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Development of Financial Performance Assessment Indices for Bank Performance Rating in Ghana

Mohammed Aidoo [α] & Farouq Sessah Mensah [σ]

Abstract- Financial ratio analysis has been the ultimate tool for assessing the financial performance of organizations. However, given the increasing complexities in business operations in recent times, there is increasing shift to alternative methods that takes a multi-dimensional approach and combine several indicators to assess the financial performance of an organization. This study, therefore, aims at establishing Financial Performance Assessment Indices for evaluating banks performance in Ghana. Secondary data which spans over a 5-year period, covering 14 financial ratios on 24 registered banks in Ghana, was extracted from the annual Ghana Banking Survey reports. Analysing the data using descriptive statistics, ANOVA, and Principal Component Analysis technique, the study confirmed the existence of correlation among sets of financial ratios. The study also identified four basic Financial Performance Assessment Indices; Share of Industry Asset Index, Bank Profitability Index, Return on Bank Loan Index, and Liquidity Index. Among these indices, the Share of Industry Asset index and the Bank Profitability index constitute the most important for assessing the financial performance of banking institutions in Ghana. Ranking the selected banks concerning the identified indices revealed that, banks with outstanding performance were SCB, TTB, and Barclays bank while ADB and GCB recorded the least financial performance. The indices can assist any organizations, investors, and individuals to undertake overall financial performance assessment and ranking of the banking institutions in Ghana.

I. Introduction

a) Background to the Study

The banking sector constitutes a fundamental component of a country's financial system. It plays a significant role in the economic growth and financial position. The banks act as a financial intermediary that provide an efficient means of transferring cash from cash-surpluses individuals and institutions to cash-deficit individuals. In the absence of financial markets, an individual who has cash surplus would have to search for an individual or business that has a cash deficit and arrange to loan the surplus cash to the deficit organization. Because of the difficulty of such direct transactions, institutions exist to acquire cash surpluses and lend them to individuals and institutions that face a deficit (GSE, 2010). Thus, the financial sector mobilizes savings and allocates credit to needy members. It enables firms and households to cope with economic uncertainties by hedging, pooling, sharing, and pricing risks. By this means, it facilitates the flow of funds from the ultimate lenders to the borrowers. The flow of funds leads to improvement in both the quantity and quality of real investments, increasing income per capita and raising the standard of living (Harker & Zenios, 2009).

Today the Banking institutions face a dynamic, fast-paced, competitive environment at the global scale. The increasing liberalization of domestic regulations in most developed and developing countries, and the intensified competition at the global market, fuel these changes. Additionally, the rapid innovation in new financial instruments, changing consumer demands and preferences, and the explosive growth in information technology contributed to the changes. Thus, the banking sector operations have taken a multi-dimensional structure with complex delivery channels, coupled with constant pressures for innovative products and services to survive and gain competitive advantage (Harker & Zenios, 2009).

In Ghana, the financial environment has changed dramatically since the 1980s. Beginning with the Structural Adjustment Program of the early 1980s and accelerating rapidly, there had been a deregulation of the financial services industry. The Financial Sector Assessment Program (FSAP) introduced in 2001 and updated in 2003, and the Financial Sector Adjustment Program (FINSAP) helped to remove legislative and administrative inefficiencies in the banking sector. These led to the removal of interest rate controls and sector allocation of lending, resulting in tremendous growth and competition in the banking industry (Price water house Coopers & Ghana Association of Bankers report, 2005).

As a means of enhancing the legal and regulatory framework, the Bank of Ghana (BOG) is established as the central bank to act as regulatory authority in all matters relating to banking and non-banking business. They are tasked with the purpose of achieving a sound and an efficient banking system in

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the interest of banks' clients and the economy as a whole (Bank of Ghana, 2007).

Despite the internal efforts by the Bank of Ghana to strengthen the financial sector, it is highly exposed to the global occurrences. In the event of the Global Financial Crisis in 2008, the emerging markets with relatively developed financial systems were affected by their integration with a global market. Through their links, Ghana and other African countries such as Nigeria, Kenya, and South Africa had their share of the consequences, mainly falling equity markets, reversal of capital flows, rising inflation and pressures on exchange rates (Ghana Banking Survey, 2009). The recent global financial crisis has intensified the awareness of the need to check the health and stability of the sector and hence the financial institutions.

b) Statement of the Problem

The Ghanaian banking industry constitutes an important aspect of the financial sector of the economy. Hence, any impact on the industry affects the economy and the financial position of the country. This situation influence the decision of foreign direct investors and the domestic investors as to how to invest their capital. There is, therefore, the need for regular check-up or performance review of the financial institutions to maintain and protect the confidence of investors (depositors, lenders, shareholders and other stakeholders). Furthermore, the gravity of the importance of a sound sector has increased tremendously after the international turmoil of the second half of the 1990s. Monetary authorities such as International Monetary Fund (IMF) and international financial institutions like the World Bank have underpinned the need for a healthy sector to build up the confidence of private sector in the liberalized system. Member countries have therefore been tasked to undertake reforms and conduct regular health check-up of the Financial Institutions (Baral, 2006).

The health of a financial sector depends on the health of the individual Financial Institutions and they are reflected in their performance over a period. Their performance is influenced by some factors which are intertwined. Regularly, in the quest to gain a competitive edge in the industry, undertake a review of their performance for informed decision making. However, such assessment has often been a single gap analysis as it relies on accounting ratios at a given time on specific areas of performance of services, product or process. There is, therefore, the need for a multidimensional approach to analysis of the financial performance of the banking industry taking into consideration the several factors that come into play in the industry.

The need for a multi-dimensional approach to financial performance assessment is widely utilized in the developed economies and they have been intensified since the recent global crunch and the increasing complexities on banking operations. Traditionally accounting methods that make use of ratios have been employed for assessing bank performance (Ncube, 2009). However, the limitations of this method coupled with advances in management sciences have led to the development of alternate methods that consider the influence of combined several financial ratios and other factors on firm performance (Berger & Humphrey, 1997). In Ghana, there is less application of such multivariate methods in the assessment and ranking of the performance of the financial institutions.

c) Purpose of the Study

The purpose of the study was to establish financial performance assessment indices for evaluating banks performance in Ghana.

d) Research Questions

The research question is whether banking performance indices can be developed and used for inter-bank performance analysis and ranking? The following research questions were addressed in the study:

1. Are there basic areas of the banking financial performance that could be developed into indices for comparative evaluation purposes?
2. Are there appropriate ratios along the identified dimensions that can be relied upon to develop indices?
3. To what extent can the established indices be used for inter-bank financial performance analysis in Ghana?
4. What has been the pattern of the financial performance of the Ghanaian banking industry?

e) Significance of the Study

The study, which aims at identifying the key and most relevant indicators for assessing banks financial performance in Ghana, will ease bank managers and investors' evaluation of banks performance. It will also inform bank management about financial performance position of their bank concerning their competitors. Again, the study, which examines the pattern of financial performance of the banking industry over a time frame provides a broader and in-depth information for all bank's stakeholders. Findings from the study will indicate any changes and direction of growth in the industry. The result from the study could serve as a clue for future prediction.

With the increasing competition in the industry, the findings and recommendations will guide the bank institutions to develop appropriate policies and strategies to remain competitive in the market. Bank management can rely on the report as part of their industry and economic review during their SWOT (identification of Strength, Weaknesses, Opportunities,

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and, Threat of an organization) analysis. Furthermore, Investors, on the other hand, will know how the industry is faring and build their expectation model appropriately; that is, the expected returns on their investment and strategies to invest. The findings will also aid banks regulation and government policy formulation about the financial stability of the economy, thereby leading to a general improvement in the industry.

