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ASSET GROWTH STRATEGY AND BANK PERFORMANCE IN NIGERIA

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ABSTRACT

This study examines the nature of the relationship between asset growth rate and growth in such output variables as total cost, total income and net profit In the Nigerian banking industry. Based on the data of 25 quoted Nigerian banks, three linear regression models were estimated complemented by descriptive data analysis. We found among others that majority of Nigerian banks adopt the conservative asset growth strategy (below group average) but experience below-average cost and profit values. The few banks adopting aggressive asset growth strategy are cost-inefficient, but profit-efficient We also find a significantly positive relationship between asset growth rate and growth in total cost, total income and net profit. Overall, growth in the output variables lags behind growth in total assets, with growth in net profit recording the lowest rate. The pursuit of an optimal growth strategy by bank management and regulatory authorities matters in an industry characterised by high cost profiles and low profits.

KEY WORDS: Asset growth, Output growth, Banking, Nigeria.

INTRODUCTION

Until the recent banking consolidation which became effective January 1, 2006, Nigeria had 89 deposit money banks with about 3,300 branches spread across the country. The top ten banks controlled over 50 per cent of the assets and liabilities of the industry. Most banks had a capitalisation of less than US$10million or about N1.3billion. The largest bank in Nigeria had a capital base of about US$298 million compared to US$526million for the smallest bank in Malaysia. It was argued that the small size of Nigerian banks, each with expensive headquarters, separate investments in software and hardware, heavy fixed costs and operating expenses led to a very high average cost for the industry. The consequence was high cost of intermediation, a widespread between deposit and lending rates, poor performance of core banking functions which contributed to placing undue pressures on many banks to engage in sharp practices as a means of survival.

Earlier studies on the Nigerian banking industry have argued against the financial sector reforms under the World Bank-supported Structural Adjustment Programme (SAP) (Soyibo, 1996a, 1996b). In their 1995 collaborative study, the Central Bank of Nigeria (CBN) and the Nigeria Deposit Insurance Corporation (NDIC) have asserted that the issue of causes of bank distress in any economy is basically empirical. The diversity of experiences in bank distress in the regulatory and supervisory frameworks of different macroeconomic conditions, along with the available human and information capital of the financial system makes it difficult to generalize across countries.

Market capitalisation of the banking sector stood at N963 72 billion, out of a total of N2.112 trillion at the end of 2005. Nigerian quoted banks accounted for 45.6 per cent of total market value at the end of 2005. Banks dominated the new issues market following the CBN's directive that minimum capital base be raised from N2billion to N25billion by the end of December 31, 2005. In a report by Ogbugbu (2005), a total of N238.4billion was raised by banks from the capital market. Furthermore, a total foreign exchange inflow of US$57.70million and £104,742 an equivalent of N6.7billion resulted from the exercise.

To the best of our knowledge, nothing is known about the input-output growth relationships in the Nigerian banking institutions. Since a greater proportion of a typical deposit money bank's total assets is made up of earning assets, the efficiency with which asset growth determines growth in gross income, total cost and net profit is critical to the long-term survival of the banking industry. In this context the following research questions are pertinent. First, does the adoption of a conservative or aggressive asset growth strategy really matter in an industry tending towards an oligopolistic market structure? Second, if the input variable (total assets) grows faster or slower than growth in the output variables (total cost, gross income and net income), what is the strategic implication for bank performance in a consolidating industry?

Our search for specific answers to the major research questions is guided by the test of three specific directional hypotheses:

H_1: There is a significantly positive relationship between growth in total assets (GTA) and growth in gross income (GTI).

H_2: There is a significantly positive relationship between growth in total assets (GTA) and growth in total cost (GTC).

H_3: There is significantly positive relationship between growth in total assets (GTA) and growth in net profit (GP).

The next part of this paper provides a survey of the related literature. This is followed by data sources and model specifications. The empirical results with their policy implications are then presented. There is finally a conclusion of the article.

