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Trend Analysis of the Effect of Capital Base Requirement on Profit Generating Capacity and Operational Efficiency of Selected Commercial Banks in Nigeria

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Abstract
The study examined the trends and patterns of change in the capital levels and efficiency of Nigerian Commercial Banks. This was with a view to providing empirical information on the relationship between capital base requirements and profit-generating capacity and efficiency of the banks. The study utilized secondary data covering 16years on the commercial banks in existence between 1992 and 2007. Data on key performance indicators of the banks such as total income, interest rates, total credits, and branch networks were sourced from the "*fact books"* published by the Nigerian Stock Exchange (NSE) and official publications of the selected banks. Descriptive statistical techniques were used to appraise the trends and patterns of the key performance indicators in relation to changes in capital base of the banks over the studied period.
The results showed that capital base requirement was ineffective in reducing distress in the banking industry. Also, the capital base requirement by the Central Bank of Nigeria lagged behind the average capital base of the banks. The study concluded that the Central Bank of Nigeria could use the regulatory power of raising the capital base of banks to stimulate greater profitability and efficiency in the banking sector.
Keywords: Banking Reforms, Capital Adequacy, Intermediation, Trend Analysis, Commercial Banks, Nigeria.

1. INTRODUCTION

Banks provide both liquid and relatively low risk savings facilities and credit in flexible amounts to households, business concerns, and governments and promote the payments system both by providing a major form of exchange, such as demand deposits, and by operating clearing systems for paper and electronic financial transfers (Kaufman, 2001). Thus banks play an invaluable role in the economy. It is quite known that well functioning banking systems accelerate long-run economic growth but poorly functioning banking systems can impede economic progress, exacerbate poverty and destabilize economies (Bath, Capro and Levine, 2001). Therefore, efficient bank operation and stability should be a major macro-economic concern of a nation. To ensure that the banking system is efficient and operationally effective, the government of every country does exert some regulatory controls. One of such control is the regulation of bank capital base through capital requirement policy. Studies have shown that a strong financial base is sine quo non for effective operation and efficient delivery of financial service by banks. The solid financial base will assist the banks to withstand fluctuations in the liabilities portfolio and be able to absorb some unexpected losses due to asymmetric information on their customers. The ability of banks to provide needed credit in a fast developing economy and to robustly compete in an ever increasingly competitive environment is enhanced with strong capital base, ceteris paribus.

Over the years the issue of capital requirement policy has always been left in the hand of the monetary authority in each country. Recently due to increase in bank failure and the attendant effect on the real sector of the economy, the campaign of bank capital adequacy has taken international dimension. Countries have begun to team up to regulate this most sensitive segment of their economy. As the financial theorist will say, the banking sector is so central and sensitive to the smooth running of the economy that it could not be left in the hand of the bankers only. Concerted effort has to be made to ensure the healthiness of the whole economy. The current globalization has also made the need for bank regulation inevitable if countries are to benefit from cross countries investment opportunities. A financial spark in a small island like Comoro can generate ripple effect in all parts of world economy. It is with this belief that the Basle Accord was initiated and an agreement was reached among stakeholders on what should be the minimum capital base of banks in the participating countries. Apart from the global effort, in recent years, the Central Bank of Nigeria (CBN) has consistently enforced flat capital requirements in terms of minimum paid-up capital in the Nigerian banking sector. The most significant leap in this direction was the 2004 financial reforms in which the number of banks was pruned down to *25* due to a CBN directive on minimum capital base of N25 billion.

However, while some financial theorists continued to emphasize the importance of capital base in banking effective operation, empirical studies in some countries had revealed that higher bank capital levels do

not, by themselves, guarantee that banks are adequately capitalized. This is so whenever banks have high ratios of risk-weighted assets to unweighted assets (See, for example, Shrives and Dahl, 1992). .For instance, despite the fact that the CBN has been enforcing capital adequacy requirements, the Nigerian banking system has always been under distress. For instance, six technically insolvent banks were taken over by the CBN in 1993. In 1995, seventeen other technically insolvent banks were taken over by the apex bank. Between 1994 and 1998, the operating licenses of thirty one banks were revoked by the CBN (Ogunbunmi, 2004). Surprisingly, the reform acclaimed panacea to the banking distress in Nigeria has begun to show sign of defect as three of the 25 banks were technically grounded just two years after the N25 billion naira minimum recapitalization reforms of 2005. Therefore this study attemc pts to investigate the relationship between the capital base requirement, profit generating capacity, and the operational efficiency of commercial banks in Nigeria.

Statement of the Research Problem

The 1988 Basle standards are almost entirely focused on credit portfolio risk, the risk of loss due to counter party default (Roy, 2003). Effect of capital requirements on bank behaviour has been empirically tested in the European Union, the United Kingdom, the United States of America, the Middle East, North Africa and Japan. While some of the results contradicted theoretical expectation, some affirmed that higher bank capital ratios were concomitant with decrease in credit risk and that the Basle Accord had promoted financial stability and provided banks with higher capital buffer against insolvency (Roy, 2003). In empirically testing the effect of capital requirements on bank behaviour, virtually sub-Sahara Africa is not on the map, even in an era of globalization. This should be corrected. This is an opportunity to empirically test the effect of capital requirements on bank behavior in Nigeria.

