

A Comparative Study of the Key Banking Indicators of Public and Private Sector Banks in India

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Abstract

In the last few years the Indian banking sector has shown remarkable resilience and has managed to meet the challenges of being financial service providers in a globalised competitive environment. They are striving hard to meet ever-growing customer needs and also reaching out to the unbanked sectors of the economy in order to bring about socio economic development. The use of technological innovation by banks has helped them to improve on their business processes, thus resulting in lower financial and management costs. The recent Domestic and international economic developments have impacted the asset quality of both public and private sector banks in the country although they have maintained their profitability. In this context this paper attempts to analyse and compare the key banking indicators of these banks using statistical tools with a view to providing an insight into how these banks can bring in competitive advantage in a challenging business environment.

INTRODUCTION

The Importance of the banking system in India has grown over the years as banks play a vital role in the functioning of the economy by providing credit and liquidity and a range of risk management services.

The Indian Banking system consists of several public sector banks, private sector banks, foreign banks, regional rural banks, urban and rural cooperative banks, in addition to cooperative credit institutions. According the India Brand Equity Foundation (2016), The Indian banking sector's assets reached US\$ 1.8 trillion in FY14 from US\$ 1.3 trillion in FY10, with 70 per cent of it being accounted by the public sector. Total banking assets in India is expected to cross US\$ 28.5 trillion in FY25. The performance of the banking sector has been rather subdued in the last few years although the commercial banks in the country are continuing to invest in increasing their network and improve their customer reach. There has been a slowdown in balance sheet growth and banks have earned profits due to decrease in their operating expenses rather an increase in their income. There has been a decline in asset quality and the Indian banking industry has exhibited resilience and does appear to be an exceptional underperformer with respect to the global banking trends in terms of profitability, liquidity and capital positions according to a recent report of the Reserve Bank of India.

Public and Private sector banks in the country continue to face challenges in the areas of maintaining asset quality compounded by slow pace of economic growth, high inflation, high customer expectations, increasing compliance, risk and governance requirements. The stability of these banks assumes a great deal of significance as they are an important constituent of the financial system of the country. An analysis of key banking indicators of these banks will provide an insight into their soundness in terms of capital adequacy, asset quality maintained, profitability, liquidity and efficiency of their operations.

REVIEW OF LITERATURE

There have been several research studies relating to the working of commercial banks in India. Kasman *et al.* (2010); Maudos *et al.* (2004) and Domicic *et al.* (2012) established that the cost of funding affects the investment potential and capital allocation of the banks. Garcia-Herrero *et al.*, 2009 found that the increasing financial intermediation cost affects banks' profitability and thus is a reason for decreasing efficiency of the banking sector as a whole. According to Brock *et al.* (2000), High interest margin is also considered 'negatively' as it leads to 'disintermediation'. A lot of research has been done on determinants of margin of banks. Variables included in the study were operating cost,