II. Methodology

a) Research Design

The study takes the form of applied research with explanatory research design. By the applied research, existing theories and principles are adopted and used in addressing observed phenomena. Thus, this study contributes to the empirical evidence of studies in the development of indices for financial performance. Explanatory research design is to help establish the causal relationship which in this study is about the correlation or the amalgamation of the ratios to address a specific aspect of the banking financial performance.

b) Sources of Data and Method of Data Collection

The study relies mainly on a pool of secondary data extracted from the Ghana Banking Survey reports published annually. They are jointly produced by Price Water House Coopers (PwC) and the Ghana Association of Bankers (GAB). Information in the annual reports of the selected banks was also accessed. The data covers twenty-four (24) registered banks, encompassing twelve (12) Ghanaian and twelve (12) Non-Ghanaian banks operating in Ghana. It spans over a 5-year period from 2003 to 2007, all covering about fourteen (14) computed ratios.

The data is collected by identifying the various ratios, outlining it in MS. Excel and entering the values from the yearly annual reports. The data is then exported to the SPSS for the actual data analysis.

III. Results and Discussion

a) Correlation Analysis of the Financial Ratios

Performing correlational analysis on the financial ratios is of much importance in this study. By this analysis, possible structural relationships the variables are analysed. The analysis indicate of the extent to which data reduction could be achieved through groupings of related variables into a new set of reduced variables. Table 3.1 gives the summary of the correlation matrix on the financial ratios (variables) that were used to examine the financial performance of the banking industry.

Table 3.1: Correlation Matrix

	SID	SIOA	SITA	NLLP	NS	NIM	ROA	ROE	LPP	LF/TD	TA/E	DP
SID	1.00											
SIOA	0.97	1.00										
SITA	0.97	1.00	1.00									
LLP	-0.18	-0.16	-0.16	1.00								
NS	0.08	0.09	0.09	0.24	1.00							
NIM	0.28	0.26	0.27	-0.11	0.43	1.00						
ROA	0.46	0.49	0.48	-0.08	0.39	0.38	1.00					
ROE	0.54	0.55	0.55	-0.24	0.26	0.33	0.80	1.00				
LPP	-0.01	0.01	0.01	0.02	0.81	0.40	0.45	0.35	1.00			
LF/TD	0.42	0.36	0.36	-0.15	0.00	0.10	0.15	0.26	0.01	1.00		
TA/E	-0.01	-0.04	-0.04	-0.14	0.19	-0.22	0.20	0.25	0.11	0.07	1.00	
DP	0.57	0.61	0.61	-0.22	-0.01	0.27	0.45	0.52	-0.02	0.15	-0.10	1.00

The study limited the correlation coefficient to a cut-off point of 0.25; that is, any correlation figure of 0.25 or more is deemed significant for analysis. This low cut-off point is used to ensure that all relevant information were adequately covered for assessment in the next chapter. Figures from the correlation table show that there exists some level of interdependencies among the financial ratios. The share of industry deposits (SID), the share of industry operating asset (SIOA), and the share of industry total asset (SITA) are highly positively correlated among themselves. The high correlations imply that an increase in deposits and advances are highly likely to results in increase in operating asset and total assets. Thus, banks with a large share of industry deposit tend to have large share of the industry operating assets and total assets.

The Return on Asset (ROA), Return on Equity (ROE), Dividend Payment ratio (DP), and the Net Interest-Margin ratios (NIM) are highly positively correlated among themselves, and each is positively correlated with the industry share. That is, a change in Return on Asset (ROA), Return on Equity (ROE) or Net

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Interest-Margin (NIM) implies a corresponding change in the other. Again, banks with large asset size are highly likely to generate higher ROA, ROE and or NIM. Other higher positive correlations can be noticed between Net Spread (NS), Net Interest-Margin (NIM) and Loan Portfolio Profitability ratio (LPP). As can be seen in the correlation analysis table, profit made on loan portfolio is highly influenced by Net Spread as indicated by the highly positive correlation figure of 0.8. That is, there is a high return on Loan Portfolios when there is an increase in Net Spread (NS) and vice versa. Still judging by the correlation figures, Table 1 indicates that the net spread influences Net Interest-Margin (NIM). It can also be observed that the ratio of Liquid Fund to Total Deposits (LF/TD), which is a measure of the liquidity position of an institution, is highly positively correlated with only bank's shares of the industry. The correlation indicates that changes in the liquidity position of a bank are influenced by changes in the bank's share in the industry. Banks with huge assets are highly likely to establish a strong liquidity position and therefore able to settle its short terms obligations as and when they occur.

The ratio Total Asset to Equity (TA/E), which measures the financial leverage of an institution, appears to be independent of all other ratios as none of the correlation coefficients between Total Asset to Equity (TA/E) and the other ratios are higher than the cut-off point.

b) Variance-Covariance Analysis of the Financial Ratios

Since the financial ratios measure banks' performances, analysis of the variance-covariance matrix is a direct assessment of the variability in the financial performance of the banking industry. Table 3.2 gives a summary of the covariance output.

Table 3.2: Variance-Covariance Matrix of the Financial Ratios

	SID	SIOA	SITA	LLP	NS	NIM	ROE	ROE	LPP	LF/TD	TA/E	DP
SID	29.2											
SIOA	24.6	25.9										
SITA	25.8	24.3	24.1									
LLP	-2.0	-1.2	-1.3	5.2								
NS	1.4	0.9	0.9	3.3	36.2							
NIM	5.4	5.0	5.0	-0.7	3.4	6.3						
ROA	7.0	6.8	6.7	-0.6	4.2	3.3	9.6					
ROE	53.8	50.0	49.6	-10.0	20.1	19.2	49.1	422.9				
LPP	-2.3	-2.7	-2.5	-0.2	27.2	4.6	4.6	29.9	31.0			
LF/TD	9.8	7.8	7.9	-1.9	-1.1	2.2	2.2	23.7	-0.8	38.7		
TA/E	-1.0	-1.1	-1.1	-1.0	-2.6	1.8	1.8	19.3	4.4	1.5	22.9	
DP	88.9	84.3	84.5	-16.8	-9.1	25.8	38.5	281.6	-8.8	20.9	-13.1	767.7

In Table 3.2, figures along the leading diagonal constitute the variance, and the rest forms the covariance of the ratios. Observably, each ratio exhibits some level of variation and hence, variation in the performance of the institutions. The Return on Equity (ROE) and Dividend Payment (DP) ratios can be observed to have the highest variance, which indicates that, there are substantial differences in the financial performance of banks in areas in which these ratios measure. On the other hand, the variance of New Loan Loss Provision (NLP), Net Interest-Margin (NIM), and Return on Asset (ROA) are all small compared to the other ratios' variance. This implies thata majority of the institutions performed keenly in the areas in which these were assessed.

Another observation from Table 3.2 is that a number of the ratios have high covariance values which suggest that, a combination of two or more of the ratios can account for more variations in evaluating banks' financial performance. That is, there is a high difference of obtaining accurate results when evaluating bank performance with two or more financial ratios than reliance on the results of a single ratio.

c) Bank's Share of Industry Asset

The graph in Figure 3.1 is an illustration of the changes in the average percentage share of the industry's assets from the year 2003 to 2007.

