THE DETERMINANTS OF COMMERCIAL BANKS INVESTMENT PORTFOLIO IN NIGERIA: 1985 - 2004 IN RETROSPECT

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ABSTRACT

Investment portfolio determinants for Commercial Banks is a very important and complex aspect of commercial banking management since the failure of a poorly managed bank due to increased risk exposure could lead to a contagion of bank failures within the system. This study attempts to empirically bring out the core variables (determinants) that influence investment portfolio of commercial banks in Nigeria. Data were sourced from the Central Bank of Nigeria (CBN) statistical bulletins and reports. The study adopted both descriptive and analytical statistics, involving regression analysis. From the analysis, it was discovered, that determinants of commercial banks investment portfolio include deposits profile, liquidity rate, exchange rate, interest, cost of funding, rate of returns as well as inflation rates. Most of these variables are exogenous and have positive relationship, which enhances economic growth and development. The linear regression result signifies that investment portfolio can increase or decrease depending on variations in the determinants studied. Since banks exert a lot of influence on the pattern of economic development through deposit mobilization, lending and investment activities, it is concluded that a proper understanding of these determinants is given proper attention in investment portfolio, decisions by commercial banks management and regulatory/supervisory and policy makers.

Keywords: Investment portfolio, Exogenous variables, economic growth, development, economic determinants.

INTRODUCTION

An economy comprises different units and agencies that undertake various forms of economic activities. The economy may be classified in various ways. One common classification identifies the financial sector and the real sector which co-exist as suppliers and utilizers of funds through financial intermediation process. Various institutions and

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markets such as commercial banks, insurance companies, mortgage institutions are involved in these activities thereby result in a complex financial system. Importantly, commercial banks currently constitute the centerpiece of the Nigerian financial system, and provide the major conduit for the transmission of monetary policy signals to the real sector. Experiences in different parts of the world have shown that any disruption in the financial sector can create substantial problems that reverberate, not only on the entire financial system, but also on the economy as a whole. The ratchet effect can indeed, make a difference between plunging the economy into recession or prosperity. Therefore, commercial banks as key participants in the economic development process, to a reasonable extent, exert a lot of influence on the pattern and trend of economic growth and development through their deposit mobilization lending and investment activities.

The importance of banking in economic growth and development dates back to the Babylonian civilization and the activities of goldsmiths in Europe particularly in Britain where the receipts issued by these Goldsmiths were transferable on the security of gold deposited with them and hence paved their way for the development of rudimentary current accounts, bills discounting and loan facilities (Nzotta, 1999). In Nigeria, the emergence of indigenous banks dates to 1892 when African Banking Corporation (ABC) began operation and later assumed a new name, Bank of British West Africa (BBWA), in May, 1893. During this era, foreign (colonial) banks dominated the economic scene, which discriminated against Nigerian businessmen, but financed a restricted group of customer, the colonial government, the marketing boards and the foreign firms. They also invested their surplus funds in the London financial markets as they lacked interest in the growth of the local economy and were mainly concerned with how to monopolize banking business in Nigeria, and make huge profits for their foreign shareholders (Onoh, 2002). With the desire to promote economic growth and development of the country, indigenous commercial banks were established to correct the perceived anomalies of the foreign banks although most of them short-lived. What is made clear is that, the development process of both the financial and real sectors hinges on a functional banking system with a widespread investment strategy and regulatory framework.

It is widely believed by development economists that economic growth and development depend critically on investment. Commercial banks play a prominent role in channeling scarce financial resources mobilized from the surplus economic units to deficit units for enhanced efficient allocation. As creators of money, principal depository of savings, major allocators of credit and managers of the country's payment mechanism, commercial banks occupy a unique position in the economy. Confidence is therefore, important to prevent runs on deposits which may affect the credit payment

process and the economy as a whole if the investment decisions are not well articulated and managed to ensure a balance between the safety and liquidity of its funds and at the same time maximize returns (profits) -investment - returns trade off.

The involvement of a sound corporate strategy for the deployment of financial resources by commercial banks requires analysis, planning, control and development. A purposeful policy is geared towards effective realization of the corporate objective which therefore emphasises on a good understanding of the fundamental factors which can inhibit success of the chosen course of action. Hence, the identification of the determinant of commercial banks investment portfolio. Banks are constraint by regulatory requirements in the use of deposit funds for investment and advances purposes, couple with the fact that "an ill-planned investment portfolio can result in problems of attaining the objectives of liquidity, and profitability, hence, systemic collapse of the banking system with the attendant runs on bank which can trigger of the credit payment process.