NPA's size of bank, asset share, banking industry environment and macro-economic conditions. Ho and Saunders (1981) conducted empirical research to establish determinants of efficiency, profitability or intermediation costs. Allen (1988) adopted Ho and Saunders' model for a set of loans with interdependent demands. Angbazo (1997) introduced credit risk, interest rate risk and their interaction effect in the model for the US banks. Later on Saunders et al. (2000) used two-stage regression technique on the interest spread considering banks in the US and six European countries. Claeys *et al.* (2008) considered single stage estimation procedure to model banks' margin from thirty-six European countries and concluded that concentration, operational efficiency, capital adequacy and risk behaviour were the important determinants of the interest margin. Maudos *et al.* (2004), while modelling NIM for European Union using single stage regression technique, found operating cost significantly affecting the NIM. Schwaiger *et al.* (2008) observed limited impact of interest rate risk on NIM. Kasman *et al.* (2010) observed merger and acquisition improved banks' efficiency while size and managerial efficiency were negatively related to NIM. Brock *et al.* (2000) modelled the interest spread for Latin American banks using the same technique. They found that banks' operating cost and level of NPAs were positively affecting the interest spread while macroeconomic condition caused negative impact on margin. Entrop *et al.* (2012) studied the German Banking system and found the extent to which interest risk exposure was affecting the banks' margin. Impact of financial crisis on banks' margin was tested by Dietrich *et al.* (2011) by considering the commercial banks of Switzerland over a period of 1999-2009. After employing two sub-groups, viz., a) 1999-2006 and b) 2007-2009, they concluded that during pre-crisis era, ownership did not impact banks' profitability. But post crisis period, public sector banks became more efficient in comparison to the private banks. Market structure seemed important during pre-crisis period and turned out insignificant post crisis. Khan *et al.* (2010) used a panel data set up to model NIM for the Pakistani banks and found operating cost and cost of funding were the main determinants for banking spread in Pakistan. Marginal influence of macroeconomic variables and market condition on NIM was reported by them. Alexiou, Constantinos *et al.* (2009) studied the effects of bank-specific and macroeconomic determinants of bank profitability, using an empirical framework that incorporates the traditional Structure-Conduct- Performance (SCP) hypothesis using panel data approach. Masood *et al.* (2012) analysed the determinants of banks' profitability by investigating the co-integration and causal relationship between total assets (TA) and total equity (TE) of Chinese banks for the period 2003-2007. Savitha (2016) studied the indicators of financial stability of select private sector banks in India and outlined challenges and opportunities faced by them. Sutorova and Teply (2013) established that lending rate increases result in increase in capital resources using a sample of 594 European banks for the period 2006 to 2011. Carlson et al (2013) test the influence of the size of banks capital surplus on lending as capital requirements change. In addition, there is empirical evidence that better capitalised banks make the provision of credit more stable in a downturn, and preserve long-term lending relationships (Albertazzi and Marchetti (2010), Kapan and Minoiu (2013), Gambacorta and Mistrulli (2004)). These studies have shown that higher capital surpluses lead to a lower reduction in credit supply following a shock. Moreover, well capitalised banks can also shield their lending from monetary shocks as they have easier access to non-insured funding (Jimenez et al (2012)). There are several potentially offsetting impacts of higher capital requirements for banks. On the positive side, capital strengthening may provide incentives for the bank to reduce its probability of default by monitoring its borrowers (Nguyen (2015) Banks can reduce moral hazard by investing in less risky assets (Berger and Bowman (2013) and mitigate the incentives to develop risky and complex products (de-Ramon et al (2012)). On the negative side, banks may increase risk-taking activities and conceal them from supervisors to restore profitability (Mariathasan and Merrouche (2013) Fraisse et al (2015) using a sample of French banks found that a percentage point increase in capital requirements leads to a percentage reduction in lending due to reductions in the size of the loans provided to customers.

OBJECTIVE OF THE STUDY

- To analyse the key banking indicators of Public and private sector banks in India with respect to
 - CAR, Operating Expenses as a % of Total Expenses and ROA
 - Interest Income, Other Income and Total Income
 - Interest Expended, Operating Expenses and Total Expenses
 - Operating Profit, Provisions & Contingencies and Net Profit
 - Total Assets, Gross NPA and Net NPA
 - Net NPAs to Net Advances, Business Per Employee and Profit Per Employee
 - Deposits, Investments and Advances,
 - NIM
 and evaluate their consistency of performance.
- To develop and test the hypotheses relating to the significance of differences in key banking indicators of public and private sector banks
- To develop and test the hypotheses relating to the significance of correlation of Net NPAs to Advances of public sector and private sector banks

Scope of the Study: The present research is conducted by considering the performance of Public and private sector banks in India for the period 2012-2016. The study focusses on establishing the consistency of performance of these banks on the basis of key banking indicators.

METHODOLOGY

Suitable Hypotheses relating to performance of Public and Private sector banks on the basis of key banking indicators such as deposits, investments, advances, total assets, gross NPA, net NPA, business per employee, profit per employee, interest income, interest expenditure, net profit, NIM and net NPA to advances of the banks were developed and tested using one-way ANOVA. The consistency of performance of the banks was judged using coefficient of variation. The correlation between Advances and Net NPA's of public and private sector banks was computed and the 't' test was used to establish the significance of the association.

Sources of Data: To evaluate the performance of private sector banks information was collected from published annual reports and financial statements of the banks included in the sample for the period 2012 to 2016 and from RBI publications.

Sample: The sample selected for the purpose of the study includes 21 Public sector and 19 Private sector banks. The sample includes the following banks.

Table 1: List of Public and Private Sector Banks considered for the Study

S.No.	PUBLIC SECTOR BANKS	S.No.	PRIVATE SECTOR BANKS
1	Allahabad Bank	1	City Union Bank Ltd.
2	Andhra Bank	2	TamilNadu Mercantile Bank Ltd.
3	Bank of Baroda	3	The Catholic Syrian Bank Ltd.
4	Bank of India	4	Dhanalaxmi Bank Ltd
5	Bank of Maharashtra	5	The Federal Bank Ltd.
6	Canara Bank	6	The Jammu & Kashmir Bank Ltd.
7	Central Bank of India	7	The Karnataka Bank Ltd.
8	Corporation Bank	8	The Karur Vysya Bank Ltd.
9	Dena Bank	9	The Lakshmi Vilas Bank Ltd.
10	Indian Bank	10	Nainital Bank Ltd.
11	Indian Overseas Bank	11	RBL Bank
12	Oriental Bank of Commerce	12	The South Indian Bank Ltd.
13	Punjab & Sind Bank		
14	Punjab National Bank		
15	Syndicate Bank		
16	UCO Bank		