SURVEY OF LITERATURE

Earlier theoretical and empirical studies on bank performance focus either on bank failure prediction or x-efficiency and scale economies. The works of Nyong (1994) provide a historical summary which reveals that managerial weaknesses for failed banks include inadequate supervision of loan portfolios and overly aggressive strategies for growth in loans and deposits. Soyibo, Alashi and Ahmad (2004) posit that bank soundness in Nigeria is determined by bank specific factors and macroeconomic conditions. In addition, when externalities or contagion effects exist in the system, then aggregate banking sector variables play a role in determining

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bank soundness.

In evaluating the challenges to small banks' survival, the works of Shaffer (1992:239) posit the following:

> Several factors make it unlikely that giant multinational banks will expand significantly at the expense of the smaller banks in the near future. In fact, compared ith the multinationals, regional banks have exhibited superior growth and profitability over the past few years.

Contrary to the prediction of economic theory, the works of Gup and Walter (1992:258) have equally noted as follows:

The high-performance banks did not engage in exotic financial activities. Instead, they did a very good job of basic banking-acquiring funds at low cost and making high-quality profitable investments. The high-performance small banks earned abnormally high returns for long periods On the contrary. economic theory suggests that abnormally high profits should be short-lived. Other banks, seeking higher returns, will engage in similar activities and drive down returns to the industry norms. The high-performance banks e studied were able to maintain persistent profits in the face of competition

In order to investigate the efficiency of banks, most economists have rather preferred to distinguish between allocative and technical efficiency. Profit maximisation requires a firm to produce the maximum output given the level of inputs employed (i e be technically efficient), use the right mix of inputs in the light of the relative price of each input (i.e. be input allocative efficient) and produce the right mix of outputs given the set of prices (i.e. be output allocative efficient).

Of the approaches used to estimate the frontiers and the inefficiency component, the two most popular are Stochastic Frontier Analysis (SFA) and Data Envelopment Analysis (DEA). SFA is a regression approach that typically includes a normally distributed error and an inefficiency component assumed to follow a one-sided distribution (e.g exponential, gamma) DEA uses a non-parametric linear programming approach to estimate the frontier and the inefficiency component. Both methods have been extended and developed further in the extensive works of Kumbhakar and Lovell (2000), and Cooper, Seiford and Zhu (2004). Recently the Generalized Maximum Entropy (GME) has been employed to provide a potential alternative frontier estimation approach that combines the strengths of both SFA and DEA. GME allows for the estimation of a frontier that is stochastic, without making an ad-hoc assumption about the distribution of the inefficiency component.

The detailed works of Berger and Humphrey (1997) present a survey of research on the efficiency of financial institutions with a count of 130 studies across 21 countries. The works of Harreno and Pascoe (2001) review some of the stochastic frontier and DEA software. In Sathye (2001), the source of inefficiency in Australian banking can be attributed to wasting of inputs (technical inefficiency) rather than choosing the incorrect input combinations (allocative efficiency). Beinstein (1996) confirms that an increase in non-performing loans increases costs. BOS and KOOL (2002) find that whereas all banks appear to perform rather similarly in terms of cost efficiency, in terms of profit efficiency large general banks and specialised banks clearly outperform small, general banks.

THE DATA AND MODEL SPECIFICATION

The data for this study were generated from the financial summaries of 25 Nigerian quoted banks (Appendices A and B). From Appendix A, we computed growth in total assets (GTA), growth in total income (GTI) and growth in net profits (GP). The 2-variable linear regression models are specified as in equations 1-3:

(1) $GTI = \alpha + \beta GTA$

(2) $GTC = \alpha + \beta GTA$

(3) $GP = \alpha + \beta GTA$

GTI, GTC and GP are defined as dependent variables, while GTA is defined as the independent variable. The alpha (α) constant shows the INTERCEPT on the dependent variable axis when the independent variable is zero The beta (β) coefficient is the slope of the regression line and measures the linear association between the dependent and independent variables.

The linear regression models are supported by the calculation of the Spearman's rank correlation coefficient in line with equation (4):

(4) $r' = I - \frac{6(\sum di)}{n(n^2-1)}$

where d stands for the difference between the ranks of the corresponding x_s and y_s. If the computed r' falls within the region of $\pm\sqrt{1.96} / n-1$, the correlation between GTA and output growth variables is significant. If the computed r' falls outside the region, then the correlation is not significant.

