium.

If the coefficient of ECM is less than zero there is a "deficiency" of bank performance and increase in it is required to restore equilibrium. As regards the magnitude of the ECM, we anticipate $-1 \leq ECM \leq 0$. if ECM (-1) = - 1 it implies that all of last period's disequilibrium is removed, otherwise- $1 \leq ECM \leq 0$ implies that only a proportion is removed. Thus the magnitude of ECM connotes the speed of adjustment to equilibrium.

The variables of interests are in two categories namely; the bank performance and the financial liberalization variables. The proxies for independent variable include the following: Interest rate (INT), exchange rate (EXR), and real financial savings (RFS). While proxies for the dependent variables are return on equity (ROE), return on capital employed (ROCE) and earnings per share (EPS).

Adebiyi (2002) stressed that financial liberalization is best measured by the macroeconomic variables of interest rate, exchange rate, and the real financial savings. To buttress this, Sundarajon and Balino (2001), linked the use of these macroeconomic indicators, especially, the real financial savings with the McKinnon-Shaw hypothesis, the main theoretical analysis which provided a rationale for liberalization as a means of promoting financial development.

Following Adebiyi (2002), Sundarajon and Balino (2001), three variables are used as indicators for financial liberalization in this study. These variables were also adopted by Reinhart and Tokathidis (2001) and Movisset (1993) for Argentina. As regards the Banking industry variables, Ekanen (2003) identified two sets of indicators;

These are levels of Bank productivity and levels of Bank performance. According to Ekanen (2003), productivity in the banking output is defined as total loans and advances, while he identified Bank performance as being measured by the following indexes: Return on Asset, Return on capital employed, Return on equity and Earnings per share. These second sets of indicators are adopted in this study mainly because the focus of this study is on bank performance and not bank productivity. These indicators were also used by Kaminsky and Schmukler (2001) to examine both the short-run and the long-run effects of financial liberalization on Bank performance in some 28 developed and emerging economies.

The financial liberalization hypothesis assumes a linear relationship between financial liberalization and financial savings. However many adjustments have been made to these two variable models of McKinnon-Shaw. For example, Ekanen (2003) adjusted the model to include Bank productivity indicators, so also did Kaminsky and Schmukler (2001).

Following, the works of Ekanen (2003), therefore, this study modified the Mckinnon-Shaw model to include two other macroeconomic indicators of financial liberalization. Therefore, a comparative analytical model is generated by using three different bank performance indicators. Following the objective of this study to examine the long-run effect of financial liberalization on Bank performance, and as a way of modifying the static analysis common in the literature of this study area. The study therefore employed panel data technique.

Data Sources

This study covers the period 1971-2005 and models will be estimated on the annual data of the three Nigerian Banks, namely, Union Bank of Nigeria plc, United Bank of Nigeria plc and First Bank of Nigeria plc. In order to make easy comparative analyses, we chose these three Banks in Nigeria because other Banks did not have data spanning the period under view (1971-2005). Data used in this study were sourced majorly from the: Central Bank of Nigeria's statistical Bulletin; Central Bank of Nigeria's Economic and financial Review; The Nigeria stock exchange fact Book; The Annual financial Reports of First Bank of Nigeria plc, Union Bank of Nigeria plc and United Bank for African plc.; Various information obtained from the research departments of other financial institutions.

EMPIRICAL ANALYSIS

This section presents and analyses the results of the study. The estimation technique adopted by this study estimates the long run relationship between the set of independent variables representing financial liberalization and bank performance in Nigeria.

RESULTS OF THE PANEL DATA MODEL ESTIMATION

TALE 4.1 RESULT OF THE EPS MODEL FOR PRE-SAP ERA (1971-1985)

DEPENDENT VARIABLE	**CONSTANT**	**EXPLANATORY VARIABLES**			**SUMMARY OF STATISTICS**	
EPS		**INTR**	**RFS**	**EXR**	**R2**	**PROB. >F**
Coefficient	7.460	5.60	-0.05	3.43	0.35	0.0000
Stand. Err	(121.94)	(3.95)	(0.02)	(4.25)		
T test	(0.06)	(1.42)	(0.46)	(0.81)		
P>/t/	0.96	0.16	0.65	0.42		

Source*: Computed from raw data of the study.*

The estimated EPS model in our result above shows that both the interest rate and exchange rate have positive relationship with bank performance in the pre SAP era, while the real financial savings had a negative relationship with bank performance during same period at 5% confidence level. In this result, the interest rate sign of 5.604188 is contrary to the sign produced in the ROCE model. In this era the charging of interest rate by the different banks was arbitrary thus the banks were able to make higher earnings for the period. Also the positive relationship between exchange rate and ROCE with a coefficient of 3.428721 typified the sharp practices like round tripping in Foreign Exchange currencies at the period. The value of P>/t/ is 0.000 which reveals that the coefficient is significant. The positive relationship result is expected for the period of pre-SAP because it was an era of fixed official exchange rate in Nigeria.