17	Union Bank of India			13	Axis Bank Ltd.
18	United Bank of India				Development Credit Bank Ltd.
19	Vijaya Bank			14	HDFC Bank Ltd.
20	State Bank of India (SBI)			15	ICICI Bank Ltd.
21	IDBI Ltd.			16	IndusInd Bank Ltd.
				17	Kotak Mahindra Bank Ltd.
				18	YES Bank
				19	

RESULTS AND DISCUSSION

The performance of banks was evaluated on the basis of key banking indicators such as CAR, Operating Expenses as a % of Total Expenses, ROA, Interest Income, Other Income Total Income, Interest Expended, Operating Expenses, Total Expenses, Operating Profit, Provisions & Contingencies Net Profit, Total Assets, Gross NPA, Net NPA, Net NPAs to Net Advances, Business Per Employee, Profit Per Employee, Deposits, Investments, Advances and NIM.

The Capital to Risk Weighted Assets Ratio (CRAR) was used to judge the soundness of banks. It is defined as the ratio of banks capital in relation to its current liabilities and risk weighted assets. Capital adequacy ratio (CAR) is one of the measures which ensure the financial soundness of banks in absorbing a reasonable amount of loss. Regulation of capital is important in order to reduce bank failures, to promote stability, safety and soundness of the banking system, and reduce losses to the bank depositors.

The Basel Committee on Banking Supervision (BCBS) stipulates from time to time, rules relating to capital requirements of Banks. BCBS introduced the capital measurement system commonly referred to as Basel I in 1988 with significant focus on credit risk of banks. In 2004, Basel II guidelines were published and besides credit risk, market and operational risks gained importance. The Basel III guidelines published in 2010 are being implemented from 2013 and will be fully effective by March 2018.

As per the RBI guidelines, banks are required to compute and disclose capital adequacy ratio under the Basel III Regulations from the quarter ended June 2013, the Bench mark requirement being 9%. A ratio below the minimum indicates that the bank is not adequately capitalized to expand its operations.

$$CAR = \frac{\text{Tier I capital} + \text{Tier II capital}}{\text{Risk weighted assets}}$$

Tier I Capital funds include paid-up equity capital, statutory and capital reserves, and perpetual debt instruments eligible for inclusion in Tier I capital. Tier II capital is the secondary bank capital which includes items such as undisclosed reserves, general loss reserves, subordinated term debt, amongst others.

The consistency of Key banking indicators namely CAR, of public and private sector banks is presented in Tables 2,3 4 and 5. The CAR ensures that the banks do not expand their business without having adequate capital. Among Public sector banks Dena Bank was the most consistent with a coefficient of variation of 2.07% and among private sector banks the most consistent was Nainital Bank with a coefficient of variation of 3.25%.

Operating expenses includes payments and provisions to employees, rent, taxes and lighting, expenses on printing and stationary, depreciation, directors and auditors fees and expenses legal charges, repairs and insurance and voluntary retirement expenditure.

The decline in operating expenses is one of the key reasons for profit generation by banks as their income did not show spectacular growth in the last few years. SBI among public sector banks and Axis Bank among private sector banks remained most consistent in term of operating expenses with low coefficients of variation.

Return on assets (ROA): Returns on asset ratio is the net income (profits) generated by the bank on its total assets (including fixed assets). The higher the proportion of average earnings assets, the better would be the resulting returns on total assets.

ROA = Net profits / Avg. total assets

With regard to ROA, Canara Bank among public sector banks and AXIS bank among private sector banks remained most consistent.

Interest Earned: Includes interest and discount on all types of loans and advances like cash credit, demand, loans, overdraft, export loans, term loans, domestic and foreign bills purchased and discounted including rediscounting, overdues and interest subsidy. Besides Interest on Investments and balances with RBI and interbank funds.

Other Income includes commission, exchange and brokerage, profit on sale of investments, profits on revaluation of investments, profits on Sale of land, Building and other assets, profits on exchange transactions, income by way of dividend and other miscellaneous income.

With regard to interest Income, Allahabad Bank was consistent among public sector banks and Dhanalaxmi Bank was consistent among Private sector banks. As regards other income Punjab & Sind Bank was consistent among public sector banks while TamilNadu Mercantile Bank was consistent among private sector banks. With regard to Total Income, Allahabad Bank was consistent among public sector banks and Dhanalaxmi Bank was consistent among Private sector banks.

Interest Expended: Includes interest paid on deposits from banks and other institutions, interest on RBI/Inter bank borrowings, interest on participation certificates, penal interest. Total Expenses is the sum total of Interest Expended and Operating Expenses

With regard to interest Expended, IDBI was consistent among public sector banks and Dhanalaxmi Bank was consistent among Private sector banks. As regards operating expenses Punjab & Sind Bank was consistent among public sector banks while ICICI Bank was consistent among private sector banks. With regard to Total Expenses, IDBI was consistent among public sector banks and Dhanalaxmi Bank was consistent among Private sector banks.