Therefore, as addition to literature, the thrust of this research effort is examination and analysis of corresponding changes in risk of bank credit portfolio caused by adjustments in bank capital ratio. It is surprising to note that despite the fact that the Nigerian banking regulatory authority – the Central Bank of Nigeria (CBN) has been implementing this Accord, the operational performance of Nigerian banking industry still remains unsatisfactory. As shown in the table 1.1 below, the bank failure is yet to abate. For instance, more than *52%* (60) of the banks in Nigeria folded up while in the following years, 47 banks amounting to 41% were closed down due to distress. Except in 2001 hardly a year will pass with at least a bank will not collapse. Indeed the trend has not stopped. In 2004, the 89 banks were squeezed to 25 with 14 completely liquidated while the rest regrouped for business as usual. It is amazing to observe that just two years of the consolidation one (4%) of the 25 banks that remained after the consolidation has been taken over by the CBN due to insolvency and a sign of collapse.

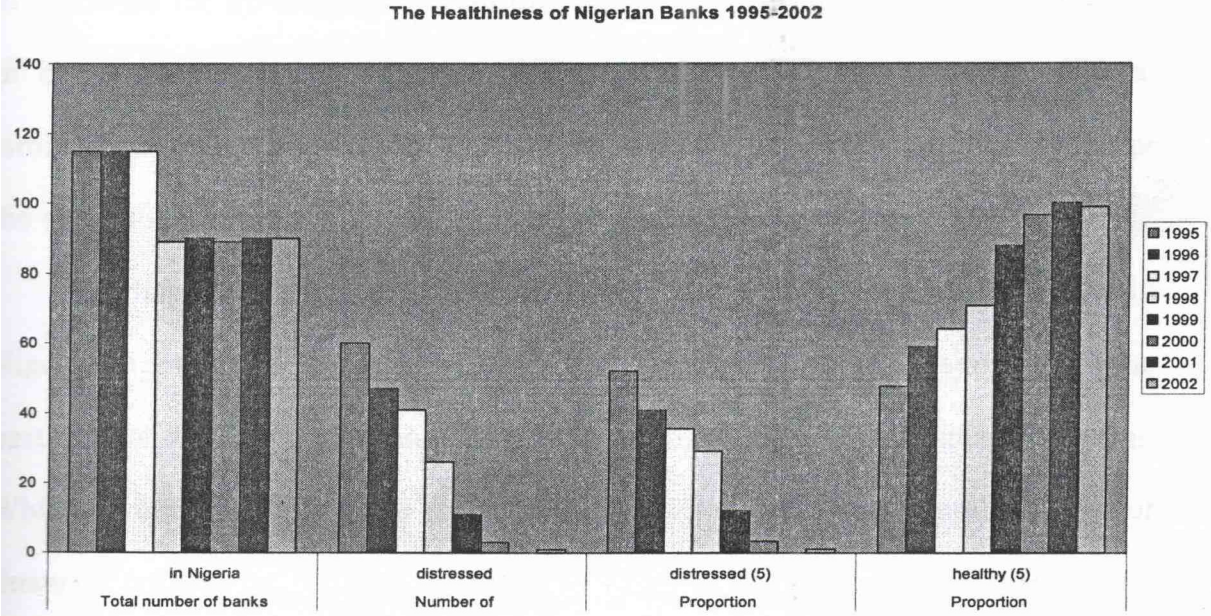
Table 1.1 Healthiness of Banks in Nigeria

Year	Total number of banks in Nigeria	Number of banks Distressed	Proportion of banks distressed (%)	Proportion of healthy banks (%)
1995	115	60	52.2	47.8
1996	115	*47*	40.9	*59.1*
1997	115	41	35.7	64.3
1998	89	26	29.2	70.8
1999	90	11	12.2	87.8
2000	89	3	3.4	96.6
2001	90	0	0	100
2002	90	1	1.1	98.9
2003	89	0	0	100
2004	89	0	0	100
2005	25*	0	0	100

Sources: Compiled from various issues of CBN statistical bulletin 1992-2007

** The consolidation exercise in the Nigerian banking sector between 2004 and 2005 resulted in the emergence of twenty five banks*

Figure 1.1: Healthiness of the Nigerian Banks



Sources: *Drawn from table 1.1*

Indeed the system experienced more instability after the Basle Accord has been implemented than before .Whereas the Accord was established to tame the rate of bank failure, the opposite has eventuated. It shows that the banking sector has not overcome the problem of distress despite the avalanche of reforms; hence sector deserves more attention than before. In view of the pivotal role of banks and the pervasive effects of its failure on the domestic economy and international image of the country, there is need for critical assessment of the underlining factors impeding the smooth operations of the various reforms in the industry especially those that pertain to its capital base as the bedrock for its sustenance and stability. To undertake such analysis and assessment certain pertinent issues need be raised for investigation about the whole regulatory process and mechanism of banking operation in Nigerian and specifically about the previous effort at taming bank failure in Nigeria. This will provide the necessary empirical basis for subsequent reform of capital base requirement of the banking industry.

Perhaps the recent problems of some of the newly recapitalized banks in Nigeria might have been averted if the reform was based on proper appraisal of the past efforts and the underlining factors generating crisis in the banking system. While several attempts were made in the past to assess the overall effects of financial reforms on banking operation in Nigeria, less attention was paid to the issue of capital base especially the operational effectiveness of increasing capital base in the banking industry. The neglect of this important aspect of the banking regulation might undermine the policy relevance of the existing evidence on the operational efficiency of Nigerian banking industry. Appraising the contribution of bank capital on the banking operation in Nigeria is inevitable and urgent to lay solid foundation for further reforms in the banking industry in Nigeria. Hence, this study attempts to fill this empirical gap in the existing literature on capital base and banking operation in Nigeria.