This study's broad objective therefore, is to ascertain or identify investment portfolio determinants of Nigeria commercial banks given the usual constraints between liquidity, solvency and profitability optimality. The study intends to provide answers to the following questions:

i   Why do banks choose to devote a significant proportion of their assets to investments?

i   What roles do investments play in the successful management of banks?

iii   What types of investment securities do banks invest on?

iv   What factors affect a bank's decision regarding the investment portfolio?

Theoretical Framework

Investments to economists mean capital formation involving the acquisition or creation of resources used in production. It also means production of durable capital goods. In principle, it is suggested that investment include relevant measure of production, which include how output as well as goods and services produced are sold. The classical and neoclassical economists argued that business invest with the need for maintaining the existing stock of capital, providing for the future and the desire to earn profits. The neo-classical investment theory has its roots in the accelerator principle, which reveals that, a representative firm is always out to maximize expected future profit. In the neoclassical framework, investment is perceived to be linearly dependent on changes in output, expected returns on investment and cost of capital. To date, equilibrium level of capital formation, that is, market determined is established by the intersection of the investment and savings curves. Interest rate performs the equilibrating exercise. It is

assumed that savings and investment curves will reflect accurately all the benefit and capital formation. One of the conditions under which level of capital formation will become sub-optimal is however when a change in any of the underlying determinants of investment occurs. When this happens, economic efficiency will be lost. Hence, commercial banks in Nigeria, as elsewhere overview these determinants to avoid falling to the trap of sub-optimality in their investment decision. In the Keynesian model, there is a close relationship between the rate of interest, investment, employment and output. The model stipulates that there is a structural relationship between money supply, interest rates, investment and output. From this theoretical framework, if money supply increases the loanable funds will also increase thus, sustaining a decrease in interest rates. Investors would usually prefer low interest rates. This relationship could be expressed as the investment function thus:

$$I = f(r, II),$$

Where:

I = Investment
R = Rate of interest
II = Expected profit

The investment function shows a negative relationship between investment and interest rates and a positive relationship between expected profit and the level of investment spending. The leading works of Cameron, Bright and Caza (1972), McKinnon (1973) and Shaw (1973) on financial repression hypothesis holds that financial sector development would contribute most significantly to economic growth if authorities were not to interfere in the operations of the financial institutions. McKinnon (1973), Adebiyi (2000), Adebiyi and Adekanye (2000) explain that the effect of real deposit rate of interest on savings and investment rest on the assumption of self-financing constraint of all economic units and the relative lumpiness of investment expenditures over consumption expenditures. The relative lumpiness of investment expenditure implies that aggregate demand for money will be greater, the larger the proportion of investment in total expenditures. Commercial banks investment portfolio management follows the application of Markowitz theory and the capital asset pricing model (CAPM), which emphasizes efficient diversification of investments in portfolio selection taking into consideration the risk and expected rate of return, denoted as:

$$E(R) = \sum_{i=1} R_1 P_1$$

Where:

E(R) - Expected rate of return
R_1 = Rate of returns of individual assets
P_1 = Associated probability

The Markowitz theory and Sharpe CAPM emphasizes a portfolio selection, which targets maximum returns while minimizing risk given market efficiency. Banks often quantify these risks by the computation of individual asset and portfolio risk. Mbat (2001) explaines that Sharpe's contribution to modern portfolio theory has helped in modifying the complex mathematical presentations intrinsic in Markowitz's theory by the introduction of a single-index model which helps in determining the characteristic line that relates the performance of a chosen asset to a chosen index of market performance. The model is given as:

$$ER_t = a + BX_t$$

Where:

ER_t	=	the expected return of a stock at a time 't'
X	=	the index of market performance at a time, 't'
a	=	constant
ß	=	Stock Beta ratio

When the return of the asset would be a dependent variable and the index of market performance becomes an independent variable: Normally, risk would be simply related to return as:

$$R - i - O$$

Where: r = rate of return on bank's investment

i = real interest rate (riskless rate)

o = vector of risk (simply made up of generic risk)

This is measured as the deviation from expected returns while others interpret the beta - coefficient associated with the capital asset pricing l as an index for risk.

