A Study on the Relationship Among Bank Profitability, Asset Quality, and Income Diversification: Reference to Indian Banks

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Abstract: The goal of this study is to look at 42 different Indian banks, both public and private, and see how differences in control structures and bank numbers affected the variety of these banks and other performance measures. The period spanning from 2020-21 to 2024-25 will be the primary focus of the investigation. More than ninety percent of the activities carried out by scheduled commercial banks are carried out by these institutions. There was a significant gap between the strategies of income diversification used by public sector banks and those utilized by private sector banks when comparing the two types of banks. When looking at banks in terms of their size, there were few instances in which diversification indicators showed any significant differences throughout the course of most years. Additionally, it has been shown that there is a negative association between Non-Performing Assets (NPA) and Return on Assets (ROA). This correlation has been confirmed to exist. The presence of a favourable association between the diversification of assets and the return on assets has been seen throughout the course of the last two years.

Keywords: Income Diversification, Public and Private Sector Banks, Return on Assets (ROA), Non-Performing Assets (NPA), Control Structure and Bank Performance.

INTRODUCTION

Income diversification and bank performance have gained significant attention in recent years. However, little attention is paid from the perspective of developing economies, in general and India in particular. Banks income is categorized as interest income and non-interest income. While the pressure on total income increases, banks do not consider the possibility of increasing income from interest income. A study of the Indian banking sector from a decentralization perspective can contribute to the existing literature.

In the banking context, diversification was looked at from the perspective of branch growth, asset growth, non-traditional diversification and different banking channels. A number of banking factors are going to be evaluated in this research with the purpose of determining how ownership and size affect those characteristics. One of the indicators is the ratio of non-interest revenue to interest income, which is used to evaluate the degree of diversification. Other metrics include return on assets (ROA), non-performing assets (NPA), and profit per employee. The secondary data that were collected throughout the years 2020-21 to 2024-25 are the primary subject of this scholarly investigation.

The conclusions of the previous study were consistent with the findings of the present research, which investigated the diversification of bank revenue by calculating the ratio of non-interest income to interest income. In addition to the effects of ownership and size, the purpose of our study is to look at the pre-conditions for bank performance, which were measured through ROA. While looking at pre-conditions, those were treated as independent variables, such as credit quality, diversity and liquidity. With the pressure on interest income, there is a need to investigate the association between diversification and profitability. The mounting concern on asset quality, particularly for public sector banks in India, also requires the inquiry. Conflicting results are available while examining the relationship between bank's income diversification and its profitability.

Few research is available covering diversification, strategy, and performance from Indian Banks. The present study is intended to fill the gap in literature. A lot of research has been conducted on different facets of bank-related diversification. (Bodnar et al., 1997; Stein, 1997) state that economies of scale, improved resource allocation, and the capacity to capitalize on competitive advantage are just a few advantages of diversification. Regulation is the driving force behind diversification in certain situations (Acharya et al. (2006)). Banks might need to diversify, for instance, if a capital requirement is implemented. The research conducted by Acharya and colleagues (2006) described the disadvantages of diversifying by joining a market with intense competition or no prior lending experience. A drawback of diversification may be a decline in credit quality and a decrease in returns. Diversification is impacted by different regulations in different nations. A study that was carried out in 2014 by Gambacorta and colleagues revealed that there is a positive correlation between the profitability of banks and the variety of their

revenue. As a measure of the bank's capacity to diversify its income streams, the study used the ratio of non-interest revenue to interest income. On the other hand, the return on assets of the bank was utilised to evaluate the degree to which it was profitable.