Operating Profit and Net Profit: Are indicators of the profitability of banks.

Provisions and Contingencies include provisions made for bad and doubtful debts, provisions for taxation, provision for diminution in the value of investments, transfers and contingencies and other similar items.

With regard to operating profit, Corporation Bank was consistent among public sector banks and Federal Bank was consistent among private sector banks. As regards other provisions and contingencies Union Bank was consistent among public sector banks while Nainital Bank was consistent among private sector banks. With regard to net profit, SBI was consistent among public sector banks and City Union Bank was consistent among Private sector banks.

Total Assets: Includes the cash and balances with the RBI, balance with banks and money at call on short notice, investments, advances, fixed assets and other assets.

Net NPA: Means Gross NPA – (Balance in Interest Suspense Accounts + ECGC Claims Received and help pending adjustment + Part Payment Received and kept in Suspense Account + Provisions help for Loan Losses)

With regard to Total Assets, Union Bank was consistent among public sector banks and Dhanalaxmi Bank was consistent among Private sector banks. As regards Gross NPAs SBI was consistent among public sector banks while Federal Bank was consistent among private sector banks. With regard to Net NPAs, SBI was consistent among public sector banks and Karnataka Bank was consistent among private sector banks.

Net NPA Ratio, Business per employee and profit per employee were used to judge efficiency of performance.

Non-performing asset (NPA) ratio: The Net NPA ratio was used to judge the quality of Assets. The Net NPA to loans (advances) ratio is used as a measure of the overall quality of the bank's loan book. An asset becomes non-performing when the interest and /or instalment of principal is delayed and not received before a stipulated time. NPA's are those assets for which interest is overdue for more than 90 days (or 3 months).

Net NPAs are calculated by reducing cumulative balance of provisions outstanding at a period end from gross NPAs. Higher ratio reflects rising bad quality of loans.

NPA ratio = Net non-performing assets / Loans given.

As regards the Net NPA ratio, SBI was the most consistent among Public Sector Banks reflecting good asset quality and IndusInd Bank was consistent among private sector banks

Business Per Employee: This is the ratio of total business to the number of employees. Total business is defined as the sum of Advances and Deposits of the bank. As regards this, Canara Bank was most consistent among Public Sector Banks and YES Bank was most consistent among private sector banks

Profit Per Employee: Profit per employee is the ratio of net profit after tax to the number of employees of the bank. As regards profit per employee, the most consistent was Vijaya Bank was most consistent among Public Sector Banks and YES Bank was most consistent among private sector banks.

Deposits: The ability of banks to provide relevant financing is dependent on its ability to mobilise deposits. The transformation of deposits into productive capital is the key to financial intermediation. Domestic deposits are a reliable and cheap source of funds for banks for development. Banks which finance most of their loans with deposits, often stand firm against liquidity crunches and are financially stable vis-a-vis those which make use of market funding. Deposits may be from banks and also others including demand deposits of non bank sector, saving and term deposits.

Investments: Investments in the bank balance sheet indicate assets purchased by the bank with a view that these will yield income in the future or appreciate and can be sold at a higher price. A unique feature of investment of bank is that a large proportion of the investments are made in pursuance of the requirement to maintain a certain level of liquid assets. Investments in India are made by banks in government securities, other approved securities, shares, debentures, in subsidiaries and joint ventures, gold, commercial paper. Investments outside India can be in foreign government securities, subsidiaries and joint ventures abroad. Besides banks are required to classify their investment portfolio under three categories: a) Held to Maturity b) Available for Sale c) Held for Trading.

Advances: Advances refer to the loans given to banks customers which could be retail or corporate clients. The growth in Advances coupled with prevailing interest rates is what drives the banks interest income. Advances will include Bills discounted and purchased, cash credits, overdrafts and loans repayable on demand, term loans. Advances secured by tangible assets, covered by bank /government guarantee and advances to priority sector and public sector.

With regard to Deposits, Allahabad Bank was consistent among public sector banks and Dhanalaxmi Bank was consistent among Private sector banks. As regards Investments Allahabad Bank was consistent among public sector banks while ICICI Bank was consistent among private sector banks. With regard to Advances, United Bank of India was consistent among public sector banks and Dhanalaxmi Bank was consistent among Private sector banks.

Net interest margin (NIM): the performance of banks is largely dependent on the NIM for the year. The difference between interest income and interest expense is known as net interest income. It is the income, which the bank earns from its core business of lending. As such, NIM is the net interest income earned by the bank on its average earning assets. These assets comprises of advances, investments, balance with the RBI and money at call.

$$NIM = (Interest\ income - interest\ expenses) / average\ earnings\ assets$$

With regard to NIM, Oriental Bank of Commerce was consistent among public sector banks and Dhanalaxmi Bank was consistent among Private sector banks.