Structure of Commercial Banks in Nigeria

Commercial banks as financial intermediates combine human and financial resources to ensure credit creation and deposit mobilization, which is required for even development and growth of the economy. Cross and Hempel (1980); Nzotta (1999), are of the view that character of a bank - its appearance, its policies, reflects its organization success or failure. These characteristics could be subsumed into the bank. As stated by Cross and Hempel (1980):

> *"The structure of a bank in the dynamic sense encompasses various characteristics that shape or determine its individuality. Among those are the market, it services and own institutional organization".*

From the foregoing, the structure of the commercial banks, which includes its age, size, market served, management organization (structure) and balance sheet determine

the investment portfolio. Hence, the actual investment securities commonly held by banks most often than not hover around the bank's size and location because these characteristics affect/determines the strength, public image, expertise and financing activities. In like manner, the structures of commercial banks are affected to a large degree by the strength of the regulatory bodies and applicable regulations/laws guiding their operations. Consequently, the volume of investment held by the banks is also determined by the existing laws. This accounted for why there has been a resurgence of substantial interest in the health, soundness and stability of the financially sector globally. These revolutionary global changes also affects the Nigerian financial sector and brings with it huge opportunities, although not without the associated risks and challenges.

Dimension of Commercial Banks' Investment

Commercial banks investment portfolio entails a combination of individual securities, which emphasizes the holding of a well-diversified portfolio given the expected return and risk of the portfolio, which is normally distributed. Therefore, efficient and effective bank management involves good understanding of the portfolio theory aimed at identification of the specific risks associated with banking business. The Markowitz theory of portfolio selection and Sharpe capital asset pricing model (CAPM) emphasizes risk diversification and return implications of holding risky securities and the construction of the portfolio opportunity set with risk-free securities. The structuring of commercial banks˙ investment place Bank management in a position where they must constantly resolve the conflict between safety, liquidity and profitability by striking a judicious balance among them.

Commercial banks investment portfolio has to do with some basic reasons why banks hold security portfolio given their maturity structure. According to Rose (1991), banks security portfolio plays the following functions which indicates why banks invest:

i   Stabilize the banks' income, so that bank revenues level out over the business cycle - when loan revenues fall, income from securities may rise;

ii   Offset credit risk exposure in the banks' loan portfolio. High-quality securities can be purchased and held to balance out the risk from bank loans;

iii   Provide geographic diversification;

iv   Provide a backup source of liquidity, because securities can be sold to raise needed cash or used as collateral for bank borrowings of additional funds;

v   Reduce the banks' tax exposure, especially offsetting taxable loan revenues;

vi   Provide flexibility in a banks' asset portfolio because investment securities,

unlike most loans, can be bought or sold quickly to restructure bank assets;

vii Dress up the banks' balance sheet and make it look financially stronger due to the high quality of most bank-held securities.

Nwankwo (1991) states that investments are important to banks because they act as a liquidity back-up or cushion and provide such other functions as; providing acceptable collaterals for borrowing, example from the central bank; acting as vehicles for repurchase agreements and for risk diversification and portfolio adjustments. They also provide opportunities for active liability management, dressing up balance-sheet appearance for customers and regulators, and they permit impersonal flexibility, which is essential in managing banks' overall maturity and interest rate sensitivity position. Nzotta (1999), in answering the pertinent question on why bank management is interested in investment management, stated that; investment are *an* important source of income to a bank; assisting in managing a bank liquidity problems; serving as collateral for borrowing from the CBN and other banks; providing vehicles for repurchase agreements, risk diversification and portfolio adjustment; and safety of funds. Banks investment securities vary, in fact they grow by the day and include both money and capital markets instruments like; Treasury bills, notes and bonds; Certificate of Deposits, Bankers acceptance, Commercial papers, for money market instruments, Municipal notes and bonds; Treasury notes and bonds (over a year); Corporate notes and bonds, Structured notes; Securitized notes; Stripped securities, for capital markets instruments.

According to Onoh (2002), commercial banks investment fall into three categories which they make with their internally generated or purchased funds. These include short-term assets, long-term assets and ease finance terms. The short-term assets are investment in treasury bills, treasury certificates, CBN high yielding certificates, banks acceptances, commercial papers, bills discounted and payable in Nigeria. The long-term assets include the securities of the federal government (development loan stocks) and those of the State and local governments, investment in shares of publicly quoted companies, or those not quoted but properly incorporated and bonus and debentures of limited liability companies. The lease finance term as the balances on the equipment lease still to pay constitute an asset to the bank financing the equipment.

Ebhodaghe and Jimoh (2000) cited in CBN Bullion (2000), state that universal banking has expanded commercial banks investment portfolio as they can now carry out what is called investment banking which is often the area of merchant banks specialty. More so, other areas, which were the exclusive right of insurance and other finance companies, are also opened to commercial banks.