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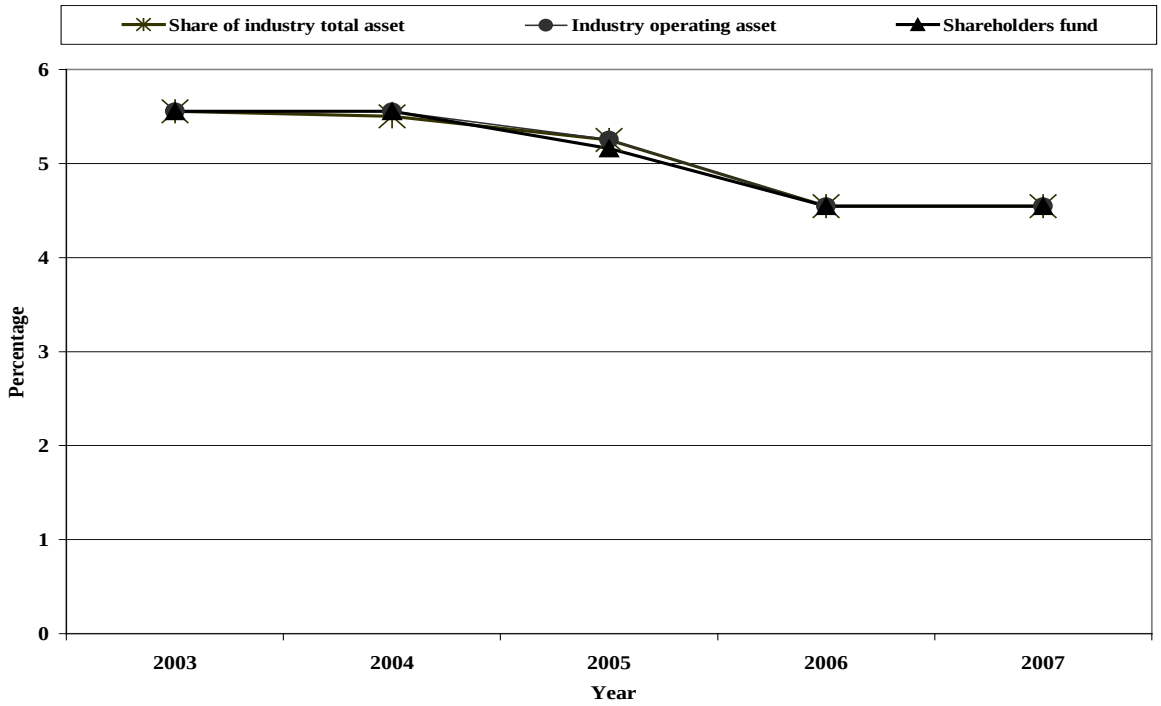

Figure 3.1: Trend (in Mean Percentage) of Individual Banks' share of Industry Asset from 2003 to 2007

It is observed from the line graphs in Figure 3.1 that there is a consistent decline in the percentage share of the industry assets owned by individual banks. The average percentage share of the industry assets that belong to individual banks has decreased from about 5.6% in 2003 to 4.5% in 2007. This is an indication that, banks' percentage share of the industry assets tends to be shrinking as the year progresses.

A further exploration was made into the growth of the industry concerning the asset. Assessment based on the industry operating assets over the period under review is as summarized in Figure 3.2 below:

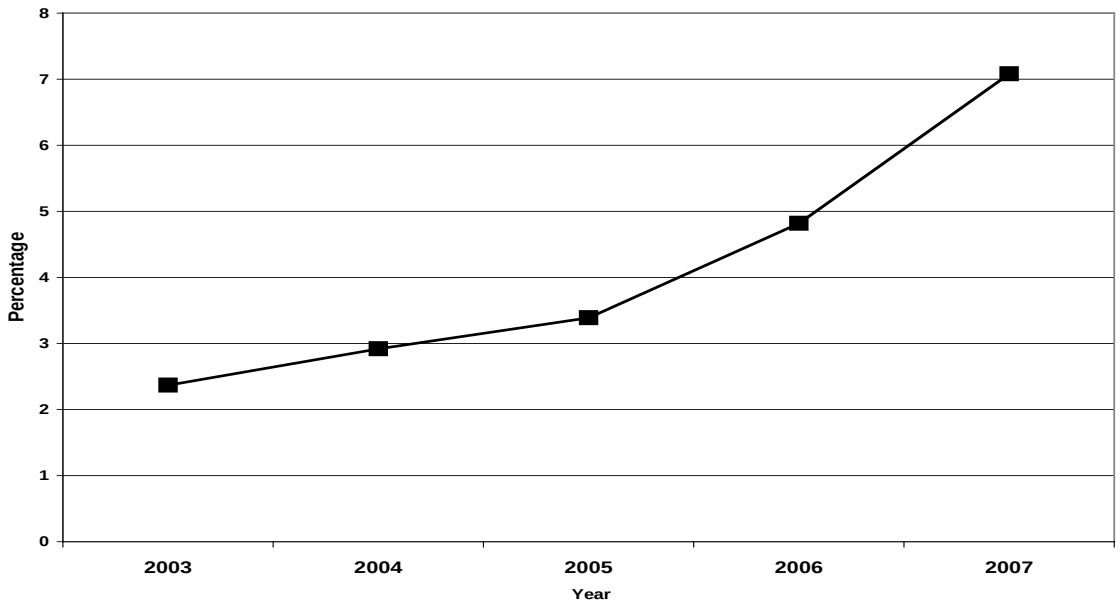

Figure 3.2: Average Percentage Growth of the Industry Operating Asset from 2003 to 2007

A noticeable observation from Figure 3.2 is that, the industry realized a consistent increase in its operating assets from 2.4% in 2003 7.1% in 2007. That is, the individual bank institutions that constitute the industry have increased their asset base. A similar analysis concerning the industry deposits resulted in similar growth in the industry. A summarized output of the industry deposit analysis is illustrated in Figure 3.3.

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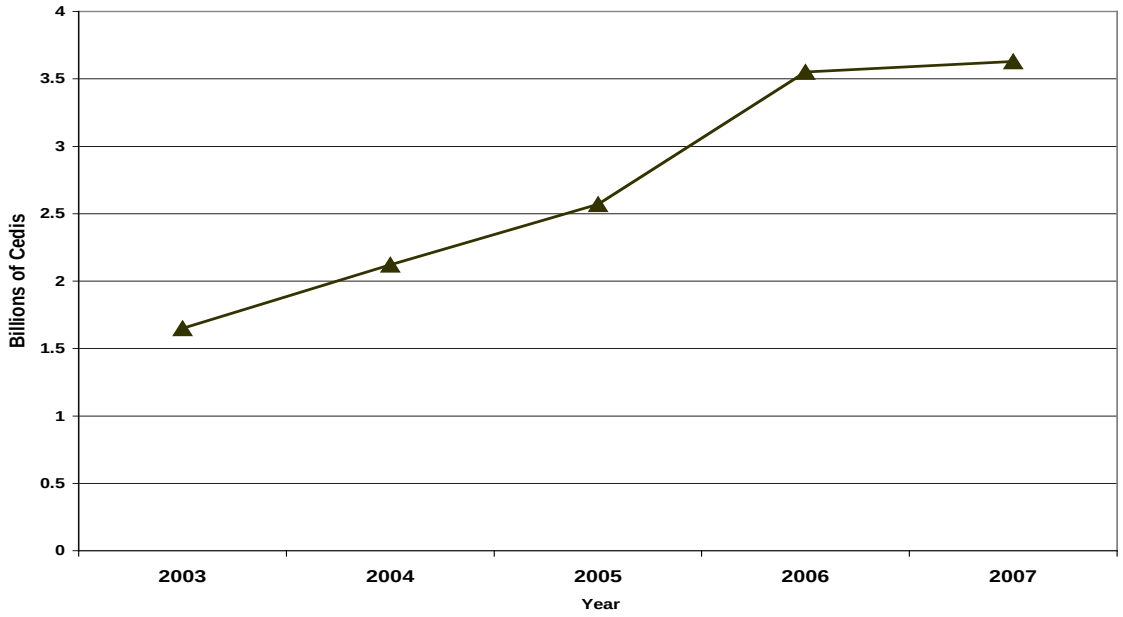

Figure 3.3: Average Growth (in billions of cedis) of the Industry Deposits from 2003 to 2007

Contrary to the shrinking of individual banks' share of the industry asset, Figure 3.2 and 3.3 shows that, the industry's assets have increased significantly from 2003 to 2007. This means that, although individual banks are continually increasing their asset size, their percentage share in the industry gradually decline.

d) Return on Asset (ROA), Return on Equity (ROE), Net Interest-Margin (NIM) and Net Spread (NS)

This combination of ratios tells the extent to which profits or returns are made on the assets owned by institutions. Higher values suggest higher returns and vice versa. Figure 4.4 is a graph of the means of the ratios for each year, depicting the trend in the financial performance of the banking industry concerning the ratios.

