



Asset Liability Management Analysis of Major Private sector Banks: A Case study of India

Prof Bimal Jaiswal (Professor, Department of Applied Economics, Faculty of commerce, University of Lucknow)

Dr Leena S Shimpi (Associate Professor, Babasaheb Bhimrao Ambedkar University, Lucknow)

Mr Prashant Srivastava, (Research Scholar, Department of Applied Economics, Faculty of commerce, University of Lucknow)

Abstract: This study conducts a comprehensive analysis of Asset Liability Management (ALM) practices in five major private sector banks in India from the fiscal year 2011-12 to 2019-20. The banks under consideration are HDFC Bank, ICICI Bank, Axis Bank, Kotak Mahindra Bank, and Yes Bank. The research employs a multi-faceted approach to evaluate the ALM performance of the selected banks. Key variables, including Net Interest Margin (NIM), Loan to Deposit Ratio (LDR), and Investment to Borrowings Ratio (IBR), are scrutinized to gauge the effectiveness of the banks' management of assets and liabilities. The NIM calculations reveal the profitability of core banking operations, while the LDR and IBR shed light on the banks' loan and investment strategies. The study emphasizes a year-wise analysis, providing insights into the variations and trends across the selected banks. The comparative analysis of NIM, LDR, and IBR showcases variations in the performance of banks. Notable trends and anomalies are identified, contributing to the understanding of each bank's asset and liability management strategies. Rankings are assigned based on exceptional performance and areas for improvement. The findings of this study contribute to the understanding of ALM practices in major private sector banks in India. The comparative analysis serves as a valuable tool for stakeholders, policymakers, and the banking industry to make informed decisions. Actionable recommendations are proposed to enhance ALM strategies and navigate uncertainties in the financial environment.

Keywords: *Asset Liability Management, Private Sector Banks, Net Interest Margin, Loan to Deposit Ratio, Investment to Borrowings Ratio, Financial Performance, Banking Industry, India.*

Introduction:

In the dynamic landscape of the banking sector, effective Asset-Liability Management (ALM) plays a pivotal role in ensuring the financial health and sustainability of financial institutions. This research paper delves into a comprehensive analysis of ALM practices employed by major private sector banks in India, exploring the intricate interplay between key financial variables such as deposits, loans and advances, borrowings, and investments. By leveraging data spanning the period from 2011-12 to 2019-20, this study seeks to provide a nuanced understanding of the evolving strategies adopted by these banks in managing their assets and liabilities.

The primary focus of this research is to assess the Net Interest Margin (NIM) as a key indicator of the profitability of core banking operations. NIM, calculated as the difference between interest income and interest expenses, offers insights into how efficiently a bank transforms its interest-bearing assets into revenue while managing the cost of funds. By scrutinizing NIM over the specified time frame, this study aims to identify trends, challenges,



and opportunities that have influenced the financial performance of major private sector banks.

Furthermore, this research extends its analysis to evaluate the Asset-Liability Mismatch (ALM) within each bank. ALM is a critical aspect of financial risk management, ensuring that a bank's assets and liabilities are well-aligned. By comparing the growth rates of loans and advances with deposits, and investments with borrowings, this study aims to unearth the degree of synchronization between a bank's assets and liabilities. A well-managed ALM strategy is imperative for mitigating risks associated with interest rate fluctuations, liquidity, and credit exposures.

The selected time period of 2011-12 to 2019-20 encapsulates a period of significant economic changes, regulatory reforms, and technological advancements in the Indian banking sector. This study endeavours to unravel the impact of these factors on the ALM practices of major private sector banks, offering valuable insights for practitioners, policymakers, and researchers alike.

Through a meticulous examination of the collected data and the calculated NIM, coupled with a detailed assessment of the Asset-Liability Mismatch, this research paper aims to contribute to the existing body of knowledge on ALM in the Indian banking sector. Ultimately, the findings are anticipated to shed light on the strategies that have underpinned the financial resilience and adaptability of major private sector banks in India during a transformative period in the banking industry.

Literature review: Asset Liability Management (ALM) in Banking

Asset Liability Management (ALM) is a crucial aspect of financial management in banking, playing a pivotal role in ensuring the stability and profitability of financial institutions. This literature review provides an overview of key studies and research on ALM, encompassing its significance, methodologies, challenges, and impacts on financial performance.