Research Questions

In order to situate the thesis in the right perspective, the following pertinent issues are raised for investigation:

(i) What has been the trend and structure of bank capital base and bank operational efficiency in Nigeria?

(ii) To what extent has bank recapitalization over the years contributed to the performance of Nigeria banks?

Objectives of the Study

The broad objective of the paper is to investigate the relevance or otherwise of bank recapitalization to improving the operational efficiency of banks in Nigeria. This broad objective is further broken down into the specific objective: To examine the trends and patterns of change in the capital levels and efficiency of Nigerian

Commercial Banks.

Research Hypothesis

In order to achieve the above specific objective this proposition will be tested empirically:

H_0: There are no significant differences between trends and patterns of change in the capital level and efficiency of Nigerian commercial banks.

Justification of the Study

In recent years, regulators have increased their focus on the capital adequacy of banking institutions in order to enhance the stability of the financial system (Bertrand, 2000). A major way banking industry across countries has been the implementation of the minimal risk-based capital requirements for banks, referred to as the Basle Accord which was adopted in 1988 and revised in 1996[1].

Many studies have tried to assess empirically the impacts of capital requirement on bank's behavior. Most studies[2] concentrate on US and some European countries. Curiously, analysis of how banks in developing countries like Nigeria have responded to the 1988 bank capital adequacy is of course crucial if one wants to gain insight into the likely implications of the Basle Accord. Our perusal of these studies shows that no serious attempt was made to examine the consequences of banking recapitalization in developing countries like Nigeria. The neglect of this on the world economy is surprising in view of the fact that the consequence bank failure in any part of the world whether developed or developing, has pervasive effect on the general world financial system. Thus, there is an important lacuna to filled in the empirical studies on the implication of bank recapitalization on financial development in Nigeria in particular and developing economies in general. This study attempts to take up this challenge by providing further evidence on bank capital behavior outside the developed economies.

The examination of Nigerian banks capital behaviour is of interest in several other respects. First, Nigeria has suffered from financial crises arising from the risk taking and weak capital base problem that nearly submerged the market in the 1990s. Examining the effect of recapitalization policy of Nigerian banks will further shed light on possible factors responsible for the crises and the appropriate policy response to prevent future occurrence. Second, regulatory pressure in Nigeria implied by the capital requirement may be stronger in Nigeria where a beach of the guidelines rapidly leads to the closure or takeover of the bank; unlike the case in some developed countries where undercapitalized banks are not necessarily closed, but are subject to restrictions on their activities and to higher deposit insurance premia. Third, financial structure and institutions in Nigeria are less developed than those in developed economies where the existing evidence are based, thus making the evidence from those countries less relevant in policy design and evaluation in Nigeria. This study therefore investigates the effect of capital regulation on bank performance in Nigeria.

2. LITERATURE REVIEW AND THEORETICAL FRAMEWORK

Concept of Capital Requirement and Regulation

Bank sector deregulation occurred in many countries in the seventies and eighties. During these two decades, asset regulation, deposit rate ceilings and even entry controls were at least partially abandoned. Since the virtual surrendering of the banking sector to market control, costly bank crises had occurred phenomenally in developed, emerging, and developing economies. In order to allay the fear of depositors and promote general confidence and stability in the banking sector, establishment of a national deposit insurance (NDIS) became a universal convention. Instead of abating, bank crises became preponderant. Since the government subsidized the NDIS, it was thought fit it regulated the banking sector.

The choice of capital requirement as instrument of regulation has been less controversial than regulation per se. Bank capital has dual functions. One is to provide a buffer or cushion against unexpected losses or shocks. This is the risk- bearing function. The higher the bank capital, the higher the capital buffer and the less the probability of insolvency, ceteris paribus. With underpriced deposits, however, increased equity financing raises bank weighted average cost of capital (WACC) and hence, narrows the scope of profitable investment. In the presence of complete information, however, this WACC should approximate the WACC engendered by free market forces! In this state, increased WACC that accompanies a higher capital requirement may be desirable in terms of both resource allocation and regulatory efficiency (Park, 1994). The other function of capital is to provide incentives for management to avoid taking excessive risks. This is the incentive function. Though the two functions provide a rationale for bank capital, they hardly provide any for regulation. Regulation of bank capital structure may not be providing a welfare-improving role after all (Gale, 2003, 2004). Even under condition of asymmetric information, there exists an optimal microeconomic capitalization level (OMCL) for an individual bank. The OMCL is rather low from macroeconomic perspective. Regulatory capital requirements can mitigate this inadequacy (Deutsche Bundesbank, *2005).* Specifically, Gale (2004) opines that the privately optimal level of capital chosen by financial institutions may be socially optimal. Hence, there is no rationale for regulating bank capital structure. Without regulatory intervention, banks cannot raise a socially efficient level of

equity (Gersbach, 2003).

Capital regulation was justified by the perception that banks choose an excessive probability of default (Stolz, 2002). Moral hazard arising from limited liability status and the underpriced NDIS are the two most cited reasons for perverse risk-taking in the banking sector. According to Stolz (2002), higher capital buffer does not guarantee reduced probability of insolvency since banks might overcompensate the positive effect of capital buffer with increased risky credit exposures.