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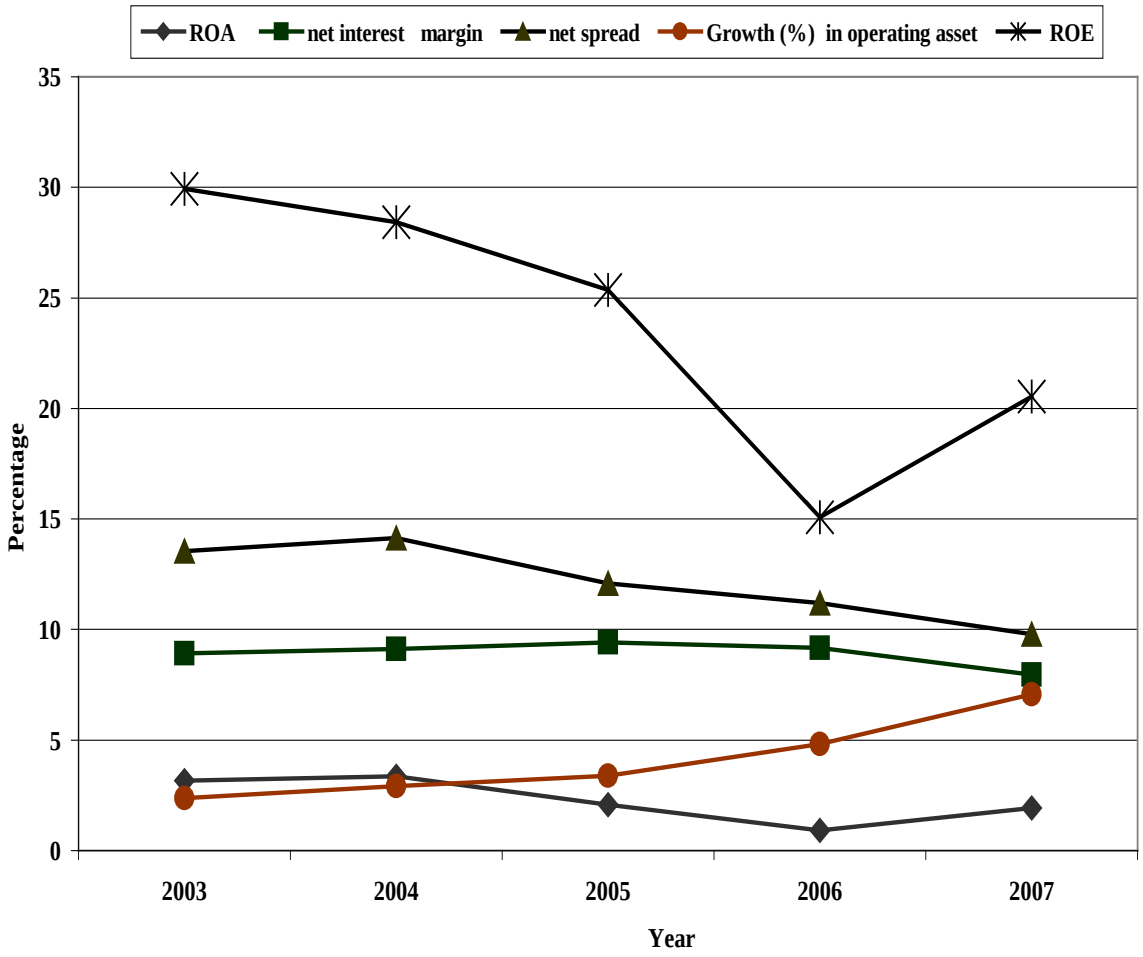

Figure 3.4: Trend (in Mean Percentage) in the Industry's ROA, ROE, Net Interest-Margin, Net Spread from 2003 to 2007

Observation from Figure 3.4 is that figures of ROA and ROE decrease significantly as the year progresses. That is, the net income generated per cedi of an asset owned by a bank reduces for subsequent years. Specifically, the year 2006 experienced the worst output of ROA and ROE. In most of the years, the figures of ROE are about four to five times higher than that of ROA. Net interest or profit margin has however been quite stable though it shows a gradual decline.

The decline in the figures of ROA and ROE is largely attributed to the increase in the growth of the industry's assets without a corresponding increase in profit levels, due mainly to narrowing net spreads. This is confirmed by the high decline in the net spread from 13.54% in 2003 to 9.79% in 2007, and net interest margin from 8.92% in 2003 to 7.96% in 2007, as well as the tremendous increase in the growth of the industry's operating asset (Figure 3.2) over the period from 2.38% in 2003 to 7.08% in 2007.

Table 3.3 gives the summary of the distribution of the ratios-ROA, ROE, Net Interest Margin (NIM) and Net Spread (NS).

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Table 3.3: Distribution of ROA, ROE and Net Interest-Margin

Financial Ratio	Descriptive Statistics	Year				
		2003	2004	2005	2006	2007
ROA	Skewness	0.03	-0.12	-2.93	-2.11	-2.00
	Kurtosis	0.53	-0.75	10.96	4.93	6.53
Net Interest-Margin	Skewness	0.07	0.16	-0.54	1.17	-0.53
	Kurtosis	-0.87	-1.03	0.64	2.66	-0.02
ROE	Skewness	0.54	-1.30	0.66	-0.48	-0.31
	Kurtosis	-1.18	3.65	-0.93	-0.29	0.47
Net Spread	Skewness	-0.29	-0.19	-0.46	-0.22	-0.82
	Kurtosis	3.17	0.51	1.45	-0.57	3.57

Observation from Table 3.3 is that, the distribution of the ratio figures is mostly negatively skewed and some tend to be more negative (especially net spread) as the year goes by. The skewness indicates that a majority of the banks' figures of ROA, ROE, NS, and NIM is lower than the recorded averages. The industry was therefore handicapped in generating higher returns on shareholders' investment as the year progresses. Additionally, the general realization of positive kurtosis for the ratio figures for each year suggests that, recorded figures are close to each other, indicating that, the industry has been keenly competitive over the years.

e) Loan Portfolio Profitability Ratio (LPP), New Loan Loss Provisions (NLP)

Figure 3.5 is a graph of the means of the financial ratios- Loan Portfolio Profitability and New Loan Loss Provision ratio. It illustrates the trends in these ratios as the year progresses.

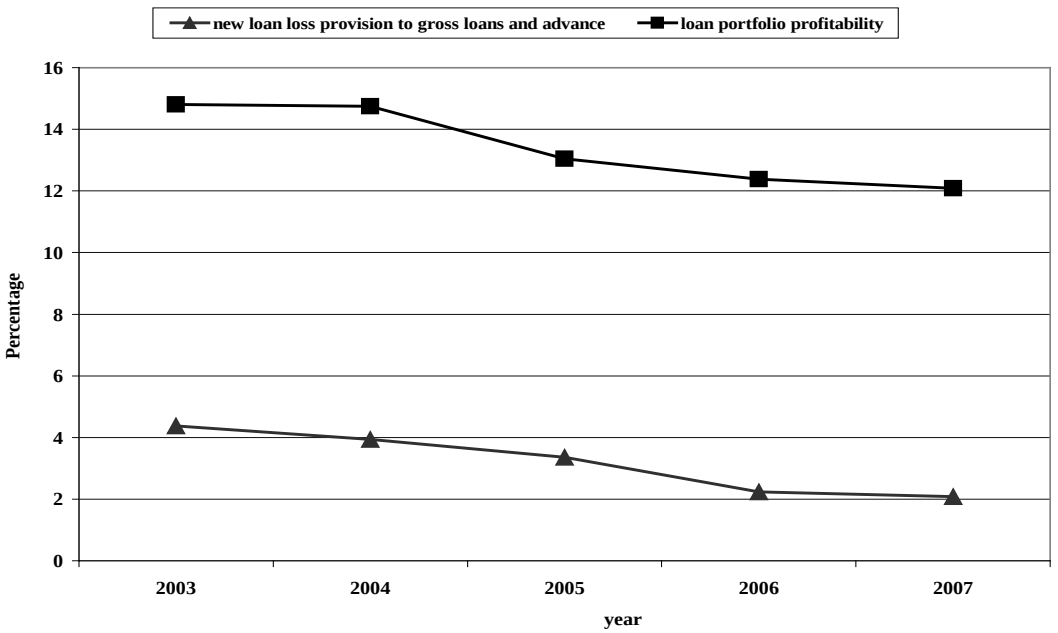

Figure 3.5: Trends (in Mean Percentage) in the Industry's Loan Portfolio Profitability and New Loan Loss Provision from 2003 to 2007