The significance of ALM is well-documented in the literature. Researchers emphasize its role in mitigating risks associated with interest rate fluctuations, liquidity management, and the overall financial health of banks (Ho and Pike, 2018; Saunders and Cornett, 2014). Effective ALM is recognized as a cornerstone for sound financial decision-making, aligning a bank's assets and liabilities with its strategic objectives. Various methodologies and models for ALM have been proposed in the literature. Interest rate risk modeling (Taleb, 2017), cash flow matching (Bodie et al., 2019), and scenario analysis (Deli, 2016) are among the commonly discussed techniques. Recent research explores the integration of advanced analytics and artificial intelligence in ALM processes, providing insights into enhancing risk management (Bologna and Cavallo, 2020; Mollah et al., 2021). Despite its importance, ALM presents challenges for financial institutions. Regulatory compliance, data quality issues, and the complexity of financial markets are identified as primary challenges (Bessis, 2015; Giacometti and Moussa, 2019). The dynamic nature of economic conditions poses challenges in forecasting interest rates and managing liquidity effectively (Hull, 2018). Studies delve into strategies for overcoming these challenges and adapting ALM frameworks to evolving regulatory environments (Beck et al., 2020; Chen et al., 2022).

Research has explored the relationship between ALM practices and financial performance. Allen and Rai (2017) suggest that banks with robust ALM frameworks exhibit better



financial resilience during economic downturns. Furthermore, studies by Demirgüç-Kunt et al. (2021) delve into the impact of ALM on bank profitability, providing insights into the long-term financial sustainability of banks.

In conclusion, the literature on ALM in banking underscores its critical role in ensuring the financial stability and sustainable growth of banks. Ongoing research contributes to the development of advanced ALM methodologies, the identification of best practices for navigating challenges, and insights into the dynamic relationship between ALM practices and financial performance.

Research Objectives:

- To estimate the Net Interest Margin (NIM) for major private sector banks in India over the period 2011-12 to 2019-20 and analyze the trends and variations in NIM to understand the efficiency and effectiveness of core banking operations.
- To examine the Asset-Liability Mismatch by comparing the growth rates of loans and advances with deposits for each bank.
- To synthesize findings into actionable recommendations for banks, policymakers, and industry stakeholders and identify strategies employed by banks to navigate uncertainties and challenges in the financial environment.

By addressing these research objectives, the study aims to offer a comprehensive understanding of the Asset-Liability Management practices adopted by major private sector banks in India, contributing to both scholarly research and practical applications within the banking industry.

Selected Banks:

Private Sector Banks (PSBs) constitute a vital segment within India's banking and financial sector. Distinguished from their public sector counterparts, private sector banks are entities owned and operated by private individuals and corporations. As their name implies, these financial institutions are primarily owned by private entities, operating with profit motives to generate returns for their shareholders while delivering a comprehensive array of banking and financial services to customers.

The regulatory framework governing Private Sector Banks in India is predominantly defined by the Banking Regulation Act, 1949, and the Companies Act, 2013. The Banking Regulation Act grants authority to the Reserve Bank of India (RBI) to oversee and supervise the operations of banks in India, including those in the private sector. Simultaneously, the Companies Act, 2013, provides the legal structure for the establishment and functioning of companies, including private banks.

Key Characteristics of Private Sector Banks:

1. **Ownership:** Private sector banks are characterized by majority ownership (more than 50%) held by private entities, including individuals, corporations, or financial institutions.
2. **Profit Motive:** These banks operate with the primary objective of generating profits for their shareholders and investors.



3. Operational Flexibility: Private sector banks enjoy greater autonomy and flexibility in decision-making, product offerings, and overall business strategies when compared to their public sector counterparts.

4. Innovation and Technology: They often take the lead in adopting innovative banking technologies and digital platforms, contributing to an enhanced customer experience.

Major Private Sector Banks undertake in this study:

1. HDFC Bank

2. ICICI Bank

3. Axis Bank

4. Kotak Mahindra Bank

5. YES Bank

These private sector banks are instrumental in propelling economic growth, fostering innovation, and offering a diverse range of banking services to the public. As the banking landscape continues to evolve dynamically, private sector banks persist as key contributors to India's financial sector, playing a crucial role in the nation's development and advancing financial inclusion goals.

Selected variables and justification:

Asset Liability Management (ALM) is a critical function in the banking sector, encompassing strategies and processes to manage the inherent risks associated with a bank's assets and liabilities. The key variables of deposits, loans and advances, borrowings, and investments are fundamental indicators utilized in ALM analysis, providing insights into the financial health, risk exposure, and overall stability of a bank.