Regulatory capital requirements earlier implemented in form of maximum leverage ratios unsuccessfully deterred banks from excessive risk-taking. Consequently, some regulators shifted attention towards linking capital requirements to the perceived risk of bank loan portfolio (Stolz, 2002). Soon risk based capital requirements won universal acceptance as evidenced by the 1988 Basle Accord. However, opportunistic moral hazard risk-taking still persists. In the circumstance, if NDIS must stay, regulatory capital requirements must be able to substantially reduce moral hazard. Perhaps an optimal cohabitation of NDIS with capital requirements is all that is needed to maximize aggregate output.

Theoretical Literature

Moral Hazard Behavior Types

Bank's limited liability status and the national deposit insurance scheme can cause bank stakeholders to behave perversely (Stolz, 2002). Using data stored in its database, a bank generates information on its loan applicants; skillfully screens the latter and approves funds for those who are credit worthy. The bank monitors funded projects and updates its loan customer database. With regards to bank database and information on loan customers, the bank has proprietary right and the potential and semantic information are the exclusive preserve of the bank. This exclusiveness of bank information creates asymmetric information for the bank vis-à-vis the financial markets.

Explicit deposit insurance is either of fixed premium type or variable (risk-based) premium type. The outcome of an insured deposit is perfectly certain and it is determined ex ante. Since deposits are guaranteed by the deposit insurance scheme, depositors lose incentive to monitor and assess the riskiness of their banks' portfolios of assets and therefore do not require higher interest rates from banks with riskier portfolios. Banks in return have incentive to increase the riskiness of their portfolios. In this scenario, the returns on deposits cannot be adequate. Also financially weak banks may gamble for resurrection by investing in high return riskier assets with little or no consideration given to the risk of insolvency (Stolz, 2002). If this perverse risk-taking backfires, the deposit insurance scheme pays the depositors. Effectively, the gambler bank shifts losses to the deposit insurer and consequently wealth is shifted from the insurer to the bank shareholders. Another line of argument is that if financial markets are assumed to be complete and depositors are perfectly informed about the failure risk of banks, the Modigliani and Miller (1958) indeterminacy principle applies (Stolz, 2002).

In spite of the existence of national financial safety net, more than 94 episodes of banking sector distress in industrial and developing economies occurred since the mid-l970s (Glick and Hutchison, 1999). Worrisomely, bank distress is occurring with increasing frequency. For instance, nine crises were marked in 1975-80, 34 during 199 1-95 and by 1997, there were seven new and 29 continuing episodes (Glick and Hutchison, 1999). Apparently, a financial safety net does not insulate the banking sector from episodes of distress. The latter is often accompanied with loss of output and recessions are usual ex-post events (Hutchison and McDilll, 1999). On the average, the cumulative output loss associated with periods of banking sector distress is about 10% of GDP (Hutchison and McDilll, 1999).

According to Sealey (1985) and Baltensperger and Milde (1987) the Modigliani-Miller theorem cannot be applicable to all banks. This is so because in a world with complete markets and without frictions, there would be no need for financial intermediaries. "A primary rationale for the existence of banks, according to information theorists, is that banks have an information advantage in monitoring firms" (Stolz, 2002). With information advantage accruing to banks, depositors lack sufficient information to fully assess the riskiness of bank portfolios (Stolz, 2002). Thus, depositors are unable to efficiently monitor and sanction banks (Stolz, 2002). This information advantage of banks gives rise to moral hazard (Stolz, 2002).

Empirical Literature

In this section, we review the empirical bank literature which may give implications for the optimal capital structure, risk-taking, and interaction with regulation and supervision. We start with a presentation of the most extensive strand which studies the relationship between capital and risk under different regulatory regimes (flat and risk-based capital regulation). Then, we continue with more specific studies on questions concerning the impact of deposit insurance, charter value, and ownership structure on bank risk-taking. We round up with a review of capital market reactions to recapitalization.

Studies on Relationship Between Capital, Risk, and Regulation

Before the early 1980s, US regulation could be characterized by a peer group approach which means that supervisors oriented themselves at the average bank balance sheet. *Marcus (1983),* who tries to explain the

decline in capital to asset ratios in U.S. commercial banks between 1965 and 1977, confirms the peer group theory of regulatory pressure. This implies that when all banks suffer capital losses (for example, from a rise in the interest rate), the increase in regulatory costs for a particular bank is much smaller than it would be if that bank alone lowered its capital. "Drops in capital common to all banks do not induce regulatory review of any particular bank and consequently do not require banks to readjust capital" (Stolz, 2002). In the early 1980s, minimum capital-asset ratio requirements supplanted the earlier peer group type of capital regulation (Stolz, 2002). Using the same methodology, *Keeley (1990)* studies the effect on the capital positions of the 100 largest bank holding companies. He finds that the regulations succeeded in causing banks with low capital ratios to increase their book value of capital ratios both absolutely and relatively to banks with initially high capital ratios, and that banks did so primarily by slowing asset growth.

The fact that this held true even banks which were in excess of the minimum regulatory capital requirement support the conclusion that the positive association between risk and capital of such banks is not strictly the result of regulatory influence. The results suggest that banks will tend to offset regulatory induced capital increases with increases in asset risk unless constrained from doing so by the regulatory apparatus.