Figures of the Loan Loss Provision to Gross Loans ratio, and the Loan Portfolio Profitability ratio as shown in Figure 4.5 decreased over the years. Since the loan loss provisions depend on the probability of loans becoming non-performing, higher provisions indicate a higher probability of non-performing assets. Therefore, the observed decreasing figures of the loan loss provision are a positive indication which implies that the industry is improving on its loan management. The decrease in the Loan Portfolio Profitability ratio, on the other hand, does not help well for the industry. It is an indication that the institutions in the industry are

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becoming weaker in generating higher returns on their loan asset. However, it can be noticed that the gain on loans for each year is more than three times the loan loss provisions.

f) Liquid Fund to Total Deposits Ratio (LF/TD)

A firm's liquidity position tells the extent to which it can meet its short - term obligations as and when they fall due. The liquid fund/total deposit ratio is used to evaluate the liquidity position of the selected banks. The result of the ratio used to assess the liquidity position is as shown in table 3.4 below:

Table 3.4: Changes in Liquid Fund to Total Deposit Ratio

Financial Ratio	Descriptive Statistics	Year				
		2003	2004	2005	2006	2007
Liquid Fund to Total Deposit (LF/TD) (x)	Minimum	0.62	0.60	0.46	0.00	0.32
	Maximum	2.24	1.84	1.21	46.00	44.00
	Mean	1.03	0.96	0.74	2.95	2.58
	Skewness	1.96	1.97	0.61	4.47	4.69

The mean of the liquid fund to total deposit ratio fell from 1.03x in 2003 to 0.74x in 2005 and gradually rose to 2.58x in 2007. That is the industry liquidity position gradually weakened from 2003 to 2005 and then revitalized from then to 2007. The strength of the liquidity position in 2007 is more than twice that of 2003. This implies that, for the year 2006 and 2007, most banks invested their deposits in low yielding assets, and also kept a higher proportion of them as a liquid asset to cover any likely matured deposits, while at the beginning of the year under review, some banks were giving out more loans. The highly increasing positive skewness of the liquid fund to total deposit ratio figures is an indication that, more banks are improving on their liquidity position; the ability to settle short-term obligations.

g) Total Asset to Equity Ratio (TA/E)

The total asset to equity ratio is related to the capital structure of a bank. That is the nature of financing of a particular institution. It measures the extent to which an organization is either debt financed or equity financed. By the nature of this ratio, a higher ratio figure indicates that the organization's total asset far outweighs its equity portion. This means that the major portion of the total asset is contributed by external investors. This is termed debt financing. Figure 3.6 illustrates the mean changes in the total asset to equity ratio over the year under review.

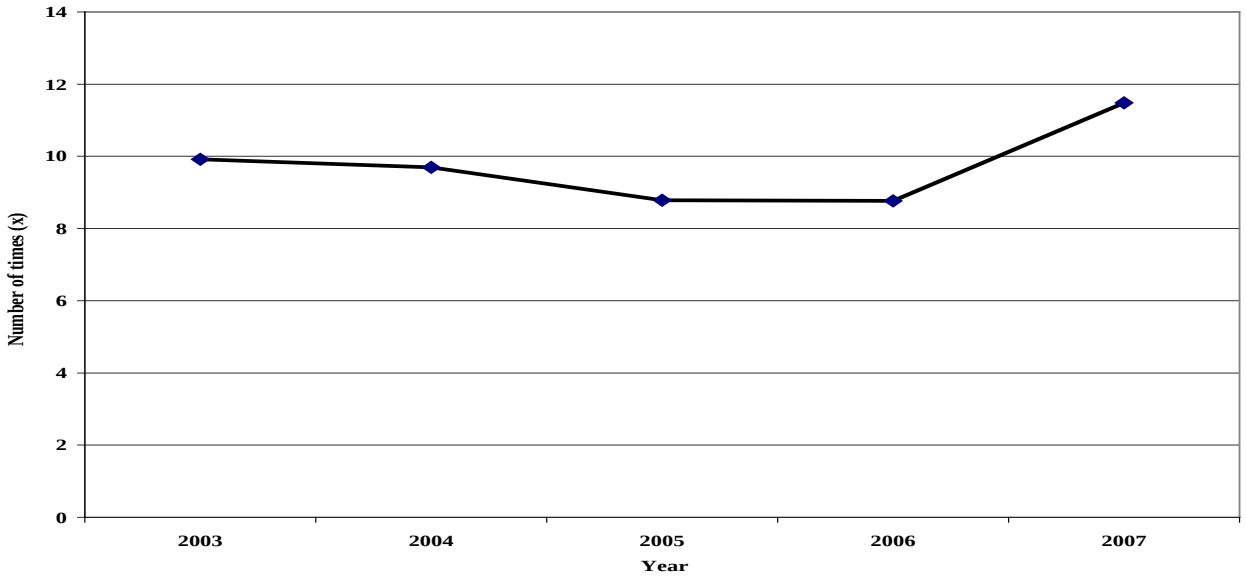

Figure 3.6: Trend in the Mean Levels of Total Asset to Equity ratio from 2003 to 2007

As can be seen in Figure 3.6 above, figures of the total asset to equity ratio from 2003 to 2006 fell within a close range of 8x to 10x. That is, the industry's total asset is about 8 to 10 times higher than its equity

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portion. This means that, the industry hugely relies on debt financing in its capital structure. In the year 2007 however, figures of the total asset over equity ratio had a sudden and upward adjustment to 11.5 times. The industry's equity cushion seems to have been worn more thinly, as the competition thickens and banks intensify market share. The highly positive skewness of the ratio figures also indicates that more banks were more financially leveraged than the industry average (that is, run more on debt financing than equity financing) for each year.

h) Suitability of Principal Component Analysis

Table 3.5 is the output of two statistical tests to confirm the adequacy of Principal Component Analysis (PCA) application on the data. The Bartlett's Test of Sphericity tests the null hypothesis that, the correlation matrix is an identity matrix (that is, there is no correlation among the ratios' variables) whiles the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy statistic indicates the extent to which variations in the original variables are accounted for by the underlying principal components generated. Higher values of both tests confirm the use of PCA.

Table 3.5: Result of KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy	Bartlett's Test of Sphericity		
	Approx. Chi-Square	Degrees of freedom	Significance
0.75	1191.18	78	0.000

The results in Table 3.5 shows a high Bartlett's test of sphericity's sample statistic of 1191.18 with a corresponding low significant value 0.000. These indicate that the correlation among the ratios figures is significant enough to provide a reasonable basis for principal component analysis. Similarly, the KMO value of 0.75 confirms an excellent use of PCA.

i) Extraction of Principal Components

The principal components are generated by forming uncorrelated linear combinations of the observed ratios. The first component is the component with the maximum variance. It is the component that explained the largest portion of the variations in the data set and constitutes the most important basis for bank performance assessment. Successive components explain progressively smaller portions of the variation, and the size of variation accounted for is an indication of their level of importance in bank performance assessment. To account for the total variations in the data set, the number of principal components generated is equal to the number of variables in the data. Table 3.6 gives the output of all the components formed and their corresponding variance accounted for, which is represented by the eigenvalues.

Table 3.6: Principal Components and their Total Variance Explained

Principal Components	Initial Eigenvalues		
	Total	% of Variance	Cumulative %
1	6.281	44.865	44.865
2	2.115	15.106	59.971
3	1.460	10.428	70.399
4	1.051	7.510	77.909
5	0.914	6.528	84.437
6	0.824	5.885	90.322
7	0.482	3.441	93.763
8	0.422	3.012	96.775
9	0.209	1.491	98.266
10	0.113	0.807	99.073
11	0.077	0.549	99.622
12	0.035	0.250	99.872
13	0.017	0.121	99.992
14	0.001	0.008	100.000

It can be observed from Table 3.6 that, principal component one (PC 1) alone explains the highest variability in the original data set, and hence variability in the performance of the industry; it accounts for 44.87% of the variation in the observed variables. This implies that, the areas where the PC1 measures should be the

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ultimate focus or basis for evaluating the financial performance of the banking industry. The inclusion of PC1 in the evaluation will give a better and more accurate evaluation than any other dimension. The second principal component (PC2) accounts for 15.12% of the variations in the data and constitutes the next area of assessment. Similar interpretation goes for the remaining Components. Each component formed assesses a unique portion of the industry under review and therefore, specific PCs should be given much weight when evaluating an aspect of the industry. However, the overall industry's financial performance evaluation lies in the assessment of the PCs with much contributing power.