The procedure for obtaining our regression results was implemented with the Software Package for Social Sciences (SPSS) on a personal computer using listwise deletion of missing data. We realise that when independent variables (Ivs) are correlated, there are problems in estimating regression coefficients. Collinearity means that within the set of Ivs, some of the Ivs are (neatly) totally predicted by the other Ivs. The variables thus affected have b and β weights that are not well estimated (the problem of the "bouncing betas"). Minor fluctuations in the sample (measurement errors, sampling error) will have a major impact on the weights.

The standard error of the weight with 2Ivs is given in equation (5):

(5) $$S_{by_{1,2}} = \sqrt{\frac{SY_{12}}{\sum x^2_1 (1 - r^2)12}}$$

This is the square root of the mean square residual over the sum of squares X_1 times 1 minus the squared correlation between Ivs. The sampling variance of the b weight with 2 Ivs is given in equation (6):

(6) (7) $$2^{S_{b_{1.2}}} = \frac{S^2_{y.12}}{\sum x^2 1 \left[1-I2^2\right]} = \frac{S^2_{y.12}\,1.2}{\sum x^2} \left[\frac{1}{1^{1-r^2_{12}}}\right]$$

The Variance Inflation Factor (VIF) for variable b1 is equation (7):

(7) $VIF_1 = \frac{1}{1 - R^2 \quad \kappa}$

The VIF for variable i is also given in equation (8):

(8) $VIF_i = \frac{1}{1 - R^2}$

Big values of VIF portend trouble, provided VIF values are equal to or greater than 10. The VIF is also equal to the diagonal element of R–1, the inverse of the correlation matrix of Ivs. The β Tolerance is specified in equation (9) as follows:

(9) $\text{Tolerance} = 1 - R^2_i = 1 / VIF_i$

Small values of tolerance (close to zero) are trouble. Under the collinearity diagnostics table, number stands for linear combination of x variables. Eigenval(ue) stands for the variance of that combination. The condition index is a simple function of the eigenvalues, as given in equation (10).

(10) $Cli = \sqrt{\frac{\lambda \max}{\lambda i}}$

where λ is the conventional symbol for the eigenvalue.

A rule of thumb is to label as large those condition indices in the range of 30 or larger. Collinearity is spotted by finding 2 or more variables that have large proportions of variance (0.50 or more) that corresponds to large condition indices.

PRESENTATION OF RESULTS

Our empirical results are presented under three major headings: descriptive statistics of the input-output matrix, Spearman rank correlation results, and the linear regression results, including the time-series cost coefficients.

Input – Output Growth Matrix

The data in Table 1 show the nature of the relationship between asset growth strategy and output efficiency in Nigerian quoted banks. From a descriptive perspective, we find that majority of the banks adopting conservative asset growth strategy (less than 68.8%) obtained below-average output growth rate. While this result is favourable in terms of total cost (TC), it is however unfavourable in terms of gross income and net profit. Only very few banks adopted an aggressive growth strategy, while recording above average output growth rates. Generally, these banks were cost inefficient, but profit-efficient

Table 1. Asset Growth Strategy and Output Efficiency in Nigerian Quoted Banks (1999-2003). An Input Output Growth Matrix

	ASSET GROWTH STRATEGY	
Output Efficiency	Conservative (Below 68 8%)	Aggressive (Above 68 8%)
Below Average		
Total Income (GTI) (Less than 95.7%)	15(60%)	1(4%)
Total Cost (GTC) (Less than 88.8%)	14(56%)	4(16%)
Profit (GP) (Less than 77.8%)	12(48%)	3(12%)
Above Average		
Total Income (GTI) (Greater than 95.7%)	10(40%)	5(20%)
Total Cost (GTC) (Greater than 88.9%)	5(20%)	5(20%)
Profit (GP) (Greater than 77.8%)	5(20%)	6(24%)

Source: Author's Computations Based on Appendix B

Spearman's Rank Correlation Results

The results in Table 2 show a positive correlation of 0.73 when asset growth (GTA) is related to growth in total income (GTI). The result is 0.70 when asset growth rate is correlated with growth in total cost (GTC). The rank correlation coefficient declines further to 0.41, when asset growth rate is related to growth in profit (GP). All the positive coefficients are significant at the 5 per cent level as they fall outside the null hypothesis acceptance region of ±0.40. Hence the hypothesis of a significantly positive relationship between asset growth rate and output growth rate can be accepted, while the null hypothesis is rejected. In all the cases, output growth rates lagged behind asset growth rate, with growth in net profit recording the lowest figure.