Studies on Risk Sensitive Capital Requirements

Avery and Berger (1991) analyze the risk-based capital (RBC) standards using data on U.S. banks from 1982 to 1989. They assess the association between bank performance and the RBC relative risk-weights and compliance with the RBC standards. By applying the Shrieves and Dahl methodology, *Rime (2001)* analyses adjustments in capital and risk of Swiss banks when they approach the minimum regulatory capital level. Switzerland is interesting insofar as Swiss capital requirements might be more risk-sensitive as the Basel Accord as they stipulate a larger number of risk classes.

Studies within the Options Pricing Framework

This strand of the literature is reviewed in an own subsection because it applies a very different methodology to the studies just surveyed. Furlong (1988) studies how the default risk of large U.S. bank holding companies changed in the pre-Basel period from 1975 to 1986. His approach builds on the insights of the option pricing theory that the equity market capitalization of a bank may be regarded as the value of a call option written on the bank's underlying asset value with deposits being interpreted as the option's strike price. Furlong then infers the volatility of the asset values by inverting the Black and Scholes call option pricing formula. He finds that asset risk measured in this way actually doubled in 1981-1986, the part of his sample in which banks faced capital requirements, compared to the earlier period. It appears that the large increase in asset risk more than offset the improved capital positions thereby increasing default risk.

However, the increase in asset risk was pronounced for capital-deficient than for well-capitalized banks. Sheldon (1996) performs a similar analysis for 219 G- 10 banks over the period 1987 to 1994 in which the Basel regulations came into force. He studies the risk-seeking effects of the implementation of the new risk- based capital standard. His results suggest that asset volatility in US banks rose irrespective of whether the banks increased their capital. In Japan, asset volatility fell although most banks raised their capital ratios. Sheldon's results provide little evidence that the implementation of the Basel guidelines increased the probability of bank failure. The problem with these two studies is that neither Furlong nor Sheldon controlled for the host of other influences which might have affected risk- taking in the sample periods. Besides, the assumptions of the Black and Scholes formula concerning the underlying probability distribution may be problematic as well.

Studies on Moral Hazard Due to Deposit Insurance

There is an extensive empirical literature, which confirms the adverse incentive effects of deposit insurance. For instance, *Thies and Gerlowski (1989) and Wheelock (1992)* find for the US banking sector that risk-taking and probability of failure are increasing in deposit insurance. Similarly, *DemirglicKlint and Detragiache (1998)* find a sample of 61 countries that are over a period from 1980-1997; deposit insurance significantly increased the probability of a banking crisis. The adverse impact of deposit insurance on bank stability was stronger where bank interest rates were deregulated (suggesting also that high bank charter values can alleviate moral hazard). The authors also find that in countries where bank regulation and supervision is of poor quality, moral hazard due to deposit insurance is higher. Unfortunately, they assess quality by some general measures of the institutional environment do not take capital regulation explicitly into account.

The findings by *Gropp and Vesala (2001)* stand in contrast to these former empirical results. They study the relationship between deposit insurance, debt- holder monitoring, bank charter values, and risk-taking for European banks. They find that the introduction of explicit deposit insurance reduces the risk-taking of banks. Gropp and Vesala explain their counterintuitive result by the expectation that in the absence of deposit insurance, a public bailout would save banks in time of distress. The establishment of an explicit deposit insurance system then actually limits the scope of the safety net. This result implies that the belief of the depositors in a public bailout is sufficient for moral hazard of banks. They also find that banks with lower charter values reduce risk taking more after the introduction of explicit deposit insurance. This supports the mitigating

effect of charter value on moral hazard. The authors also show that large banks do not change their risk-taking in response to the establishment .of deposit insurance. This suggests that the introduction of explicit deposit insurance does not alleviate "too-big-to-fail" problems. "The fact that the saving and loans crisis in the U.S. occurred just after a period of extensive deregulation suggests that high charter value may have effectively counterbalanced the negative incentive effects due to deposit insurance" (Stolz, 2002).

Theoretical Framework

Capital decision is analyzed within the theoretical framework developed by Baltensperger (1973). In this framework, the individual bank is assumed to maximize its profit by choosing an optimal ratio of capital/debt within a competitive environment. Also, the individual competitive bank has the right to issue whatever kind of callable debt requested by the public, knowing that this is redeemable in outside currency. The difference between inside and the outside currency has to be clearly made. The outside currency is the means of payment with the highest level of acceptability, while the inside currency is a debt redeemable on demand in the outside currency, its level of acceptability being inferior to the former (Baltensperger, 1973). Thus, the management of reserves in outside currency is decentralized among the private commercial banks. (Selgin, 1988 and white 1983, 1986). The decentralized management of reserves in outside currency increases the costs associated with the production of liquidity services and intensifies the link between the illiquidity cost and insolvency cost. The banking firms are supposed to be commercial banks working under the fractional reserve principle. In other words, depositors accept to hold debt redeemable on demand (inside money issued by commercial banks) in outside money (base money) even though they are aware that the bank does not hold 100% of the deposits issued in outside currency. They would rather face the risk of holding illiquid debt than renounce access to additional loanable funds. Among the callable debt issued by individual banks, notes represent a category apart given that these are direct substitutes for outside money.