The number of Principal Components to retain is influenced by the main objective of the study, which is to identify key financial performance assessment indices for banks performance evaluation. The application of the 'Eigenvalue greater than one rule' confirms that the first four Principal Components need to be retained as indicated by the values under the column 'Total' of the Eigenvalues in Table 6. That is, areas where these principal components assess are worthy of consideration in the evaluation. Analysis based on the scree plot was performed to corroborate the outcome of the eigenvalue greater than one rule. The result is as summarized in Figure 3.7.

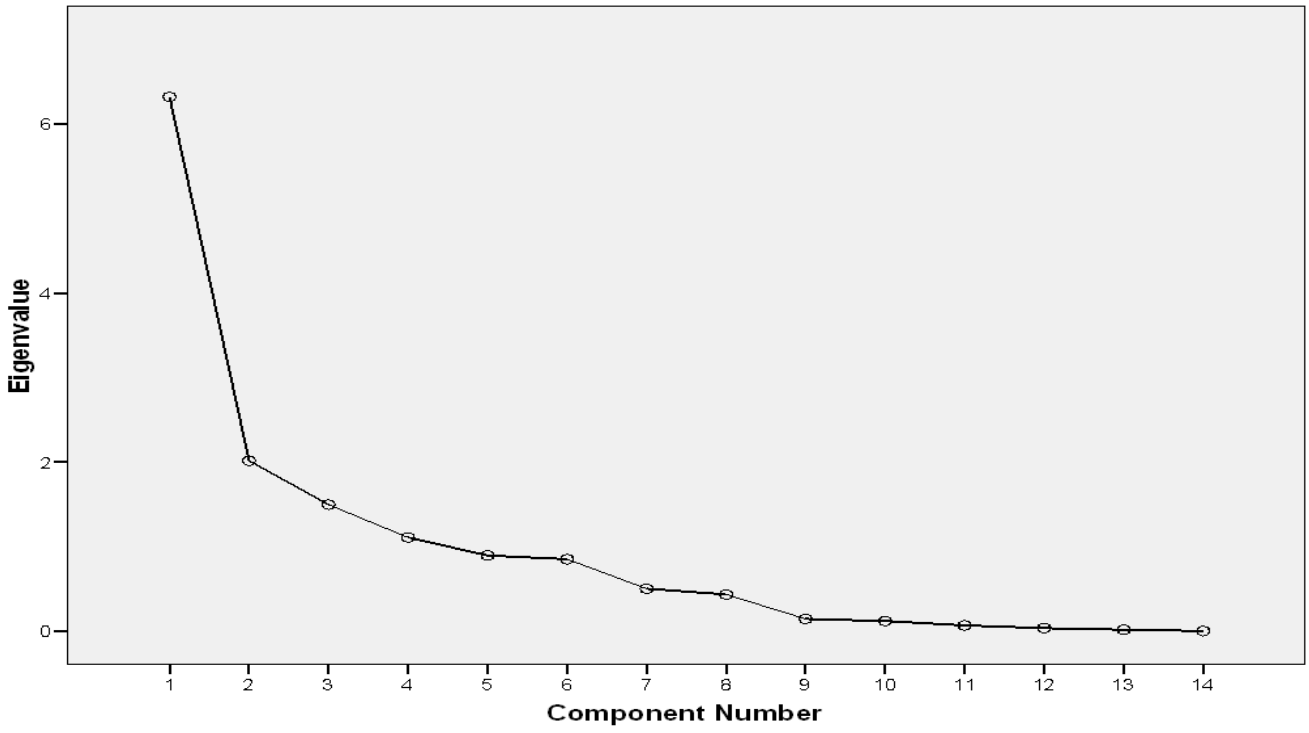

Figure 3.7: Scree Plot indicating the Components on the Steep Slope

It can be observed from the scree plot that, only the first two principal components are on the steep slope of the graph. This implies that Component 1 and 2 are the major principal components that account for large variations in the financial performance of the bank institutions. The extreme distance of component one from the other principal components indicates that, the first principal component is the ultimate index for bank performance evaluation.

Following the above analysis, the first four principal components (PC 1, 2, 3 and 4) were retained with much emphasis on component 1 and 2. The principal components were rotated (orthogonal transformation at 90 degrees) to generate a rotated component matrix for easy and clearer interpretation of the components formed. (The unrotated component matrix is shown in Appendix A). The rotated component matrix reports the component or pattern loadings for each ratio or variable on the principal components. These pattern loadings are the correlation between the ratio figures and the principal components. A high pattern loading indicates that the component can explain the variations in the corresponding ratios accurately. The analysis deemed loading of size 0.5 or more on any principal component as significant. Table 3.7 summarizes the results of the matrix.

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Table 3.7: Rotated Component Matrix

Ratio	Component			
	1	2	3	4
ROA	0.295	0.816	0.136	-0.043
ROE	0.294	0.784	0.096	0.141
Net Spread	0.021	0.055	0.940	-0.166
Loan Portfolio Profitability	-0.198	0.179	0.892	0.071
New Loan Loss Provision	0.067	-0.263	0.209	-0.827
Total Asset/Equity	-0.110	0.079	-0.034	0.049
Share Of Industry Deposits	0.930	0.246	-0.015	0.125
Share Of Industry Net Advances	0.932	0.277	-0.038	0.101
Share Of Industry Total Asset	0.951	0.266	-0.040	0.062
Share In Industry Operating Asset	0.952	0.264	-0.043	0.051
Share Of Industry Shareholder Fund	0.924	0.201	-0.080	-0.067
Net Interest Margin	0.359	0.617	0.273	0.015
Dividend Pay Out Ratio	0.462	0.571	-0.174	0.212
Liquid Fund/Total Deposits	0.374	-0.201	0.171	0.614

Observation from Table 3.7 is that the first principal component (PC1) has high loadings only for all the ratios about a bank's share in the industry (share of industry deposits, a share of industry total asset, and share of industry shareholder fund). Hence PC1 can be named as bank's share of the industry index. Thus, a bank's share of the industry constitutes the most important basis for assessment of financial performance. The size of the share in the industry is reflected in the size of the asset base of the individual banks. Therefore, evaluation of financial performance with the share of industry asset as the basis is a direct evaluation based on the asset size of the individual banks.

The second Principal Component (PC2) is highly loaded with ROA, ROE, Net Interest-Margin and Dividend Pay-out ratios. These ratios play key roles in assessing the profitability of a firm. Hence PC2 can be termed as bank profitability index. The PC2 should be the basis for evaluating the industry profitability.

The loan portfolio profitability and the net spread ratios can also be seen to have high loading only on the Third Principal Component (PC3). Therefore, PC3 is named as return on loans index.

Concerning the fourth Principal Component (PC4), only the loadings on the Liquid Fund to Total Asset and the New Loan Loss provision to Gross Loans and Advances are higher than the cut-off point of 0.5. The realization of negative loadings on the new loan loss provisions and the positive loading on the Liquid Fund to Total Deposit ratios on the fourth PC imply that, the industry performs in opposite direction in areas where the ratios assess. This observation was expected because, when a liquid fund is large, it indicates that more of the total deposits are not given out as loans, but rather being reserved and invested into profitable securities. As a result of the low level of loan given out, there is a decrease in the amount of loan loss provisions. This situation is appropriately used in evaluating the liquidity position of an organization and hence, PC4 is termed as the liquidity index.

j) Industry Share of Asset Index; PC1

Referring to the rotated component matrix in Table 3.7, the significant loadings on PC1 or Industry Share of Asset Index are all positive and hence, large component scores imply the acquisition of large share of the industry asset over the period. Similarly, small score values of a particular bank indicate an acquisition of a small percentage of the assets in the industry. The scores ranking and their corresponding banks are as shown in Table 3.8.