Table 2: Spearman's Rank Correlation Coefficients for Selected Input-Output Growth Variables

Variables	Spearman's Coefficient of Correlation (r')	Significance (5%)
ΔTA and ΔTI	+0.69	0.40
ΔTA and ΔTC	-0.68	0.40
ΔTA and Δp	+0.47	0.40

Source: Author's computation based on Appendix B

Linear Regression Results

Table 3 shows that the quoted banks in Nigeria depict some kind of similarity in their mean output growth rates, with growth in total income (GTI) recording the highest variability of 51.2 per cent. What is not, however, known at this stage is the differential contribution of interest and non-interest revenue to this variation.

The variables in the study equation as depicted in Table 4 show the B Tolerance factors shifting drastically from zero, hence suggesting non-collinearity in our data. As a result of this, our reported beta coefficients can be relied upon for establishing the nature of the association between asset growth rate and selected output growth rates. The association between asset growth rate (GTA) and growth in total income or gross earnings (GTI) is positive (0.8232); it is also positive when asset growth rate (GTA) is related to growth in total cost (GTC) (0.6862). However, the beta coefficient drops to 0.4965 when GTA is related to growth in net profit (GP).

The coefficient of determination (R^2) in Table 5 shows that a 100 per cent growth rate in total assets brings about a 67.8 per cent growth in total income, 47.1 per cent in total cost, and just 24.7 per cent growth in net profits. Since the computed t and F values exceed, the critical regions, the positive association between GTA and GTI, GTC and GP is significant at the 5 per cent level. The time-series cost coefficients of selected Nigerian quoted banks summarised in Table 6 show high cost profiles with an average beta coefficient of 1.1474.

Table 3: Residual Statistics for Selected Dependent Variables

Model	Minimum	Maximum	Mean	Standard Deviation
Model 1 (GTI)				
* PRED	13.9117	250.8879	87.6462	51.1769
* RESID	-40.4387	115.4263	0.0000	35.2971
* Z PRED	-1.4408	3.1898	0 0000	1.0000
* ZRESID	-1.1225	3.2041	0 0000	0.9798
Model 2 (GTC)				
* PRED	19.4355	237.3730	87.2462	47.0653
* RESID	-66.2272	179.6607	0.0000	49.8932
* ZPRED	- 1.4408	3.1898	0.0000	1.0000
* ZRESID	- 1.3006	3.5282	0.0000	0.9798
Model 3 (GP)				
* PRED	31.0441	208.1748	86.1577	38.2527
* RESID	-68.0503	206.3656	0.0000	66.8755
* ZPRED	- 1.4408	3.1898	0.0000	1.0000
* ZRESID	- 0.9970	3.0235	0.0000	0.9798

Source: Software Package for Social Sciences (SPSS) Print-out.

Table 4: Variables in the Equations

Model Parameters	Model 1 (GTI)	Model 2 (GTC)	Model 3 (GP)
α (Constant)	13.7030	9.2436	30.8881
B Tolerance	1.0435	0.9597	0.7800
SE B(VIF)	0.1469	0.2077	0.2783
95% Confdnce	0.7403	0.5311	0.2055
Interval B	1.3467	1.3882	1.3544
Beta (β)	0.8232	0.6862	0.4965
SE Beta	0.1159	0.1485	0.1772
Corr. Part.	0.8232	0.6862	0.4965
Var-Covar Matrix	0.0216	0.0431	0.0775