Meanwhile, the coefficient of real financial savings is – 0.05. This indicates a negative relationship between the real financial savings and earnings per shares during Pre-SAP period. This is not farfetched as they are expected to have an inverse relationship with each other. This is because the more funds into real savings the lesser will be available for investors to put in shares of the banks and vice-versa.

The R^2 of the model is 0.3511 with prob. > f 0.000. The parameters reveal that the relationship between bank performance (EPS) and all other independent variables are not significant. The statistical coefficients of Interest rate, real financial savings and Exchange rate put together are not significant. In other words, it simply implies that 35% change in earnings per share is explained by interest rate, real financial savings and exchange rate. The remaining 65% change in earning per share is explained by other variables not captured in the model. The constant value of 7.46 shows that earnings per share will change only by 7.46, if all the independent variables remain constant.

TABLE 4.2: THE RESULT OF EPS MODEL FOR POST SAP ERA (1986-2005)

DEPENDENT VARABLE	CONSTANT	EXPLANATORY VARIABLES			SUMMARY OF STATISTICS	
EPS		**INTR**	**RFS**	**EXR**	**R^2**	**PROB. >F**
Coefficient	15.0345	5.18869	0.1455	4.2297	0.79	0.0000
Stat. Err.	25.3764	6.00185	0.0216	3.7187		
T test	0.59	0.86	0.607	0.74		
P>/t/	0.554	0.387	0.402	0.460		

***Source**: Computed from raw data of the study.*

The result of our R^2 from the regressional model for the period of Post SAP earnings per share is quite high as expected. It shows that all the independent variables have significant effect on the dependent variables, given the R^2 value of 0.791. This implies that about 79% variation in earnings per share as a measure of Bank performance is explained and captured by the interest rate, real financial savings by the interest rate. This is higher than the value obtained during the pre- SAP period (a value of 0.35). The remaining 21% period (a value explained by other variables that are not included in the model. However, the prob. > F is 0.0000 showing that the proportion of variation in Earnings per Share explained by the independent variables included in the model is significant.

All the coefficients of the independent variables are positive and significant as shown by the coefficient and t-statistics in our table 5.2, but the constant value of 0.346 is however not significant with the prob.>/t/ value of 0.0554.

TABLE 4.3; RESULT OF ROCE MODEL FOR PRE-SAP ERA (1971-1985)

DEPENDENT VARIABLE	CONSTANT	EXPLANATORY VARIABLES			SUMMARY STATISTICS	
ROCE		**INTR**	**RFS**	**EXR**	**R^2**	**PROB. >F**
Coefficient	0.0875	0.0048	3.630	0.0046	0.694	0.0000
Stat. Err	0.4836	0.0098	3.860	0.0106		
T test	1.81	0.49	0.94	0.44		
P>/t/	0.070	0.424	0.348	0.66		

***Source**: Computed from raw data of the study*.

The result of our model for Return on capital employed as a proxy for bank performance as against the independent variables of interest rate, real financial savings and exchange rate is high. In other words, the proportional change in ROCE as a result of change in independent variables is 69% while the remaining 31% is explained by other variables

not captured in the model. Looking at the coefficients of the individual independent variables as shown by our table 4.3. reveals the coefficients are all positive. Moreover, all their coefficients are significant as indicated by the t-test.

TABLE 4.4. RESULT OF ROCE MODEL FOR POST-SAP ERA (1986-2005)

DEPENDENT VARIABLE	**CONSTANT**	**EXPLANATORY VARIABLES**			**SUMMARY STATISTICS**	
ROCE		**INTR**	**RFS**	**EXR**	**R^2**	**PROB. >F**
Coefficient	0.00655	0.00192	6.4108	0.0041	0.72	0.0000
t. Err.	0.02086	0.0517	1.8708	0.0492		
T test	3.13	0.37	3.43	0.84		
P>/t/	0.002	0.711	0.001	0.402		

Source: Computed from raw data of the study.

The rate at which return on capital employed responds to changes in real financial savings in the two periods of pre-SAP and post-SAP eras compared showed from our tables 4.3 and 4.4 respectively. That is, it is 3.630 in pre SAP era while in post SAP era it is 6.4108. Though they both have positive relationship but the intensity shows that the increased in real financial savings enables the banks to mobilize more resources in terms capital accumulation and hence better returns on capital employed. While the coefficient of exchange rates in the two periods are not substantially different from each other, mainly because the era of round tripping in foreign exchange went away with the pre-SAP era, hence the lower coefficient of 0.0041 in post-SAP era compared to the coefficient of 0.46 of pre- SAP regime.