Public Sector Banks	CA R (%)	Opex as % Of Total Expenses	RO A (%)	Interes t Incom e	Other Incom e	Total Incom e	Interest Expende d	Operatin g Expenses	Total Expense s	Operatin g Profit	Provisions & Contingenci es
Allahabad Bank	9.8	5.5	56.5	9.1	20.7	9.9	10.3	13.8	10.7	10.1	39.1
Andhra Bank	8.8	3.1	35.3	17.5	23.8	18	18.9	19.8	19.1	16.7	36.5
Bank of Baroda	6.9	3.9	56.7	15.5	15.5	15.4	18.2	21.4	18.8	5.5	64.4
Bank of India	7.7	9.2	118.6	17.4	10.4	16.4	18.7	26.9	20	12.5	50.2
Bank of Maharashtra	6.6	8	121.4	22.5	17.1	22.1	24.9	19.7	23.6	16.6	27.2

Canara Bank	11.8	3.9	33.2	15.2	21.8	15.8	16.5	20.4	17.1	8.9	60.9
Central Bank of India	8.8	7.8	88.2	12.9	13.2	12.8	12.5	20.8	14.2	11.7	32.9
Corporation Bank	8.3	5.4	64.7	16.6	6.7	15.4	17.9	18.7	17.9	3.1	38.6
Dena Bank	2.1	10.3	500.7	17.4	17.3	16.9	21.2	26.9	21.7	23.8	37.2
Indian Bank	2.4	5.3	215.6	11.2	16.4	11.3	16	13.2	15.2	6.3	17.3
Indian Overseas Bank	13.2	8.2	61.8	11.5	14.7	11.6	14.1	18.8	14.5	12.4	33.1
Oriental Bank of Commerce	5.4	5.8	106.6	9.6	19.1	10.3	9.9	14.7	10.5	11.6	23.4
Punjab & Sind Bank	9.4	6.6	70.2	11.9	5.9	11.6	12.6	8.9	11.8	23.5	38.2
Punjab National Bank	5.4	5.6	104.5	10	22.9	11.1	12.2	15.7	12.7	5.9	46.9
Syndicate Bank	7.2	8.5	118.4	16.9	38.7	18.5	21.7	25.3	21.9	7.9	54.7
UCO Bank	13.4	4.6	34.4	10.7	32.6	11.9	10.2	13.4	10.6	24.4	48.5
Union Bank of India	6.1	3	49.8	17.3	18.4	17.2	20.7	18.8	20.3	4.9	11.2
United Bank of India	10.9	6.2	56.7	10.8	31.1	12.5	14.5	13.5	13.9	12.2	37.2
Vijaya Bank	8.6	5.7	66	18	21.8	18.2	19.3	22.4	19.7	14.3	31.5
State Bank of India	5.5	2.1	37.8	17.2	27.8	18.4	20.1	18.8	19.7	15.6	27.3
IDBI Ltd.	10.2	10.1	98.7	7.8	21.9	9.1	7.3	18.5	8.8	13.2	54.3

Table 3: Coefficient of variation (%) of key banking indicators of Public Sector Banks

Public Sector Banks	Net Profit	Total Assets	Gross NPA	Net NPA	Net NPAs To Net Advances	Business Per Employee	Profit Per Employee	Deposits	Investments	Advances	NI M
Allahabad Bank	119	9.8	63.4	61.3	54.4	4.8	285.7	8.7	6.9	12.3	7.6
Andhra Bank	51	18.3	61.5	59.4	47.6	3.9	20.9	18.9	21.6	17.9	11.0
Bank of Baroda	183	17.9	88.0	87.8	85.1	6.3	468.9	17.9	14.4	15.5	10.0
Bank of India	510	19.7	91.0	83.8	77.6	7.1	2288.1	20.5	14.2	18.9	6.2
Bank of Maharashtra	55	20.8	89.5	100.8	88.2	12.2	57.5	22.3	13.6	23.7	4.9
Canara Bank	150	16.9	89.5	78.9	67.8	0.4	346.4	16.7	13.2	16.1	7.4
Central Bank of India	1086	11.8	49.4	48.2	44.2	7.7	162.1	11.6	16.6	8.9	4.5
Corporation Bank	114	14.1	89.8	86.7	81.1	1.4	323.8	15.9	13.1	14.4	5.2
Dena Bank	243	15.8	85.5	81.6	72.8	0.7	261.1	16.2	16.7	14.8	9.3
Indian Bank	34	14.2	53.3	61.3	51.4	3.3	25.4	14.9	12.6	14.2	14.7