The Canadian bank's capital buffer assisted in averting the financial crisis (Guidara et al. 2013). Beck along with others. (2013) used metrics like nonperforming loans, loan loss provisioning, and maturity matching to examine the impact of asset quality. Swamy (2013) noted that factors such as industry characteristics, macroeconomic conditions, bank ownership, and size affect asset quality when examining Indian banks. In response, development financial institutions transformed it into a commercial bank, accessed low-cost funding, and broadened their asset portfolios. These banks participated in universal banking in addition to their regular banking operations (Bapat, 2012). The findings of a study that investigated the relationship between institutional ownership, diversity, and risk in publicly traded banks revealed that stable ownership is linked to geographic, revenue, and unconventional (asset) diversification, in addition to a reduction in risk, Holding Companies (BHC) (Denget al. 2013). The research was conducted by Acharya and colleagues. (2006) made note of the drawbacks of diversification, namely the decline in returns and credit quality. According to Pennathur et al. (2012) concluded that ownership is crucial to diversification. In comparison to private sector banks, public sector banks produce a much lesser amount of money via fees. When the mean efficiencies of public and private sector banks were compared, it was found that there were considerable variations between the two types of banks. The public sector banks had a much greater mean efficiency than the private sector banks. When viewed from the point of view of India, it is seen that private sector banks have a preeminent position in the industry of bancassurance, but public sector banks continue to hold a majority position in the core banking activity. More than ₹21,000 crore has been gathered by public sector banks and large commercial banks because of clients who have failed to maintain the minimum balance in their accounts. This emphasizes the degree to which the private banking business is heavily dependent on income that is not derived from interest.

Empirical evidence that reveals a strong association between the size of a bank, its technical efficiency, and its scale efficiency has been obtained (Drake & Hall, 2003). This evidence was obtained via the acquisition of empirical evidence. In addition to this, they have tried to evaluate the degree of income diversity that exists between bigger and smaller banks. The study by Ntow and Loryea (2012) studied the relationship among return on assets (ROA), asset quality and liquidity ratio measured through credit-deposit ratio. ROA performance was observed to be worse for older banks in China, (Wu et al., 2007).

CONCEPTUAL FRAMEWORK
Banks are motivated to diversify due to various factors such as the requirement for a profit centre, involvement in a variety of financial markets services, extensive customer outreach, and the establishment of leading market positions across all financial services. Diversification also has positive effects. In order to gather pragmatic proof, it is necessary to investigate the existence of a strong association between the size of a bank, its technical efficiency, and its scale efficiency.
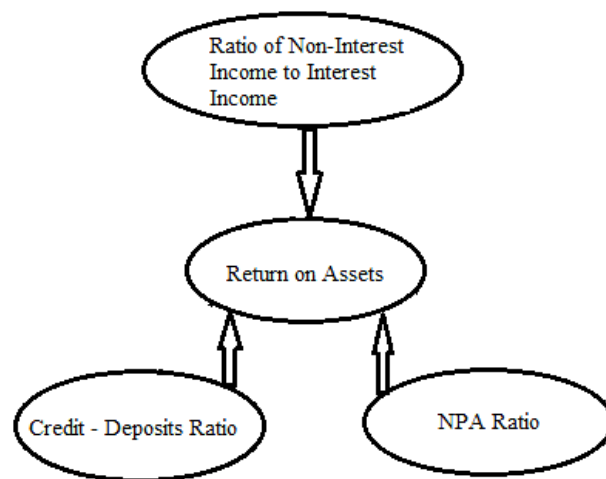
FIGURE 1. Relationship of Return on Assets with Ratio of Non-interest income to Interest Income, Credit Deposit Ratio, and NPA Ratio.

Based on the results on the size of the bank, it seems that smaller banks are more likely to participate in activities that do not generate interest. This is mostly since smaller banks have a greater capacity for specialisation and provide a wider range of services. There is a belief that market structure of industries has implication on bank performance. Similarly, the economy also has a bearing on bank performance. It is seen when the economy takes a hit, there is an increase in non-performing assets, resulting in depletion in bank profitability. We find contrasting results between bank size and bank profitability.

The following hypotheses have formulated in light of the above discussion:

Hypothesis 1: In terms of ownership, public and private sector banks differ significantly from one another.

Hypothesis 2: There exists a notable disparity in size between public sector banks and private sector banks.

Hypothesis 3: The ratio of non-interest income to interest income and credit-deposit ratio positively affects return on assets and non-performing assets negatively affects return on assets.

METHODOLOGY
The first section deals with evaluating how ownership and size affect performance and income diversification by analysing the secondary data gathered from public and private sector banks between the years 2020-21 to 2024-25. More than 90% of scheduled commercial banks' business is conducted by these two bank groups.