Source: SPSS Print-out

Table 5: Growth Factors Linear Regression Results for Nigerian Banks

Model Parameters	DEFINED DEPENDENT VARIABLES*		
	GTI	GTC	GP
R^2	0.6774	0.4709	0.2465
Adjusted R^2	0.6642	0.4488	0.2151
SEE	36.0250	50.9220	68.2545
Eigenval (1)	1.8274	1.8274	1.8274
Eigenval (2)	0 17256	0.17226	0.1726
T-Test (Model)	7 1030	4.6210	2 8020
Sig. T (Model)	0.0000	0.0001	0 0099
T-test (Constant)	1.0890	1.0820	1 2960
Sig. T (Constant)	0 2869	0.2900	0 2074
F-Ratio	50 452	21.3570	7.8520
Sig F	0 0000	0 0000	0.0100
Durbin-Watson Test	1.7123	1.4479	1.7394

* The explanatory variable in this case is Growth in Total Assets (GTA)

Note: GTI = Growth in Total Income (Gross), GTC = Growth in Total Costs, GP = Growth in Profits (Net), SEE = Standard Error of Estimate, R^2 = Coefficient of Determination.

Source: Software Package for Social Sciences (SPSS) Print-out.

Table 6: Time-Series Cost Co-efficients of Selected Nigerian Bank (1999 – 2003)

S/No	Bank	α (Intercept)	βTC
	Access Bank	-5.1490	2.3441
	Afribank	5.3595	2.0630
	Chartered Bank	1.3270	0.6241
	Cooperative Development Bank	-0.0170	0.6135
	EIB International Bank	0.9510	0.5215
	First Bank	19.355	3.0510
	FSB International	3.4130	0.4851
	Guaranty Trust Bank	-02458	2.2434
	Gulf Bank	-0.2180	0.8455
	Hallmark Bank	-2.1620	2.1540
	IMB International Bank	3.1030	0.4560
	Inland Bank	14.2220	0.4629
	Intercontinental Bank	1.6580	2.6221
	Liberty Bank	0.8580	0.1510
	Lion Bank	0.2560	0.2870
	Many Bank	0.0360	0.3010
	NAL Bank	-0.8780	1.4860
	Omega Bank	-0.8650	0.6435
	Trade Bank	0.5820	0.5320
	Universal Trust Bank	1.7690	1.0090
	Union Bank	27.0263	0.4185
	United Bank for Africa	9.4130	2.1180
	Wema Bank	0.3390	0.9570

Source: Based on the financial summaries of individual banks (1999 – 2003)

POLICY IMPLICATIONS OF THE FINDINGS

The policy options open to both bank management and the regulatory urgencies based on these findings are varied. Bank management needs to pursue such asset growth strategies that are matched by below-average cost ratios and above-average profit figures. Portfolio expansions should correspond to appropriate risk-return tradeoffs. Otherwise, risk-averse investors would add to the cost of funding liabilities by demanding higher risk premia.

Deteriorating profit figures under conservative asset growth strategies are indicative of an unsound banking system. What needs to be watched is the volume of both interest and non-interest income vis-à-vis the cost of doing business in the Nigerian banking industry. Under universal banking it is expected that banks of the future should exploit more of non-interest income potentials as a gauge to increasing non-performing loans (npls). Although optimal cost structure is practically non-existent in banking, the narrower the spread borrowing and lending rates the riskier a bank becomes.

The regulatory authorities in Nigeria have been inconsistent in dealing with the root causes of poor bank performance. The recent consolidation of Nigerian banking institutions into 25 deposit-money banks is both poorly-timed and hastily-executed. Although economic theory posits that an increase in average size reduces average cost, recent empirical studies are inconclusive on the effects of consolidation on bank performance [see Berger and Humphrey (1977), Rezvanian and Rehdian (2003), Drake and Hall, 2003]. Consolidation without a prior implementation of a prompt corrective action may eventually limit the monetary transmission mechanism (Misra 2002 and Toby, 2005)

CONCLUSION

The discussion of our empirical data can be summarised as follows: First, majority of Nigerian quoted banks adopted the conservative growth strategy and experienced below-average cost ratios, and below-average income figures. These banks were cost-efficient but profit-inefficient. The few banks that adopted an aggressive asset growth strategy were cost-inefficient, but profit-efficient. Second, the linear regression results show that output growth rates in terms of total cost (GTC), total income (GTI) and net profit (GP) lagged behind growth in total assets, with growth in net profit recording the lowest rate. Third, most of the banks investigated recorded high cost profiles above the beta average. The pursuit of an optimal growth strategy by Nigerian banks matters in an industry characterised by high cost profiles and low profit figures.