Indian Overseas Bank	-703	10.5	80.7	84.2	85.4	4.9	-201.0	12.1	15.3	8.4	9.1
Oriental Bank of Commerce	59	11.4	63.0	62.7	53.8	1.6	86.3	11.6	8.5	11.0	1.7
Punjab & Sind Bank	39	13.9	55.3	53.9	44.6	2.9	57.3	14.9	14.3	13.8	10.6
Punjab National Bank	152	15.7	75.9	85.5	72.3	2.9	611.9	16.1	10.2	14.1	10.7
Syndicate Bank	152	21.7	72.2	90.7	77.3	3.8	296.3	20.8	23.2	20.2	17.6
UCO Bank	561	13.6	67.2	65.4	69.1	4.4	36894.8	13.3	23.6	10.9	7.9
Union Bank of India	16	16.6	34.4	68.5	54.6	6.1	12.4	16.2	14.7	15.9	8.1
United Bank of India	-1710	9.1	53.7	57.1	56.3	7.4	15.8	10.2	18.8	3.4	10.1
Vijaya Bank	20	17.3	68.2	77.1	63.9	4.0	0.0	17.9	17.7	16.9	11.6
State Bank of India	14	10.5	28.7	34.7	31.8	14.1	13.9	31.5	30.0	30.2	9.0
IDBI Ltd.	524	9.7	68.4	76.6	70.2	3.1	-526.6	9.6	8.1	6.7	6.4

Table 4: Coefficient of variation (%) of key banking indicators of Private Sector Banks

Private Sector Banks	CAR	Opex as % Of Total Expenses	ROA	Interest Income	Other Income	Total Income	Interest Expended	Operating Expenses	Total Expenses	Operating Profit	Provisions & Contingencies
City Union Bank Ltd.	10.3	6.8	6.8	20.1	27.3	20.8	18.4	25.7	19.9	25.7	36.7
Tamilnad Mercantile Bank Ltd.	7.6	3.8	23.3	19.2	15.9	18.6	20.9	23.3	21.3	11.9	18.1
The Catholic Syrian Bank Ltd.	5.8	3.8	-433.1	13.9	16.0	13.9	16.6	16.1	16.4	66.4	37.7
Dhanlaxmi Bank Ltd	14.1	8.5	-132.8	5.2	30.3	6.8	8.8	15.8	9.8	-1361.7	73.8
The Federal Bank Ltd.	6.6	8.3	29.4	13.3	18.3	13.6	14.6	24.7	16.9	5.2	19.7
The Jammu & Kashmir Bank Ltd.	4.4	11.7	45.5	14.3	21.9	14.4	13.9	25.5	16.0	12.3	33.9
The Karnataka Bank Ltd.	4.1	6.0	11.7	18.1	18.2	18.1	17.0	22.0	17.9	19.0	20.9
The Karur Vysya	8.	12.2	27.	19.8	25.5	20.3	19.5	30.3	21.4	21.1	41.4

Bank Ltd.	4		1								
The Lakshmi Vilas Bank Ltd.	8.8	3.9	27.9	20.2	26.3	20.8	19.5	23.9	20.3	23.9	26.9
Nainital Bank Ltd.	3.3	2.7	26.4	18.1	33.3	18.3	23.1	22.2	22.9	8.6	17.4
RBL Bank	26.2	8.1	24.6	60.8	66.4	61.5	61.7	60.0	61.1	66.0	68.5
The South Indian Bank Ltd.	8.2	5.5	34.4	16.5	28.9	17.3	17.6	23.0	18.6	12.1	32.9
Axis Bank Ltd.	8.0	2.6	3.6	23.5	20.7	22.9	20.1	20.7	20.2	29.4	34.1
Development Credit Bank Ltd.	5.5	4.7	24.5	33.3	31.7	33.1	29.9	28.8	29.5	53.0	83.8
HDFC Bank Ltd.	3.3	4.7	4.3	29.3	23.9	28.4	29.1	23.0	26.9	32.2	31.6
ICICI Bank Ltd.	5.2	5.0	9.9	17.2	29.2	19.3	12.3	18.7	13.9	31.7	52.8
IndusInd Bank Ltd.	9.8	10.2	8.9	28.7	45.2	31.8	24.4	38.8	28.6	41.6	43.8
Kotak Mahindra Bank Ltd.	6.4	7.1	17.8	39.7	41.3	39.6	38.9	47.2	41.6	33.8	47.5
YES Bank	9.8	16.5	6.8	28.2	41.6	30.2	23.9	43.2	27.8	38.1	41.2

Table 5: Coefficient of variation (%) of key banking indicators of Private Sector Banks