The R^2 for the generated result as obtained from our table 4.4 is 0.72. This clearly shows that the effect of interest rate, real financial savings and exchange rate on Bank performance as measured by return on equity is significant at 95% significant level as expressed by prob. >f.(0.000). All the coefficients of the independent variables are positive except for interest rate which has a negative relationship with ROE and it is expected.

TABLE 4.5: RESULT OF ROE MODEL FOR POST SAP ERA (1986-2005)

DEPENDENT VARIABLE	**CONSTANT**	**EXPLANATORY VARIABLES**			**SUMMARY STATISTICS**	
ROE		**INTR**	**RFS**	**EXR**	**R^2**	**PROB. >F**
Coefficient	0.1302	0.00636	5.5706	0.26598	0.971	0.0000
Stat. Err	0.6240	0.1045	3.7806	0.0995		
T test	0.21	-0.61	1.48	2.67		
P>/t/	0.835	0.542	0.140	0.008		

Source: Computed from raw data of the study.

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The result for the Post-SAP period for return on equity model above showed a better positive relationship in all the independent variables (interest rate, real financial savings and Exchange rate), especially when compared as showed in the table 4.5, reveals that 97% of variation in dependent in the model is explained by the variables in the model leaving only 3% unexplained. Also, the effect of interest rate, real financial savings and exchange rate on return on equity is significant at 95% significant level as expressed by prob. >F(0.0000).

PARAMETRIC DIAGNOSTIC TESTS

Some diagnostic tests were conducted on the residual to evaluate the panel data model tested. The tests conducted include: The Breuch-Godfrey serial correlation Lagrange Multiplier (LM) tests, the Ramsey's RESET test of specification error (Omitted variables, incorrect functional form, correlation between exogenous variables and error term) as well as the Cumulative Sum (usually known as CUSUM) parametric stability test.

The LM test of serial correlation showed that there was an absence of first order serial correlation in the residuals.

SERIAL CORRELATION TEST

The Lagrange Multiplier (LM) test was carried out to test for the possibility of serial correlation in the model. It was calculated for the twelfth order for both pre and post SAP periods. The LM test could be either in X^2 form or F statistics form.

The result of the auxiliary regression up to the 3^{rd} lag in case of pre-SAP is presented in table 4.6. The F- statistics hypothesis is the coefficient of the lagged residuals is zero (0). The F. statistics is 2.728914 indicating that there is absence of serial correlation in the model.

Also the post-SAP result shows that F- statistics is 3.7549040 as shown in table 4.7 indicating the absence of serial correlation in the model. They are not significant even though the results are the auxiliary regression in post-SAP period is only 2 lag.

TABLE 4.6: BREUSCH-GODFREY SERIAL CORRELATION LM TEST FOR PRE-SAP ERA (1971-1985)

VARIABLE	COEFFICIENT	STD ERR	T-STATISTICS	PROB.
Constant	-0161776	0.142983	-1.131431	0.2606
Interest rate	0.002774	0.005077	0.546389	0.5860
Real fin. Savings	-3.48007	1.98406	-0.176243	0.8605
Exchange rate	0.004255	0.005474	0.777348	0.4388
Residual (-1)	0.378780	0.099751	6.804718	0.0000
Residual (-2)	0.125201	0.104340	1.199932	0.2330
F statistics = 2.728914 Prob. 0.000 R^2 = 0.479521				

***Source**: Computed from raw data of the study.*

TABLE 4.7: BREUSCH – GODFREY SERIAL CORRELATION LM TEST FOR POST-SAP ERA (1986-2005)

VARIABLE	COEFFICIENT	STD ERR	T-STATISTICS	PROB.
Constant	-0.271889	0.241938	1.13451	0.4512
Interest rate	0.002884	0.006078	0.646191	0.3860
Real fin. Savings	4.48008	2.98505	-0.271243	0.7506
Exchange rate	0.005366	0.006784	047521	03288
Residual (-1)	0.478750	0.098761	4.814611	0.0123
Residual (-2)	0.25211	0.21430	2.199932	0.12312
F statistics =3.75494 Prob.= 0.000 R^2 = 0.479521				

***Source**: Computed from raw data of the study.*

ERROR OF MIS-SPECIFICATION TESTS

To ensure there are no errors of miss-specification or omitted variables in a model, Ramsey Reset test is carryout out. Thus, it is conducted in this study to test for the possibility of specific errors like serial correlation and heteroskedasticity. The test adds the squares and tests for the significance of this additional variable. It is an indirect way of testing whether the square of the regression is significant.