1. Deposits: It represents a significant liability for a bank. Analysing the growth, composition, and maturity profile of deposits aids in understanding the bank's funding structure. High-quality deposits contribute to a stable funding base, while a skewed deposit mix may indicate liquidity challenges.

2. Loans and Advances: They constitute a major portion of a bank's assets. Monitoring the trends in loan portfolios helps assess the risk exposure and credit quality. ALM analysis involves evaluating the maturity profile, interest rate sensitivity, and asset quality of loans to manage credit risk effectively.

3. Borrowings: They represent external funding sources for a bank. Examining the volume and nature of borrowings is crucial for understanding the bank's reliance on external funding and assessing the associated costs. ALM considers the maturity and interest rate structure of borrowings to manage liquidity and interest rate risks.

4. Investments: They include securities held by a bank, such as government bonds and corporate securities. The analysis of investment portfolios aids in gauging the bank's liquidity position, interest rate risk exposure, and overall investment strategy. ALM assesses the maturity, yield, and market risk associated with investments.



ALM analysis helps banks identify and mitigate various risks, including interest rate risk, liquidity risk, and credit risk. Deposits, loans, borrowings, and investments collectively contribute to understanding and managing these risks effectively. The composition of deposits and borrowings provides insights into the liquidity position of a bank. Analyzing the maturity profiles and cash flow dynamics of these liabilities assists in formulating strategies for maintaining adequate liquidity buffers. ALM is particularly concerned with interest rate risk. Loans, borrowings, and investments have different interest rate sensitivities, and understanding these dynamics helps in crafting strategies to balance interest rate-related risks. ALM analysis contributes to ensuring that a bank maintains adequate capital to support its operations. The assessment of loans and investments assists in determining the capital adequacy ratio, a crucial aspect of regulatory compliance.

In conclusion, the chosen variables—deposits, loans and advances, borrowings, and investments—are integral to ALM analysis, providing a comprehensive view of a bank's financial structure, risk exposure, and strategic positioning. The data extracted from annual reports serve as the foundation for robust ALM practices, enabling banks to navigate challenges, optimize performance, and ensure sustained financial stability.

Research Methodology

1. Research Design:

The research adopts a quantitative research design to systematically analyze financial data from the annual reports of selected banks. This design facilitates the calculation of Net Interest Margin (NIM) and the assessment of Asset-Liability Mismatch.

2. Data Collection:

The primary data sources include the annual reports of major private sector banks in India for the time period from 2011-12 to 2019-20. The key variables include deposits, loans and advances, borrowings, and investments, extracted from the balance sheets and financial statements of the selected banks.

3. Statistical calculations and tools:

3. Growth Rate analysis:

The Average Annual Growth Rate (AAGR) has been calculated for each bank from 2011-12 to 2019-20 using the formula:

$$\text{AAGR} = [(\text{Final Value} / \text{Initial Value})^{(1/n)} - 1] * 100$$

Where:

Final Value is the value at the end of the period (2019-20).

Initial Value is the value at the beginning of the period (2011-12).

n is the number of years in the period (8 years in this case).



3.B Assessment of Asset-Liability Mismatch:

Net Interest Margin (NIM) is a financial metric that represents the difference between the interest income earned by a financial institution and the interest expenses it incurs, expressed as a percentage of its average interest-earning assets. NIM is a key indicator used in the banking and financial industry to assess the profitability of a bank's core lending and investment activities. It has been estimated in this study.

Calculation of Net Interest Margin (NIM):

$$\text{NIM} = [(\text{Interest Income} - \text{Interest Expenses}) / \text{Average Earning Assets}] * 100$$

$$\text{Interest Income} = (\text{Loans and Advances} + \text{Investments})$$

$$\text{Interest Expenses} = (\text{Deposits} + \text{Borrowings})$$

$$\text{Average Earning Assets} = (\text{Loans and Advances} + \text{Investments}) / 2$$

Interest Income: The total revenue generated by a bank from its interest-earning assets, such as loans, investments, and other interest-bearing securities.

Interest Expenses: The total cost incurred by a bank for paying interest on its liabilities, including deposits, borrowings, and other interest-bearing liabilities.

Average Earning Assets: The average value of a bank's interest-earning assets over a specific period, usually calculated by taking the average of the beginning and ending balances.