Determinants of Commercial Banks' Investment

Investing in securities is a straight forward policy but requires the understanding of factors affecting the choice among investment securities since the underlying principle is the maintenance of a balance between liquidity, safety and profitability. The classical and neoclassical economists' theorists identified investments determinants as; deposits (savings), interest rates, income level and predictions about business performance as well as the rate of returns which Keynes describes as the "marginal efficiency of capital" which is the highest rate of return expected from an additional unit of a capital asset over its costs. These theories found a wide application in banks investment portfolio determinants analysis.

Samuelson and Nordhaus (1995) opine that revenue, costs and expectations are fundamental determinants of investments. They argue that because capital goods last many years, investment decisions depends on the demand, the interest rates and taxes that influence the cost of investment and business expectations about the state of an economy. The literatures on the theories of investment behaviour recognizes these three determinants, while recent theories suggest that investment with particular reference to private sector investment can be significantly affected by such factors as macro-economic instability, macro economy policy (monetary, fiscal and exchange rate), credibility of policy reforms among others. The works of Revell (1980), Agu (1988), Aja-Nwachukwu (1990), Nwankwo (1991) and Mbat (1995) identify various risks such as interest rate risk, credit risk, risk of marketability and purchasing power risk as the major determinants of commercial banks investment portfolio. More so, the work of Cameroun, Bright and Caza (1972), Mckinnon (1973) Shaw (1973) in Agu (1988) on financial repression hypothesis and those of Wheelock (1992) and Obadan (2004) point to regulatory/supervising authorities as playing fundamental roles in investment profile of banks.

METHOD

This study is an attempt to bring out the core variables (determinants) that influence investment portfolio of commercial banks in Nigeria through empirical method. The design is descriptive. Data were sourced from the Central Bank of Nigeria (CBN) statistical bulletins and reports (see table for analysis in Appendix 1) for the period 1985-2004. The study adopted both descriptive and inferent statistics, involving regression analysis using Statistical Package for Social Sciences (SPSS). Our economic model is specified in its functional form thus:

$$Y = f (X_1, X_2, X_3, X_4 \ldots \ldots \ldots Xn) \qquad \ldots \ldots \ldots (1)$$

Where:

Y = Dependent variable

$X_1 - X_n$ = Independent variables

Specifically, we have:

$Inv = f(Erg, Liq, Int_s Exr, Inf, Dep, Cos, ...n)$ ………(2)

where;

inv. = Investment portfolio holdings

Erg. = Expected Earnings

Liq. = Liquidit rate

Int. = Interest rate

Exr. = Exchange rate

Inf. = Inflation rate

Dep. = Deposit liability

Cos.= Funding cost

The regression model becomes:

$Y = b_o + b_{1x1} + b_{2x2} + b_{3x3} + b_{4x4} + ……. b_{nxn} + u$ ……… (3)

So;

$Inv = b_o + b_{1inerg} + b_{2inliq} + b_{3inint} + b_{4inexr} + b_{5ininf} + b_{6eindep} + b_{7incos} + U$........ (4)

The analysis and interpretation of results are based on our linear models for clarity. The use of linear equations is to help reduce, if not completely remove heterscedastic errors that might creep into both sides of the equation as agreed by Friend and Pucket (1964), Ekpo (1977) and Amadi and Osaro (in) Amadi (2002).

RESULTS AND DISCUSSION

The data for the study are extracted from CBN various publications from 1985 - 2004 (See appendix 1).

Regression Results

Multiple R	0.970
R - Square (R^2)	0.942
Standard error of Estimate	0.898
Adjusted R-Square	0.908
D-W statistics	1.606
F-statistic	27.77
Significance t-ratio	5%

From the regression results on table 1, the linear model shows that the coefficient of determination (R^2) is 94.2% and it implies that 94.2% of total variations is accounted

for by the relationship between the dependent (investment portfolio) and independent variables (explanatory variables). The result also shows that given the regression intercept, -123634,3, a unit increase in the dependent variable (investment portfolio) would lead to 533.163 increase in expected earnings (returns) position all other variables given remaining constant. This applies to all other variables taking one after the other. The student t-value gives; 1.056, 2.901, 0.671, 1.016, -1.744 2.344 and 0.341 respectively for all the independent variables at 5% level of significance.

The Durbin-Watson (D-W) statistics, is an econometric criteria aimed at investigating whether the assumption of economic model employed is satisfied or not in any particular case. It measures the degree of auto -correlation among variables used. In this case, our D-W (of 1.606) shows that there is a strong degree of positive auto -correlations among the variables used. The F-statistic (27.77), which concerns the entire model is higher than the tabulated value of (2.06) at 5 percent significant level. This shows that the difference between the variables in the model is significant. In testing our hypothesis therefore, since the calculated value of F-statistics is greater than the tabulated value ($F_{cal} > F_{tab}$) we reject the null hypotheses which state that;

(i)   Commercial Banks' investment portfolio is not significantly affected by liquidity rate in the economy and accepts the alternative which states that it is affected by liquidity rate. Since the F-statistics applied to the entire model, the rejection of the null hypotheses and acceptance of the following.