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Table 3.8: Banks Ranking Based on PC1: Share of Industry Asset Index

2004			2005			2006			2007		
Rank scores	Type	Bank	Rank scores	Type	Bank	Rank scores	Type	Bank	Rank scores	Type	Bank
2.61	GH	GCB	2.18	GH	GCB	2.28	NGH	BBG	2.93	NGH	BBG
1.70	NGH	BBG	1.64	NGH	SCB	1.80	GH	GCB	2.27	GH	GCB
1.57	GH	ADB	1.48	NGH	BBG	1.06	NGH	SCB	0.56	NGH	SCB
1.32	NGH	SCB	1.12	GH	ADB	0.91	GH	ADB	0.50	GH	ADB
0.39	NGH	SSB	0.24	NGH	SSB	0.32	NGH	SSB	0.22	GH	MBG
0.07	NGH	EBG	0.17	NGH	EBG	0.26	GH	MBG	0.17	NGH	EBG
0.00	NGH	SBBL	0.12	GH	NIB	0.02	NGH	EBG	-0.01	NGH	SSB
-0.04	GH	MBG	0.02	GH	MBG	-0.06	GH	NIB	-0.10	GH	NIB
-0.23	GH	NIB	-0.11	NGH	SBBL	-0.25	NGH	ZBL	-0.37	NGH	GTB
-0.42	GH	FAM	-0.37	GH	FAM	-0.29	GH	FAM	-0.40	NGH	SBBL
-0.43	NGH	BPI	-0.49	NGH	ZBL	-0.37	NGH	ABL	-0.50	NGH	ZBL
-0.48	GH	UGL	-0.51	GH	CAL	-0.50	GH	CAL	-0.52	GH	FAM
-0.64	GH	CAL	-0.56	NGH	ICM	-0.57	GH	PB	-0.52	GH	PB
-0.73	GH	PB	-0.70	GH	UGL	-0.77	GH	HFC	-0.57	GH	FBL
-0.83	NGH	ABL	-0.74	NGH	ABL	-0.83	NGH	SBBL	-0.63	NGH	ABL
-0.86	NGH	ICM	-0.86	GH	TTB	-0.87	GH	UGL	-0.64	GH	CAL
-0.94	GH	HFC	-0.88	GH	HFC	-0.93	GH	TTB	-0.80	GH	TTB
			-1.01	NGH	BPI	-1.01	NGH	BPI	-0.86	GH	HFC
						.	GH	FBL	-0.90	NGH	ICM
						.	NGH	GTB	-0.94	NGH	BPI
						.	NGH	IBL	-0.96	GH	UGL

Observation from Table 3.8 is that over the study period, the major banks that have been consistent in the first quartile range are Ghana Commercial Bank (GCB), Agric Development Bank (ADB), Barclays Bank, Standard Chartered Bank (SCB) and SG-SSB. These banks had been alternating their ranking positions as the years go by. It can also be noticed from the ranking scores that, banks with the least asset share in the industry were mainly Prudential Bank, International Commercial Bank, HFC, The Trust Bank (TTB) and BPI.

k) Bank Profitability Index; PC2

All the significant loadings on the Bank Profitability Index; PC 2 are positive. Therefore, large positive scores imply banks with higher profit level and vice versa. The ranking of the banks based on the profitability index is summarized in Table 3.9.

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Table 3.9: Banks Ranking Based on the Scores of PC 2: Bank Profitability Index

2004			2005			2006			2007		
Rank scores	Type	Bank	Rank scores	Type	Bank	Rank scores	Type	Bank	Rank scores	Type	Bank
1.73	GH	TTB	1.56	GH	TTB	1.70	GH	TTB	1.26	GH	TTB
1.41	NGH	BBG	1.52	NGH	BBG	1.38	NGH	EBG	1.02	NGH	EBG
1.12	NGH	SCB	1.30	NGH	EBG	1.07	NGH	SCB	1.00	NGH	SCB
0.91	NGH	SSB	0.89	NGH	SCB	0.41	GH	GCB	0.69	NGH	SSB
0.76	GH	HFC	0.85	NGH	SSB	0.41	NGH	SBBL	0.65	NGH	SBBL
0.75	NGH	EBG	0.47	GH	PB	0.40	NGH	SSB	0.60	GH	HFC
0.62	GH	NIB	0.27	GH	NIB	0.28	GH	CAL	0.13	GH	CAL
0.50	GH	PB	0.26	GH	HFC	0.09	GH	HFC	0.02	GH	PB
0.40	GH	CAL	0.19	GH	CAL	0.08	GH	UGL	-0.01	GH	UGL
0.29	GH	MBG	0.12	GH	MBG	0.07	NGH	ICM	-0.16	GH	NIB
-0.09	NGH	ICM	0.07	NGH	BPI	0.00	GH	MBG	-0.20	NGH	BPI
-0.16	GH	GCB	-0.08	GH	GCB	-0.03	GH	PB	-0.22	GH	MBG
-0.19	NGH	ABL	-0.18	GH	FAM	-0.22	NGH	BPI	-0.30	GH	FAM
-0.36	GH	FAM	-0.46	NGH	ICM	-0.45	GH	FAM	-0.37	NGH	ICM
-0.82	NGH	SBBL	-0.64	NGH	ABL	-0.46	GH	NIB	-0.45	GH	GCB
-0.87	GH	UGL	-0.64	GH	UGL	-0.54	GH	ADB	-0.55	NGH	ABL
-1.00	GH	ADB	-0.75	NGH	SBBL	-0.77	NGH	BBG	-0.77	NGH	IBL
-1.68	NGH	BPI	-0.93	GH	ADB	-1.56	NGH	ABL	-0.79	GH	ADB
			-2.83	NGH	ZBL	-3.32	NGH	ZBL	-1.06	GH	FBL
						.	GH	FBL	-1.08	NGH	ZBL
						.	NGH	GTB	-2.07	NGH	BBG
						.	NGH	IBL	-2.91	NGH	GTB

The score ranking as shown in Table 3.9 confirms that The Trust Bank (TTB), Standard Chartered Bank (SCB), SG-SSB (SSB), Ecobank Ghana (EBG), and Barclays Bank (BBG) have consistently been on the first quartile of the profitability ranking. Thus, these are the banks that have consistently had higher returns on their investment in the industry over the five-year period, although the industry suffered a declining trend in its returns on investment. Concerning banks that made lower returns or profits, no bank was found to be in the last quartile group for each year. However, Agric Development Bank (ADB), Amalgamated Bank (ABL), Zenith Bank Limited (ZBL), Fidelity Bank Limited (FBL) and First Atlantic Merchant Bank Ltd (FAM) frequently took positions in the last quartile ranking and therefore experienced low profit returns on their investments. The outputs of the ranking for the 3rd and 4th indices (Loan profitability, and Liquidity Index) are displayed in Appendices B and C.

IV. Summary, Discussion, Conclusions and Recommendations

a) *Summary of Findings*

The study utilizes a multivariate statistical approach to objectively assess the financial performance of the Ghanaian Banking Industry over a five-year period from 2003 to 2007. Its main objective was to establish financial performance assessment indices for bank evaluation. Secondary data was extracted from the Ghana Banking Survey report (2008) and analysed. The data covered 22 banks - 11 Ghanaian and 11 foreign - operating in Ghana. The variables were mainly financial ratios. Findings from the study are that, the industry observed increasing improvement in its asset base, liquidity position and loan management as the year progresses. There was a gradual decline in the new loan loss provisions which augurs well for loan management. Net spread

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constituted the main determinant factor in the changes in loan management due to its strong positive correlation with loan portfolio profitability and new loan loss provisions to gross loans and advances ratio. The improvement in the assets base of individual banks and hence the industry asset base, led to the gradual strengthening of the liquidity position of the industry as the year progresses. The industry, however recorded declining trends in its returns or profit levels as the year goes by, but remains positive. Reliance on debt financing was found to be a common financing strategy in the banking industry, with the year 2007 recording the highest figure. In most cases, the majority of the banks were found to be performing below the recorded averages; thus being more depressed under the increasing competition in the industry. In all the years, 2006 experienced the worse financial performance in general.The study established four key financial performance assessment indices and their identified corresponding financial ratios. This is summarized in Table 4.1.