The partial equilibrium framework is a one-period model. As a result, managerial decisions are not necessarily consistent over time. The absence of time-consistency in the process of decision introduces a bias in the analysis: managers suffer from short-sightedness. Indeed, the one-period framework reduces the time-horizon of the firm and favours decisions of maximizing profit in the short run. By neglecting the time-horizon, the model overlooks the role played by the time-preferences of managers and shareholders. Indeed, by assuming a short time-horizon they have an incentive to choose the solution that maximizes profit in the short-run which does not imply that it maximizes the long-run profit as well. This time-frame could favour risky decisions and influence the results of the model.

3. RESEARCH METHODOLOGY

Data Sources and Sampling Procedure

This study is a panel data study. It collected data on some individual banks for specific periods of time 1992 to 2007 and coalesce these data together to generate a pooled data series. Hence the study is both time series and cross sectional. Therefore, secondary data time series were collected on some selected banks for the period 1992 to 2007. The population included all the banks in existence from 1992 to 2007. Therefore from about eighty seven banks, thirty two were selected. The criterion used for the selection was availability of consistent data on the bank for the whole sample period(See appendix B for the list of banks in the sample). Data on all these banks were collected from their annual reports submitted to the Central bank of Nigeria and Nigeria Stock Exchange. Where such data were not available, the banks involved were visited to gather the data from their archives.

Some of the banks did not provide all the necessary statistics from the base period 1992, to the lead period 2007. only the banks that we were able to get the relevant consistent data on were considered. During the period under survey there were bank failures, mergers and acquisitions. Those banks that failed were also included but with a dummy added from the date of their closure. Those that merged or acquired were taken as individuals till the date of their fusion. Indeed since the study adopted polled cross sectional data analysis, the effects of mergers and acquisitions did not affect the analysis. However, to account for this also a dummy variable was also included.

4. DATA PRESENTATION, ANALYSIS AND DISCUSSION

This section presents the empirical analysis carried out on the relationship between capital base requirement and measures of bank performance. Thus, the section is sectionalized on the basis of this objective. Apart from this introduction, the section is divided into four parts. Section 4.2 is devoted to examining the trends and patterns of the capital base and bank operating efficiency in Nigeria. The descriptive properties of the variables were also examined by conducting an analysis of the mean, medium and standard deviation of the variables. Furthermore, correlation coefficients and causality nexus among the variables were examined.

Pattern/Trend of Change in Capital Base Level

Table 4.1 and Figure 4.1 below depict the average values of the aggregates of capital base of the banks in Nigeria between 1992 and 2007. The minimum capital base was also included in table 4.1. As the Table 4.1 shows the minimum bank capital has always lagged behind the actual average value of bank capital in most of the years. By 1992, the minimum bank capital was *N50* million while the average bank capital was above N74 million. This suggests that most banks in existence then had sufficient capital base to meet up with the regulatory requirement. This low capital base requirement coupled with the financial liberalization policies that led to the relaxation of entry requirement into banking industry aided the establishment of mushroom banks. Most of these banks were unsustainable as they were more or less family businesses that lacked basic corporate business ethical practice. The resultant effect of this was the high mortality rate of banks. The situation was critical in 1995 when over 60(52%) of the existing banks were classified as distressed by the CBN. Similarly in 1996 47(41%) and in 1997 4 1(36%) of the banks were critically ill and the CBN had no other option than to intervene again in the industry. As a way of curtailing this trend of distress and to bring sanity into the banking industry, the regulatory authority increased the bank capital base from N50 million to N500 million. This was about 900% increase in the capital base of the banks with the belief that this would not only reduce the number of new entrants but would also force the existing banks to merge.

Ironically, by the time, the regulatory authority was taking this decision, the capital base of most of the banks had increased to about N55 million. Thus only few banks were affected. The effect of this increase in bank capital base and other regulatory measures by the CBN only led to closure of only 26 (23%) banks in the number of banks from 115 to 89. With this new bank capital base the number and proportion of distressed banks began a downward trend. 41(36%) in 1997 it fell in to 11(12%) by 1999. Not satisfied with this achievement and because of the need to strengthen and fortify the banks for future challenges and to prevent the occurrence of the total crisis of 1995, a unified operating license was canvassed for both merchant and commercial banks. Under this unifying license, the distinction between commercial and merchant banks was removed and all banks could operate both retail and wholesale banking unlike before where only commercial banks were allowed to operate retail banking. This new policy led to most merchant banks converting to commercial banks and others who could not convert merged with exiting commercial banks or were acquired by other big banks.

Based on this new arrangement the new capital base requirement increased to N2 billion. However by this time, the average bank capital has also increased to N2.8 billion. This implies that the regulatory capital base requirement was perpetually lagging and only trailing the actual capital base of the banks. The only effect was to restrict entrance but with little effect on the existing banks as they had already exceeded the base value. Rather than the number of banks reducing the number increased marginally from 89 in 2000 to 90 in 2001 when the universal banking system was introduced. However, this shows that the distressed situation has been curtailed at least in the short term. By 2002, more specifically towards the end of 2002, a bank collapsed and many other banks were found to be technically unsound. This created some fears and concerns among the regulatory authority and hence the need to take stringent measures.