NIM is expressed as a percentage and reflects the spread or margin between the interest earned on assets and the interest paid on liabilities. A higher NIM indicates a more favorable spread, suggesting that a bank is earning more on its interest-earning assets than it is paying on its interest-bearing liabilities. Conversely, a lower NIM may suggest that the bank's interest expenses are relatively high compared to its interest income. NIM is a crucial measure for banks as it provides insights into the efficiency and profitability of their core banking operations, helping stakeholders, including investors and analysts, assess the financial health and performance of the institution. It is also used for benchmarking and comparing the performance of different banks within the industry.

3.C Ratio analysis:

Calculating the Loan-to-Deposit Ratio (LDR) and Investment-to-Borrowings Ratio can be highly useful in Asset-Liability Management (ALM) analysis. These ratios provide insights into the composition and alignment of a bank's assets and liabilities, helping to assess risk exposure, liquidity, and the overall effectiveness of the bank's ALM strategies. Here's how these ratios are useful:

- **Loan to Desposit Ratio (LDR):** It is calculated as the ratio of a bank's total loans to its total deposits. The formula is:

$$\text{LDR} = \text{Total Loans} / \text{Total Desposits}$$

LDR provides an indication of a bank's reliance on deposits for funding its lending activities. A higher LDR may suggest a greater dependence on external funding sources, while a lower



ratio may indicate excess liquidity. LDR helps assess a bank's exposure to credit risk. A high LDR could imply a higher concentration of loans relative to deposits, potentially indicating greater credit risk. Monitoring LDR over time helps evaluate changes in a bank's lending and funding strategies. It assists in optimizing the balance between lending and deposit generation.

➤ **Investment-to-Borrowings Ratio (IBR)**

It compares a bank's investments to its borrowings. The formula is:

Investment-Borrowings Ratio = Total Investments / Total Borrowings

This ratio helps assess a bank's liquidity position by examining the proportion of investments funded by borrowings. It also provides insights into interest rate risk exposure associated with the investment portfolio. A higher ratio may indicate a greater reliance on borrowings to finance investments, potentially increasing interest rate sensitivity and liquidity risk. A lower ratio may suggest a more conservative funding approach. Changes in the Investment-to-Borrowings Ratio can reflect shifts in a bank's investment and funding strategies, influencing the overall balance of its asset and liability portfolios.

ALM analysis involves aligning the maturity, interest rate, and credit risk profiles of assets and liabilities. The LDR and Investment-to-Borrowings Ratio contribute to evaluating this alignment. Banks need to adhere to regulatory guidelines on liquidity and capital adequacy. These ratios aid in assessing compliance and managing regulatory risk. By strategically managing the mix of loans, investments, deposits, and borrowings, banks aim to optimize profitability while minimizing risks. In summary, both the Loan-to-Deposit Ratio and Investment-to-Borrowings Ratio are valuable tools in ALM analysis, offering insights into a bank's liquidity position, risk exposure, and the effectiveness of its asset and liability management strategies.

3.D Comparative Analysis:

A comparative analysis is conducted to evaluate variations in NIM and Asset-Liability Mismatch across different private sector banks. This helps to identify banks with exceptional performance and potential areas of improvement.

The study acknowledges limitations, including the availability and reliability of data, potential variations in accounting practices, and external factors impacting the banking industry. This research methodology is designed to provide a rigorous and systematic approach to the analysis of Net Interest Margin and Asset-Liability Mismatch, contributing valuable insights to the field of Asset-Liability Management in major private sector banks in India.



Data Analysis and Interpretation

Growth rate analysis:

Table 1: AAGR of selected private sector banks

Name of Bank/ Variable	Deposits	Loans and Advances	Investments	Borrowings
HDFC Bank	19.97%	16.67%	12.85%	12.69%
ICICI Bank	19.76%	17.34%	12.74%	13.09%
Aix Bank	20.29%	16.94%	13.44%	11.45%
Kotak Mahindra	19.88%	18.12%	15.70%	15.79%
Yes Bank	21.15%	18.12%	18.39%	15.50%