The Indian Banks Association's (IBA) data for public sector banks and private sector banks used as the data sources. Since IBA is a reputable banking organization, the data is accurate. Gathering, organizing, and disseminating data and other information about the composition and operation of the banking system is one of the goals. IBA is gathering information on the bank performance highlights based on ownership differences. To determine the difference based on ownership and size, a two-sample t test was used. It does this by comparing the means of the two samples to see if there is statistical support for the difference in population means. We evaluated how ownership affected the different bank performance metrics, such as diversification. As a benchmark for determining the degree of income diversification, we have used the ratio of non-interest revenue to interest income, which is in line with the findings of past study about this topic. A t-test with two independent samples was used to investigate the connection that exists between the size of a bank and the performance indicators that it has. A route analysis is performed with the purpose of determining whether the correlation matrix is adequate in connection to several different causal theories. One kind of regression modelling that has been built upon is called route analysis. Among the components of the analysis are the computation of regression weights, the evaluation of the observed correlation matrix, and the evaluation of the degree of goodness of fit. In the framework of structural equation modelling, the interpretations are examined. One benefit of structural equation modelling is its ability to control measurement errors and consider multiple dependent variables at once.

Within this section, we will provide important instructions on how to style the mathematical material that you generate. We do not, however, make any effort to define clear styles or norms for the typography of mathematical expressions. Your writing should conform to the established styles, symbols, and conventions that are generally used in the field or subject matter that you are writing about. This is something that you should do.

RESULTS AND DISCUSSION

While relying on secondary panel data of public sector and private sector banks, we obtained data on interest income, non-interest income, return on assets, non-performing assets, ratio of non-interest income to interest income. We conducted two independent sample tests for finding the difference between profit per employee, return on assets, non-performing assets, and ratio of other income to interest income.

Ownership and performance

The two-sample independent t-test results are obtained in following Table 1. A noteworthy difference exists for non-performing assets (recent years), the ratio of non-interest income to interest income (3 out of 5 years) and profit per employee (1 out of 5 years).

Size and Performance

To determine the size-based differences in Profit per Employee, Return on Assets, Non - performing Assets (NPA), and Ratio of Other Income to Interest Income, two independent sample tests are conducted. The bank that met the size threshold had a total business size of Rs. 25,000 billion. The threshold was selected using professional opinion and advice. Upon reviewing the literature, we discover that there is no a unified method for differentiating banks according to size.

According to the findings of the research, most small-sized banks are comprised of existing private sector banks and a combination of public sector banks. Over the course of a considerable amount of time, it has been noted that the majority of small-scale banks have stayed within the same group. A limited group of public sector banks and new generation private sector banks that have expanded to a substantial scale are the types of financial institutions that are classified as large-sized banks. For two out of every five years, there is a significant gap in terms of the profit per employee, as well as the ratio of non-interest revenue to interest income. This disparity is also present for two out of every five years. According to the findings of our investigation, there was no indication of a substantial association between the size of a bank and its profitability. There were no significant differences discovered in the ratio of non-interest revenue to interest income for most of the years when comparing the sizes of different banks. In Table 2, you can see the outcomes of the independent t-test that was performed on two samples.

Antecedents of Bank Performance

Path analysis, another name for structural equation modelling, is a method used to evaluate the interdependencies between an independent and dependent variable. Structural Equation Modelling has been used for wide applications such as service quality measurement. In our study, our interest was more in assessing the relationship between diversification and performance. For Diversification, we used the measure as the ratio of non- interest income to interest income. For Profitability, we used ROA which is an acceptable measure in a banking context. In addition, we used credit deposit ratio as a measure of liquidity and non-performing assets representing asset quality. Here return on assets was treated as dependent variable and Diversification, Liquidity and Asset Quality measures as independent variable. The results of structural equation modelling are shown in Table 3.

TABLE 1. Two Sample Independent t-test based on ownership

Parameter	2020-21	2021-22	2022-23	2023-24	2024-25
Profit / Employee	0.245*	0.049	0.655	0.475	0.766
Returns on Assets	0.897	0.645	0.165	0.094	0.072**
Non-Performing Assets	0.262	0.143	0.008**	0.002**	0.002**

Ratio of Other Income to Interest Income	0.062*	0.047**	0.023**	0.102	0.233

P < .1, ** P < .05, Total Number of Banks – 42; Public Sector Banks – 28; Private Sector Banks – 14.