In order to nib this potential financial crisis in the bud, in the third quarter of 2004, the CBN introduced a comprehensive banking reform policy of which the core policy instrument is the increase in the capital base from a meagre N2 billion to N25 billion representing an increase of about 1150% in capital base. This came as a surprise to most of the banks and even other corporate bodies. There are reasons to be surprised, from the experience and as explained earlier previous increases have been gradual and in most cases only to prevent new entries. But this time around, the new capital base was higher than the industry trend. Most of the existing banks became surprised and even confused. Several options were provided by CBN, two of such options were (i) merger and acquisition and (ii) raising of funds through the stock market. By the end of 2004, only 25 banks were able to meet the deadline. Out of these 25 banks, six (6) banks only consolidated by just increasing their capital base through stock market public offer while 75 other banks engaged in merger and acquisition to form 19 new banks 14 out of the 89 banks in existence by 2003 were unable to conclude their consolidation exercise by the time the deadline expired. Currently most of these fourteen banks are now being acquired by the surviving 25 banks. By 2007 two other banks also merged and the number of banks reduced to 24.

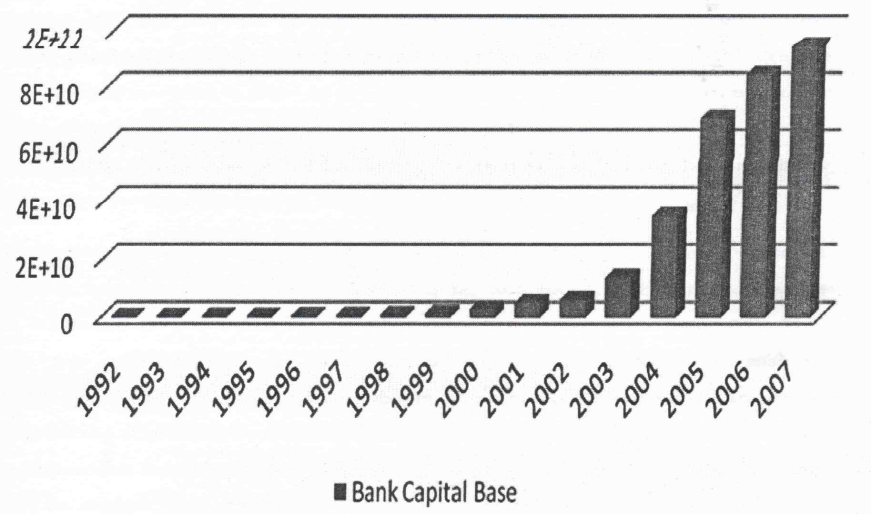
The importance of this trend analysis is that capital base requirement has been ineffective in reducing distress in the banking industry due to the fact that it was always lagging behind the industry trend. To be effective, it must be higher than the industry trend. This could explain why the 2004 consolidation was more effective than the past exercises.

Table 4.1: Trends and Patterns of bank Capital Base in Nigeria (1992-2007)

Year	Total number of Banks	Number of Banks Distressed	Proportion of Distressed Banks (%)	Bank Capital (N billion)	Bank Capital Base (N billion)
1992	119	Na	Na	0.074238	0.05
1993	115	Na	Na	0.091257	0.05
1994	115	Na	Na	0.129461	0.05
1995	115	60	52.2	0.174506	0.05
1996	115	47	40.9	0.468183	0.05
1997	115	41	35.7	0.547977	0.5
1998	89	26	29.2	0.834135	0.5
1999	90	11	12.2	1.325796	0.5
2000	89	3	3.4	2.843129	0.5
2001	90	0	0	5.083793	2
2002	90	1	1.1	6.141195	2
2003	89	0	0	13.76548	2
2004	89	0	0	35.21804	25
2005	25*	0	0	69.17538	25
2006	25	0	0	84.67222	25
2007	25	1	0	94.68381	25

Sources: CBN Statistical bulletin 2005 and 2007
Na=not applicable.

Figure 4.1: Trends values of the Capital base of Nigerian banks from 1992 to 2007



Sources: Panel Study 2007

Table 4.2 depicts the trend values of bank capital and some measures of bank efficiency. As the Table 4.1 shows, risk exposure of banks reduces as the bank capital base increases. Though the risk exposure rose from *-15%* in 1993 to 23% in 1994, it fell from 47% in 1995to *-45%* in 1997. This reduction in 1997 coincided with the increase in capital base from N50 million to N500 million. Similarly the risk exposure fell to a negative value in 1999 *(55%).* Though the value remained positive in most of the other periods but the percentages are lower in 2000s than in the 1990s. This could be interpreted to be in tandem with increase in bank capital in these years. Thus, there was inverse association between bank capital growth and risks exposure of banks.