Table 4.1: Identified Assessment Indices and their respective Financial Ratios

Performance Assessment Index	Identified key Financial Ratios
Share of Industry Asset Index	• a share of industry operating asset, • a share of industry shareholder fund, • a share of industry deposit • a share of industry net advance
Bank Profitability Index	• ROA, • ROE, • dividend pay out ratio • Net interest margin ratio.
Return on Bank Loan Index	• loan portfolio profitability ratio • net spread
Liquidity Index	• New Loan loss provision to gross loans and advances ratio, • liquid fund over total deposits ratio

Among these identified indices, the Share of Industry Asset index and the Bank Profitability index constitute the most important indices for assessing the financial performance of banking institutions. Ranking the selected banks concerning the identified indices revealed that, banks with outstanding performance were SCB, TTB, and Barclays Bank while ADB and GCB recorded the least financial performance.

b) Discussion of Results

The reliance on financial ratios as key indicators for bank performance assessment has been extensively supported by researchers and business analysts. Whereas some literature have drawn conclusions based on a single financial ratio research base, others have concluded on the need for inclusion of several financial ratios. Finding from this study supports the use of more than one financial ratio in bank performance assessment since the ratios are correlated, and the identified indices are a linear combination of two or more of the individual financial ratios.

Existing common and dominant evaluating tool in assessing the financial soundness of a financial institution is termed CAMELS, which is the initials of Capital adequacy, Asset quality, Management expertise, Earnings strength, Liquidity and Sensitivity to market risk. This model calls for categorization of the financial ratios into groups as indicated by the acronyms and requires consideration of every category in the evaluation of financial institutions' performance. The study's identification of four assessment indices namely; a share of industry asset's index, Banks Profitability index, Return on Bank Loan index, and Liquidity position conforms to the CAMELS tool. The established indices confirm that there is a unique set of ratios for assessing a particular aspect of the banking industry performance.

The share of industry asset's index tends to align with the Capital Adequacy, bank profitability index tends to align with Earnings strength, and bank loan profitability index aligns with Asset quality. It can, however, be said that the groups or indices established in the study are more reliable than the CAMELS model. The CAMELS model is recommended for all financial institutions' performance assessment and contains several financial ratios in each category of which the selection is left to the judgment of the researcher or the analyst. That is, the researcher adopting the CAMELS' model may not know the appropriate financial ratios to select from each category, and it is also cumbersome to include all the recommended financial ratios. In this study the financial ratios in each group are those that are highly correlated and yield better results than any other combinations.

The realization of extensive growth in the asset base of the industry is in a positive direction for the growth of the entire industry. Banks play an important

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intermediation role in the financial services market; they take on deposits (incur liabilities) and provide loans and advances (create assets) from which they would either make a profit and distribute some to providers of capital, or make a loss.For the conduct of both activities, banks require adequate capital to provide comfort to both customers and the regulator of the industry for them to have confidence in the financial services system (Ghana Banking Survey, 2008). The growth in the industry asset is as a result of the banks' compliance with BoG directives requiring banks to meet a minimum capital by some period. In the year 2003BoG issued a directive requiring all banks to increase stated capital to GH¢7million (an equivalent of ¢70billion) by the end of 2006. This was to enable them have the universal banking licenses that allowed them to undertake retail, merchant, development and investment banking without the need to acquire separate licenses. According to the Ghana Banking Survey report (2008), the majority of banks raised the additional capital required through transfers from retained earnings and income surpluses. In the process, the industry's stated capital was increased from GH¢29 million in 2003 to GH¢181million in 2007; that is, by more than five times the 2003 levels. Although all the banks obliged and increased their stated capital as required thereby increasing their asset base, finding from the study indicate that, the percentage share of the industry asset of each bank shrinks as the year progresses. This revelation is because each year, the weaker and poor performing institutions attempt to improve, thereby increasing their share in the market and the industry asset. This reduces the size of other banks in the industry. Again, the increasing number of bank institutions in the country as the year goes by reduces the market share of the existing banks, and hence the reduction in the percentage shares of the industry asset of individual banks.

The improvement in the liquidity position of the industry is an expected outcome which reflects the objectives of BoG directives. Other associated outcome of the increase in the capital could be the improvement in loan management and banks institutions becoming more financially leveraged. The high financial leverage as observed in the year 2007 could be linked to the inability of most banks to meet the BoG capital requirement with its retained earnings and income surpluses, and therefore had to rely on external sources for funds.

Analysts have explained that Asset, especially Operating Asset is a core arsenal for doing business and creating value for stakeholders of a bank institution. This means that the larger a bank's asset, the higher the returns or profits. However, this is a contradiction of the realization in the study of a declining trend in the returns or profits level in the industry; that is, as the industry assets base increases, the profit level decreases. The general decline is also manifested in the corresponding decline in the payment of dividend on shareholders' investment (24.3% in 2003 and 19.7% in 2007). In each year, there were some banks that did not pay the dividend at all. MBL, GTB, BPI, ZBL, PBL, International Commercial bank, Intercontinental bank, and Unibank Ghana limited were the major banks that could not declare dividend payment in most of the years. However, Barclays Bank, SG-SSB, Standard Chartered Bank and Ecobank Bank Ghana distributed over 60% on the average, of their earnings as dividends. Such a reduction in the industry's dividend payout, according to the Ghana Banking survey report (2008), could be attributed to retaining more of the earnings to satisfy BoG's increased minimum capital requirement. Another contributing factor is the realization of greater opportunities for bank growth as the economy expands, and the increased industry competition compelling banks to develop more innovative products, invest in business and service support infrastructure. However, in the mist of the decline, the industry remained firm and generated positive, reasonable returns on its assets.

c) Conclusions

The study has its main objective of establishing financial performance assessment indices which can be used for bank performance evaluation in the Ghanaian banking industry. It also examines the pattern of performance of the banking industry over a five-year period, from 2003 to 2007.

The conclusion from the study is that, there is correlation between the financial ratios and reliance on several correlated financial ratios is more effective in a bank's financial performance assessments than a single financial ratio. Assessment of the performance of the Ghanaian banking institutions is based on four key indices identified in this study. These indices are the share of industry assets, the bank profitability, the return on a bank loan, and bank liquidity position. The established indices contain the appropriate financial ratios for bank evaluation.

Another observation from the study is that the Ghanaian Banking Industry has had a significant improvement in its assets size, liquidity position, and loan management, but a significant decline in its profits level, though remain positively large. Using the profitability index, it was found that banks with outstanding performance were Standard Chartered Bank, The Trust Bank, and Barclays Bank. Agric Development Bank and Ghana Commercial Bank performed poorly despite being among the institutions with a large asset base over the period.

The use of these indices in evaluating the performance of Ghanaian banks will reveal their true financial performance better than what would be obtained by relying on the result of a single ratio.

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The study, however, did not examine the impact of changes in macro indicators such as inflation, exchange rate, and Gross Domestic Product (GDP) growth on bank performance. Further research is therefore recommended in these areas as a means of completing the scope of the banking financial performance assessment.

d) Recommendations

Banks of Ghana should encourage the banks in Ghana to use the multivariate approach in calculating the performance of the banks to determine early signal of banks from being insolvent meaning that the bank's liabilities exceeded their asset.

Management of Banks should use adopted to multivariate statistical approach in calculating the performance of the bank so as to determine the financial strength of their banks so as to attract investors in their banks.

Human resource manager should recruit accounting and financial personnel who know the multivariate approach in calculating the performance of the banks. In addition to this, banks should provide periodic training to staff on the use of the multivariate approach to calculating the performance of the banks.

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