(ii)   Commercial Banks' Investment portfolio is significantly affected by deposit profile of the banks.

(iii)   Commercial Banks' investment portfolio affects the expected rate of returns (earnings or profitability).

CONCLUSION

Investments are said to be economic activities designed to increase, improve or maintain the productive quality of the existing stock of capital, which in the case of commercial banks is enhancement of liquidity and profitability to prevent runs in the system. But investment is a flow variable, which involves commitment of funds in an activity which occurs over a period of time with the expectation or anticipation of benefits which may or may not occur or accrue concurrently with the investment outlay. Consequently, this study concludes that a proper understanding of investment determinants in the banking industry could form a basis for bankers and policy-makers to device policy prescriptions concerning the management of investment portfolio and supervision. More so, banks should explore investment vehicles, which will reduce their tax liability since loan income is taxable (i.e. subject to full corporate income tax) while investment income can offer

significant tax shelter. This study covers the period (1985-2004), the pre-merger and banking consolidation era of the Nigerian banking history. Hence, other studies should be carried out to extend the period to 2015 or 2016 to unravel the present realities.

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APPENDIX 1

	Invp	erg	Liq	inf	exr	inf	dep	cos
1	10875.80	20.80	65.00	5.40	2.02	19.20	17597.10	3.43
2	5223.30	27.20	36.40	10.20	4.02	17.60	18137.60	5.03
3	8712.60	46.10	46.50	56.00	4.54	24.60	23086.70	4.72
4	7565.20	34.70	45.00	50.50	7.39	27.70	29065.10	8.35
5	4606.40	27.00	40.30	7.50	8.04	20.80	27164.90	7.45
6	10067.80	15.40	44.30	12.70	9.91	31.20	38777.30	9.29
7	7453.50	14.60	38.60	44.80	17.30	18.32	53208.70	2.10
8	6767.00	31.30	29.10	57.20	21.90	21.00	75047.70	1.62
9	31192.00	12.59	42.20	57.00	21.90	20.79	110453.6	.02
10	40444,00	5.27	48.50	72.90	21.90	20.86	142537.5	2.79
11	22695.00	49.38	33.10	29.30	21.90	23.32	178962.1	8.52
12	49751.00	77.15	43.10	8.50	21.90	25.51	214359.8	4.99
13	42861.50	103.30	40.20	10.00	21.81	26.12	280028.7	6.87
14	52993.80	102.90	46.80	6.60	21.81	27.19	314303.5	8.03
15	193412.9	108.30	61.00	6.90	21.81	26.35	476350.9	3.64
16	285294.4	120.10	64.00	18.90	21.81	31.15	702104.5	8.39
17	344376.7	150.00	55.40	18.00	22.00	13.00	970705.3	5.46
18	320200.3	155.50	55.10	17.50	26.20	28.20	1422686	13.05
19	283753.7	180.00	52.10	17.50	26.20	29.29	1591266	9.63
20	394735.4	162.40	50.20	13.80	23.40	24.35	1689588	12.82

APPENDIX 2

Regression

Model summary[a]

Model	R	R square	Adjusted Rsquare	Std. Error of the Estimate
1	970[a]	942	908	.0898

Model summary[b]

Model	Change Statistics					Durbin-Watson
	R^2	F change	df1	df2	Sig, F Change	
1	942	27.768	7	12	000	1.606

a. Predictors: (constant), COS, BXR, LIQ, INF, INT, ERG, DEP
b. Dependent Variable: INVP

ANOVA[b]

Model	Sum of Squares	df	Mean square	F	Sig.
1 Regression	3.41E+11	12	48664382997	27.768	.u50[a]
Residual	2.10E+10	19	1752518292		
Total	3.62E+11				

a. Predictors: (constant), COS, EXR, LIQ, INF, INT, ERG, DEP
b. Dependent Variable: INVP

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	-128634.3	81847.488		-1.572	.142
ERG	533.163	504.776	.224	1.056	.312
LIQ	3979.552	1371.880	.282	2.901	.013
INF	427.434	636.581	.067	.671	.515
EXR	2077.553	2044.220	.120	1.016	.330
INT	-5148.224	2952.587	-180	.174	.107
DEP	.129	.055	.520	42.344	.037
COS	4941.553	5874.937	127	.841	.417