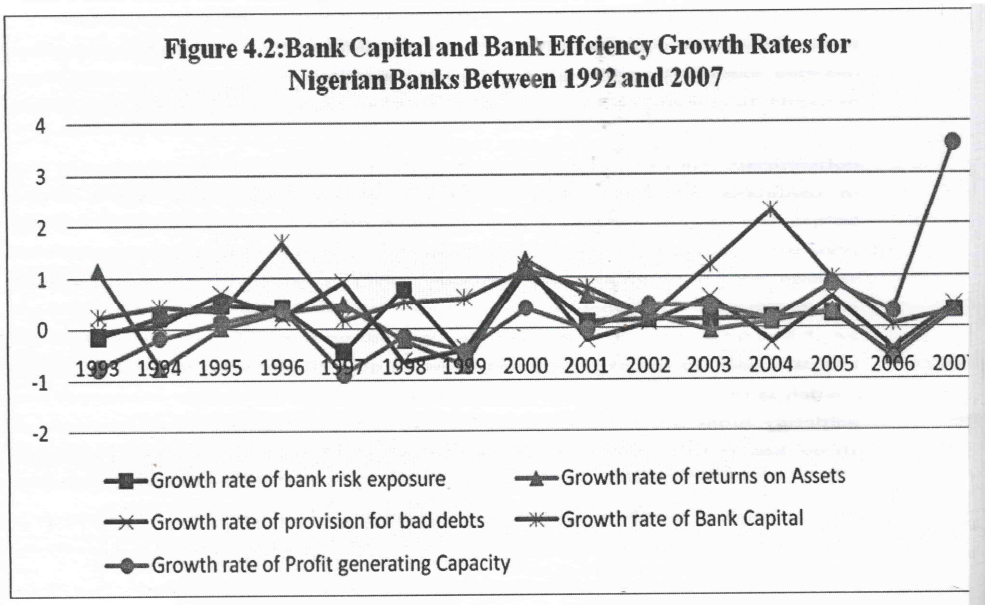
In contrast to expectation in the case of return to asset there was also negative association between the growth in bank capital and ROA. As depicted by the figure 4.2, most of the times the bank's capital rose, return on asset fell. This implies that mere increase in bank capital may not translate to increase in efficiency if measured by the returns to assets of the banks. However, the trends of the growth rate of profit generating capacity increase with increase in bank capital. This implies that bank ability to generate more profit moves in tandem with the increase in capital base. Provision for bad loan is also observed to increase in many years than decreasing. This further raises issues regarding the relevance of bank capital increase as a way of curtailing bank distress and promoting efficient bank operation and capacity to generating profits. However basing policy

inferences on only this trend is dangerous as the trend is too preliminary and tentative to rely upon for meaningful inferences. A more rigorous analysis is required to determine the relevance of bank capital to the improvement in bank operational efficiency and bank capacity to generate profit.

Table 4.2: Results of Computation of Growth Rates

	Growth rate of bank risk exposure	Growth rate of returns on Assets	Growth rate of provision for bad debts	Growth rate of Bank Capital	Growth rate of Profit generating Capacity
1993	-0.15	1.15	-0.05	0.23	-0.75
1994	0.23	-0.75	0.08	0.42	-0.18
1995	0.47	0.02	0.69	0.35	0.12
1996	0.4	0.31	0.22	1.68	0.37
1997	-0.45	0.47	0.91	0.17	-0.87
1998	0.77	-0.22	-0.64	0.52	-0.15
1999	-0.55	-0.71	-0.4	0.59	-0.44
2000	1.09	1.34	1.23	1.14	0.39
2001	0.11	0.63	-0.22	0.79	-0.03
2002	0.16	0.25	0.11	0.21	0.45
2003	0.17	-0.05	0.59	1.24	0.43
2004	0.18	0.12	-0.28	2.28	0.17
2005	0.27	0.32	0.6	0.97	0.86
2006	-0.52	-0.57	-0.4	0.06	0.32
2007	0.33	0.32	0.44	0.32	3.58

Sources: Panel Study 2007



According to tables 4.1, 4.2 and figures 4.1 and 4.2, the trends and patterns indicated changes in bank capital and corresponding changes in the indices of bank efficiency, the null hypothesis — there is no significant difference between trends and patterns of change in the capital levels of efficiency of Nigerian Commercial Banks is rejected.

In order to explore further the linkage and to avoid spurious interpretation of the result from the causality nexus among the variables examined to determine the causal relationship between bank efficiency indices and capital base requirement as well as other bank related variables, the correlation coefficients between pairs of these variables are examined before granger causality is used to determine the direction of influence. To this effect, the correlation and causality among the key variables are presented in table 4.3. As shown in table 4.3 the relationship between changes in return on assets (ROA) and changes in capital base of the banks is positive but very low. Similar pattern is observed in the cases of bank risk level, profit before tax, input variables (prices of physical capital (PC), deposits (PD) and labour (PL)) and profit generating capacity (PGC).

5. CONCLUSION AND RECOMMENDATIONS

As part of the background to the study and in fulfillment of objective of the study, a trend analysis of changes in key bank variables and the pattern of these changes in these variables over the sample period are carried out in order to determine a unique association or co-movement among the variables can be detected. It is

established that there is positive association between bank performance and key bank variables.

Conclusion

The study has shown that the regulatory pressure is an integral factor in bank efficiency determinant. This suggests that the central bank of Nigeria can use the regulatory power of raising the capital base of banks to stimulate greater efficiency and ensure that the bank still generate sufficient profit for the shareholders. The recent development in the mega banks in the US and other advanced European countries is signal that bank has optimal threshold level at which additional increase in capital base may be inimical to the healthiness of the banking industry and the overall economy. The regulatory authority must ensure that check and balances are put in place to check the excesses of banks so as to prevent financial crises.

Recommendations

Since capital base has significant positive effect on bank operational efficiency and capacity to generate profit, it can be instrumental in promoting bank soundness and stability. The followings are therefore recommended: Bank capital regulation must be anchored on a sound monitoring system which regularly assesses the economy, ascertains, and establishes the level of capital commitment required by the banking sector;

Adjustment must be made to the established level of capital commitment in (i) above so that the weakness in bank asset portfolio and liability portfolio are adequately taken into cognizance;

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