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Appendix A: Input-Output Estimates of Nigerian Quoted Banks (Average values, 1999 – 2003).

S/N	Bank	Total Assets (₦'B)	Total Income (₦'B)	Total Cost (₦'B)[1]	Profit (₦'B)[2]
	Access Bank	11.053	2.060	1.783	0.220
	Afribank	68.829	11.999	10.497	0.937
	Chartered Bank	26.834	4.325	3.229	0.871
	Cooperative Dev. Bank	6.064	1.377	1.210	0 134
	EIB International Bank	7.718	2.273	1 994	0.219
	First Bank	251.259	35 775	28 508	5 790
	FSB International Bank	25 708	5.810	4 625	0 812
	Guaranty Trust Bank	51.243	8.874	6 485	1 962
	Gulf Bank	11 812	2 950	2 319	0 565
	Hallmark Bank	27 120	4 767	3 699	0 823
	IMB International Bank	5.434	1 053	0 769	0 257
	Inland Bank	5 434	2.241	1 920	0 276
	Intercontinental Bank	43.280	10.278	8.216	1 534
	Liberty Bank	7.209	1.574	1.160	0 390
	Lion Bank	7 628	1.321	0 973	0 274
	Manny Bank	4 607	0.997	0.638	0 294
	NAL Bank	15 461	3 256	2 838	0 347
	Omega Bank	8.583	1 676	0 900	0.252
	Regent Bank	2 772	0 175	0.106	0.045
	Trade Bank	7 604	1 771	1 313	0 109
	Trans International Bank	13.109	2 209	1 823	0 328
	Union Bank	260 771	36 370	28 073	5 786
	United Bank for Africa	162 716	19 210	16 167	2 102
	Universal Trust Bank	25 454	5 494	4 292	0 960
	Wema Bank	30.897	4.900	3.928	0.693

Source: Author's Computations from Banks' Financial Summaries in the NSE Factbook (2003)

[1] Total cost (TC) is computed as the difference between gross earnings and profit before tax

[2] Profit is net profit after tax

Appendix B: Average Growth Rates of Absolute Bank Performance Measures (1999-2003) 1998 100 Per Cent

S/N	Bank	AVERAGE GROWTH RATES (%) Total Assets (GTA)	Total Income (GTI)	Total Cost (GTC)	Net Profit (GP)
	Access Bank	116.6	280 8	31[illegible]	161 9
	Afribank	51.6	27 5	38	277 5
	Chartered Bank	94.1	78.3	7 0	104.5
	Cooperative Dev. Bank	48.0	64.3	95.8	(28.7)
	EIB International Bank	20.5	38.2	31.8	115.8
	First Bank	82.2	79.2	81.9	72.3
	FSB International Bank	35 2	100.3	72.1	(7 3)
	Guaranty Trust Bank	148 4	145 7	142 2	113 6
	Gulf Bank	152 7	203 6	187 0	253 1
	Hallmark Bank	101.7	180.2	154 4	244 4
	IMB International Bank	53.8	67 4	113 6	(4.8)
	Inland Bank	53 8	37 2	40 4	16 0
	Intercontinental Bank	92 8	70 1	72 2	71 8
	Liberty Bank	35 5	37 9	32 0	(39 3)
	Lion Bank	37 4	60.1	66 3	40 5
	Manny Bank	22 6	51 9	93.0	0 3
	NAL Bank	53 1	87 8	137 9	(28 5)
	Omega Bank	227 3	225.4	198 0	144.7
	Regent Bank	25 6	44.6	(3.6)	125.0
	Trade Bank	43.7	65.8	35.2	25.3
	Trans International Bank	0.2	15.5	10.6	45.1
	Union Bank	88.5	71.9	64.0	78.1
	United Bank for Africa	61.7	75.9	79.8	72.7
	Universal Trust Bank	54.2	37.9	35.7	25.7
	Wema Bank	72.4	65.6	59.0	65.4
	Group Average	68.8	95.7	88.9	77.8

Source: Author's Computations from Banks' Financial Summaries in the NSE Factbook (2003)