Private Sector Banks	Net Profit	Total Assets	Gross NP A	Net NP A	Net NPAs to Net Advances	Business Per Employee	Profit Per Employee	Deposits	Investments	Advances	NI M
City Union Bank Ltd.	17.9	19.5	52.9	59.6	45.5	8.7	9.1	18.5	13.4	20.4	20.4
Tamilnad Mercantile Bank Ltd.	16.1	21.2	36.8	43.6	37.5	5.7	20.9	21.9	24.4	18.7	18.7
The Catholic Syrian Bank Ltd.	-336.2	11.1	40.3	61.0	60.3	5.9	-362.9	12.5	27.5	8.8	8.8
Dhanlaxmi Bank Ltd	-65.7	6.6	44.2	44.6	50.2	15.6	-188.4	4.3	8.8	8.3	8.3
The Federal Bank Ltd.	24.6	15.4	20.5	63.6	46.6	9.3	26.2	18.7	12.9	16.8	16.8
The Jammu & Kashmir Bank Ltd.	42.0	10.9	93.6	131.9	126.8	11.9	43.6	10.2	11.1	15.6	15.6
The Karnataka Bank Ltd.	23.1	17.2	25.4	29.7	15.6	8.9	17.4	18.4	10.4	18.7	18.7
The Karur Vysya Bank Ltd.	11.8	15.5	42.1	50.1	37.5	9.5	16.7	16.2	10.2	18.5	18.5
The Lakshmi Vilas	39.	23.	20.	34.	40.3	14.4	27.6	24.2	18.6	26.9	26.

Bank Ltd.	7	9	5	7							9
Nainital Bank Ltd.	15.3	18.7	44.9	22.3.6	223.6	26.4	12.5	19.4	12.9	13.3	13.3
RBL Bank	64.3	59.9	81.1	11.5.5	61.2	21.4	33.6	58.2	59.4	60.9	60.9
The South Indian Bank Ltd.	22.7	16.6	77.5	10.1.1	88.9	5.6	31.2	15.7	20.3	15.3	15.3
Axis Bank Ltd.	25.7	23.9	47.9	66.3	36.0	8.5	10.5	19.1	12.5	27.8	27.8
Development Credit Bank Ltd.	43.2	30.0	19.9	44.6	21.2	11.8	34.2	32.3	21.6	35.2	35.2
HDFC Bank Ltd.	32.8	29.3	31.2	49.6	20.2	21.9	24.1	31.5	23.7	33.8	33.8
ICICI Bank Ltd.	19.6	15.2	50.2	86.6	66.9	12.1	12.9	19.2	6.7	21.4	21.4
IndusInd Bank Ltd.	40.1	34.5	29.5	45.5	10.4	6.7	5.4	30.1	27.7	35.9	35.9
Kotak Mahindra Bank Ltd.	25.3	46.5	68.6	67.5	26.1	7.3	16.1	54.3	36.6	48.4	48.4
YES Bank	36.1	30.2	97.5	13.7.3	106.9	5.0	1.4	30.3	19.9	38.4	38.4

Suitable Hypotheses relating to key banking indicators of public and private sector banks included in the sample were developed and tested using One-way ANOVA.

Table 6: Hypotheses Relating to Key Banking Indicators of Public and Private Sector Banks

S. No.	Hypotheses	Public Sector Banks				Private Sector Banks			
		F critical at 5% level of significance	Calculated F value	Sig.	Accepted/Rejected	F critical at 5% level of significance	Calculated F value	Sig.	Accepted/Rejected
1	H ₁ There is no significant difference in the deposits	1.697	38.462	.000*	Rejected	1.741	51.057	.000*	Rejected
2	H ₂ There is no significant difference in the investments	1.697	41.818	.000*	Rejected	1.741	141.911	.000*	Rejected
3	H ₃ There	1.697	43.489	.000*	Rejected	1.741	44.321	.000*	Rejected

	is no significant difference in the Advances			0*				0*	
4	H ₄ There is no significant difference in the Total Assets	1.697	40.232	.000*	Rejected	1.741	65.874	.000*	Rejected
5	H ₅ There is no significant difference in the Gross NPAs	1.697	8.954	.000*	Rejected	1.741	16.588	.000*	Rejected
6	H ₆ There is no significant difference in the net NPAs	1.697	5.503	.000*	Rejected	1.741	5.645	.000*	Rejected
7	H ₇ There is no significant difference in the Business Per Employee	1.697	20.821	.000*	Rejected	1.741	25.104	.000*	Rejected
8	H ₈ There is no significant difference in the Profit Per Employee	1.697	0.725	0.790	Accepted	1.741	22.139	.000*	Rejected

	ee								
9	H ₉ There is no significant difference in the Interest Income	1.697	100.774	.000*	Rejected	1.741	58.871	.000*	Rejected
10	H ₁₀ There is no significant difference in the Interest Expenditure	1.697	68.296	.000*	Rejected	1.741	72.890	.000*	Rejected
11	H ₁₁ There is no significant difference in the Net Profit	1.697	9.013	.000*	Rejected	1.741	53.845	.000*	Rejected
12	H ₁₂ There is no significant difference in the NIM	1.697	10.773	.000*	Rejected	1.741	21.466	.000*	Rejected
13	H ₁₃ There is no significant difference in the Net NPA to Advances	1.697	0.829	0.673	Accepted	1.741	5.003	.000*	Rejected