TABLE 2. Two Sample Independent t-test based on size

Parameter	2020-21	2021-22	2022-23	2023-24	2024-25
Profit / Employee	0.443	0.039**	0.187	0.452	0.482
Returns on Assets	0.663	0.341	0.428	0.632	0.728
Non-Performing Assets	0.732	0.447	0.244	0.493	0.221
Ratio of Other Income to Interest Income	0.215	0.105	0.048**	0.066*	0.386

P < .1, ** P < .05, Total Number of Banks – 42; Public Sector Banks – 28; Private Sector Banks – 14.

TABLE 3. Path coefficient with dependent variable as Return on Assets (ROA)

Parameter	2020-21	2021-22	2022-23	2023-24	2024-25
Ratio of other Income to Interest Income	0.682	-0.254	1.798	3.134*	2.796*
Credit Deposit Ratio	0.700	0.450	0.335	-0.471	0.646
Non-Performing Assets	-0.470**	-0.469**	- 0.455**	-0.483**	-0.405**

P < .1, ** P < .05, Total Number of Banks – 42; Public Sector Banks – 28; Private Sector Banks – 14.

CONCLUSION

Data and responses gathered from commercial and public sector banks form the basis of the study. Not only do public and private banks get their due, but so do schedule commercial banks, foreign banks, and rural regional banks. There are clear performance gaps between public and private sector banks when looking at the important ratios of Non-Performing Assets (NPA) and Return on Assets (ROA). Based on the ratio of non-interest income to interest income, the research placed a focus on diversification. The difference based on ownership patterns was compared using an independent sample t-test. The relationship of Return on assets (ROA) and nonperforming assets was found to be negatively correlated, while diversification and ROA were found to be positively correlated in the last two years. Considering the declining trend in traditional interest-based revenue streams, banks have recently demonstrated a shift in their revenue-generating strategies to include non-interest sources. The higher levels of income from interest sources are being cited by critics. Due to developing technology and enabling laws, Indian banks offer chances for revenue generation from payment services as well as fee-based streams like commissions from the sale of insurance and mutual fund products. Subsequent studies may evaluate the performance of foreign banks, public sector banks, regional rural banks, private sector banks of the new generation, and private sector banks of the old generation.

REFERENCES

1. Ajit, D. (1997). Para banking in India: Some issues. *Economic and Political Weekly*, 32 (42), 2677-2681.
2. Bapat D (2012). Efficiency for Indian public sector and private sector banks: Assessment of impact of global financial crisis. *International Journal of Business Performance Management*, 13 (3 /4), 330-40.
3. Guidara, A., Lai, V. S., Soumaré, I., & Tchana, F. T. (2013). Banks' capital buffer, risk and performance in the Canadian banking system: Impact of business cycles and regulatory changes. *Journal of Banking & Finance*, 37(9), 3373-3387.
4. Hayden, E., Porath, D., & Westernhagen, N. V. (2007). Does diversification improve the performance of German banks? Evidence from individual bank loan portfolios. *Journal of Financial Services Research*, 32(3), 123-140.
5. Karray, S. C., & Chichti, J. E. (2013). Bank size and efficiency in developing countries: Intermediation approach versus value added approach and impact of non-traditional activities. *Asian Economic and Financial Review*, 3(5),593.
6. Kumar, A., & Dash, M. K. (2013). Constructing a measurement in service quality for Indian banks: Structural equation modeling approach. *Journal of Internet Banking and Commerce*, 18(1), 1-13.
7. Miller, S. M. & Noulas, A. (1997). Portfolio mix and large bank profitability in the USA. *Applied Economics*, 29(4), 505-512.
8. Sanjeev, G. M. (2006). Does banks' size matter in India? *Journal of Services Research*, 6(2), 135-144.
9. Sanya, S., & Wolfe, S. (2011). Can banks in emerging economies benefit from revenue diversification? *Journal of Financial Services Research*, 40(1-2), 79-101.
10. Sawada, Michiru (2013). How does the stock market value bank diversification? Empirical evidence from Japanese banks. *Pacific Basin Finance Journal*, 23(3), 40- 61.
11. Sharpe, S. (1990). Asymmetric information, bank lending, and implicit contracts: A stylized model of customer relationships. *Journal of Finance*, 45(4),1069-87.