The original regression was first estimated and the fitted values of the regression, the dependent variable (Bank performance) are obtained, the regression was estimated against the powers, of the fitted values as additional regressor. The RESET test is a test of the fitted values. The tests statistics is calculated in F form with P-1 and (T-K, P-I) degrees of freedom.

TABLE 4.8: RAMSEY RESET TEST FOR EPS

VARIABLE	COEFFICIENT	STD. ERR.	T-STATISTICS	PROB.
Constant	17.35997	2.84783	0.609586	0.05435
Int. rate	-4.439024	7.03558	0.630939	0.05295
Real fin. Savings	0.05809	0.00827	0.701915	0.4844
Exchange rate	-2.87233	4.125552	0.696231	0.4879
Fitted ^2	0.077997	0.133919	0.582418	0.5616
Fitted ^3	0.000206	0.000532	0.386912	0.6997
Fitted 4^	1.35E-07	6.98E.07	0.193134	0.8473
F – statistics = 1.020652 Prob. = 0.000 R^2 = 0.688174				

Source: Computed from raw data of the study.

The result for EPS model is as shown in our table 4.8 and the statistics are shown as F statistics = 1.020652, probability = 0.0000, R^2 = 0.688174. The statistics as shown reveals there is no evidence that the functional form is miss-specified in the direction for which the RESET tests have power. For example, the F-statistics is significant at 5% level and the R^2 (0.6881740) is also significant. The probabilities of the coefficient of the power of the fitted values are 0.0000. This shows that they are significant at 5% level as shown in table.10

TABLE 4.9: RAMSEY TEST FOR ROCE MODEL

VARIABLE	COEFFICIENT	STD ERR	T-STATISTICS	PROB.
Constant	-0.112133	0.142985	-0.784226	0.4348
Int. rate	0.001219	0.001590	0.766994	0.449
Real fin Savings	3.70017	6.57E-07	0.563464	0.5744
Exchange rate	-0.000302	0.001253	-0.241146	0.8099
Fitted ^2	2.903415	2.035525	1.426371	0.1569
F – statistics = 1.310508 Prob. = 0.0001 R^2 = 0.749809				

***Source**: Computed from raw data of the study.*

Table 4.9 shows that the error miss-specification tests for ROCE model. From the available data, F- statistics = 1.310508, Prob. = 0.0271283 and R^2 = 0.749809. This statistics shows that there is no evidence that the functional form is miss-specified in the direction for which the RESET Tests have power. For example, the F-statistics is significant at 5% level and the R^2 (0.749809) is also significant. The probabilities of the coefficient of the power of the fitted values are 0.0001. This clearly shows that they are significant at 5% level.

SUMMARY AND CONCLUSION

This study provides empirical evidence on effect of financial sector liberalization on bank performance in Nigeria for the period 1971-2005. It assessed the various liberalization models, most of which focused on savings mobilization, behavior of real interest rates and foreign exchange rates amongst others. It also examined some models of bank performances and tested three major hypotheses. First, that interest rate liberalization has no significant effect on banks' return on equity, which focuses on the impact of financial sector liberalization on the behavior of real interest rates as it affects banks' return from its equity. Second, that exchange rate liberalization has no major impact on banks' return on capital employed, which investigates the effect of financial sector reforms on the relationship that exists between bank performance and foreign exchange rates. Third, that real financial savings have no significant effects on earnings per share, which also investigated the impact of savings mobilization on the earnings per share of the banks. A number of diagnostic tests were also conducted on the residuals to evaluate the models; these include the Breuch-Godfrey serial correlation Lagrange Multiplier (LM) test, the Ramsey REST test of specification error (i.e. to test for omitted variables, incorrect functional form, correlation between exogenous variables and error term) and the Cummulative Sum (CUSUM) tests of parametric stability, the LM test of serial correlation showed that there was an absence of first order serial correlation in the residuals and cumulative sum tests also showed that observations are more stable during Pre-SAP period than the post-SAP era.

The study essentially rejected the null hypotheses for the alternative hypotheses.
With respect to the financial liberalization hypotheses, the study provides some evidences that financial sector reforms have reduced financial repression in the banking system in Nigeria.

Though studies reviewed were found to be in support of the main propositions of the models, the panel data technique revealed that financial sector liberalization has a positive and significant effect on bank performance in Nigeria for the period reviewed, especially as measured by the proxies of earnings per share and return on equity but has not been significant enough to transform the nations' economy to the desired level.Hence, the study suggests among other things that a precondition for the efficiency of a liberalized financial sector is a stable macroeconomic environment and it is essential to ensure that government fiscal policy are assigned to complement monetary policies not to work against monetary and fiscal policies and help restore domestic and international confidence in the Nigeria banking system.

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