From the table it can be observed that there is a significant difference with respect to the key banking indicators of public and private sector banks except for Profit per Employee and the ratio of Net NPA to Advances of Public Sector Banks. The significance of correlation of Net NPA to Advances of public sector and private sector banks was analyzed using the 't' test.

The rank correlation between the Advances and the Net NPAs of each of the public sector and Private sector banks was computed using Spearman's rank correlation test

$$r = \frac{1 - 6\sum D^2}{(N^3 - N)}$$

The correlation coefficient was used to determine the value of 't' using the following formula

$$t = \frac{r \cdot \sqrt{N-2}}{\sqrt{1-r^2}}$$

Where r is the correlation coefficient and N is the number of years.

Null Hypothesis (H₀): There is no significant correlation between Advances and Net NPAs.

Alternate Hypothesis (H_A): There is significant correlation between Advances and Net NPAs

Table 7: Hypothesis Relating to Correlation between Advances and Net NPAs

Public Sector Banks	Rank Correlation r	t Critical @ 5% Level of Significance With 3 df	Calculated t	Accepted/ Rejected	Private Sector Banks	Rank Correlation r	t Critical @ 5% Level of Significance with 3 df	Calculated t	Accepted/ Rejected
Bank of Baroda	0.70	3.18	1.70	Accepted	Tamilnad Mercantile Bank Ltd.	0.70	3.18	1.70	Accepted
Bank of Maharashtra	0.90	3.18	3.58	Rejected	Dhanalaxmi Bank Ltd	0.00	3.18	0.00	Accepted
Canara Bank	0.90	3.18	3.58	Rejected	The Federal Bank Ltd.	0.90	3.18	3.58	Rejected
Central Bank of India	0.90	3.18	3.58	Rejected	The Jammu & Kashmir Bank Ltd.	0.10	3.18	0.17	Accepted
Corporation Bank	0.90	3.18	3.58	Rejected	The Karnataka Bank Ltd.	0.90	3.18	3.58	Rejected

Indian Overseas Bank	0.60	3.18	1.30	Accepted	The Karur Vysya Bank Ltd.	0.90	3.18	3.58	Rejected
Syndicate Bank	0.80	3.18	2.31	Accepted	The Lakshmi Vilas Bank Ltd.	0.30	3.18	0.54	Accepted
UCO Bank	0.10	3.18	0.17	Accepted	Nainital Bank Ltd.	0.30	3.18	0.54	Accepted
United Bank of India	0.31	3.18	0.55	Accepted	RBL Bank	0.90	3.18	3.58	Rejected
Vijaya Bank	0.90	3.18	3.58	Rejected	Development Credit Bank Ltd.	0.90	3.18	3.58	Rejected
State Bank of India	0.90	3.18	3.58	Rejected	YES Bank	0.90	3.18	3.58	Rejected

CONCLUSION

The analysis conducted has provided an insight into the key banking indicators of public and private sector banks included in the sample. It has helped in identifying the banks which have performed well as well as those which are struggling with respect to the parameters outlined. Both public and private sector banks continue to face a number of challenges in today's business scenario. Public sector banks are faced with rising stressed assets since 2012 and consolidation of the Indian public sector banks is a key challenge. Infusion of capital is a much needed initiative for the public sector banks as they continue to deal with corporate governance and operational inefficiencies. Political will is the need of the hour to help public sector banks reap the benefits of consolidation. While scale and management bandwidth continue to haunt public sector banks the regulator's initiative can facilitate corporate governance reforms and help them deal with low capital, high NPAs and poor management quality. Private Sector Banks continue to face a number of challenges in today's Business scenario. The areas where they are faced with problems include staff quality and capabilities, managing brand image and reputation, client segment focus and providing customised advice and solutions to meet high customer expectations. These banks also face increasing compliance risk and governance requirements. The strict KYC and Anti Money Laundering (AML) standards along with tax transparency have resulted in increased costs and complexity for these banks. Increasing transaction costs have impacted profitability of banks. Besides expenses on due diligence and scrutiny via transaction surveillance system in order to build customer confidence have increased cost of operations of these banks. Client retention remains a key focus area for private banks. The success of the banking sector in the coming years is heavily dependent on the development of a suitable mechanism to rectify, restructure and recover stressed assets along with a framework of accountability to the stakeholders.

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