Source: Author's Calculation

Deposits: Axis Bank has the highest AAGR at approximately 20.29%. Yes Bank follows with an AAGR of approximately 21.15%, making it the bank with the highest growth rate during this period. HDFC Bank, ICICI Bank, and Kotak Mahindra Bank have similar AAGRs of approximately 19.97%, 19.76%, and 19.88%, respectively. Axis Bank has the highest AAGR among the five banks, indicating strong and consistent growth in deposits over the eight-year period. This growth could be attributed to effective marketing, a wider range of financial products, and successful customer acquisition strategies. Yes Bank also shows a significant AAGR, making it the second-fastest growing bank in terms of deposits. The high AAGR may be due to aggressive expansion efforts, attracting new customers, and diversifying its product offerings. HDFC Bank has a steady and healthy AAGR of approximately 19.97%, putting it in line with ICICI Bank and Kotak Mahindra Bank. HDFC Bank's consistent growth is indicative of a well-established customer base and a reputation for providing quality banking services. - ICICI Bank's AAGR of approximately 19.76% is slightly lower than HDFC Bank, Axis Bank, and Yes Bank. This may be because it already had a substantial customer base in 2011-12, making it more challenging to achieve extremely high growth rates. Kotak Mahindra Bank also exhibits a stable AAGR, similar to HDFC Bank and ICICI Bank. Like HDFC Bank, it may have benefited from having a strong customer base and a reputation for reliability. In summary, the trends in deposits for these banks show that they all experienced healthy growth during the eight-year period. Axis Bank and Yes Bank had the highest growth rates, likely due to their expansion and aggressive customer acquisition strategies. HDFC Bank, ICICI Bank, and Kotak Mahindra Bank also showed solid growth, reflecting their established positions in the market. It's important to note that various factors, including the economic environment, banking policies, and customer preferences, can influence these trends, and further analysis would be needed to understand the underlying reasons for these growth rates.

Loans and advances: Yes Bank has the highest AAGR at approximately 18.12%, indicating the fastest growth in loans and advances during the period. ICICI Bank follows closely with an AAGR of approximately 17.34%, making it the second-fastest growing bank in terms of loans and advances. Kotak Mahindra Bank also shows a significant AAGR of approximately



17.42%.Axis Bankand HDFC Bank have AAGRs of approximately 16.94% and 16.67%, respectively, which are slightly lower but still healthy.Overall, all five banks have experienced steady growth in loans and advances from 2011-12 to 2019-20. Yes Bank has shown the highest growth rate, while ICICI Bank, Kotak Mahindra Bank, Axis Bank, and HDFC Bank have also demonstrated robust growth. It's worth noting that the growth in loans and advances can be influenced by various factors, including economic conditions, demand for credit, and the banks' lending strategies.

Investments:Yes Bankhas the highest AAGR at approximately 18.39%, indicating the fastest growth in investments during the period.Kotak Mahindra Bank also shows a significant AAGR of approximately 15.70%.Axis Bankfollows with an AAGR of approximately 13.44%.HDFC Bank and ICICI Bank have AAGRs of approximately 12.85% and 12.74%, respectively, which are slightly lower but still healthy.The analysis of investment trends shows that Yes Bank experienced the highest growth in investments, which could be due to strategic decisions, expanding investment products, and market conditions. Kotak Mahindra Bank also showed strong growth, possibly driven by its investment offerings and customer base. Axis Bank, HDFC Bank, and ICICI Bank exhibited solid growth in investments as well.

Borrowings:Kotak Mahindra Bankhas the highest AAGR at approximately 15.79%, indicating the fastest growth in borrowings during the period.ICICI Bankfollows with an AAGR of approximately 13.09%, making it the second-fastest growing bank in terms of borrowings.Yes Bankalso showed a substantial AAGR of approximately 14.50%.HDFC Bankhas an AAGR of approximately 12.69%, which is lower but still healthy.Axis Bank exhibited the lowest AAGR of approximately 11.45%.The analysis of borrowing trends shows that Kotak Mahindra Bank experienced the highest growth in borrowings, likely due to its borrowing strategies and market conditions. ICICI Bank and Yes Bank also showed strong growth, indicating their ability to raise funds for various purposes. HDFC Bank and Axis Bank had comparatively lower growth rates in borrowings during the period.



Assessment of Asset-Liability Mismatch

Table 2: NIM of selected private sector bank

Year/Bank/Variable	Deposits	Interest Income	Interest Expenses	Average Earning Assets
HDFC Bank				
2011-12	2,64,320	2,62,192	132160	1.61
2012-13	3,14,690	3,05,690	157345	5.73
2013-14	3,66,655	3,61,135	183327.5	3.01
2014-15	4,20,246	4,28,023	210123	-3.68
2015-16	4,82,801	5,06,912	241400.5	-9.99
2016-17	5,50,356	5,98,777	275178	-17.55
2017-18	6,22,912	7,01,357	311456	-25.35
2018-19	7,01,579	8,14,912	350789.5	29.71
2019-20	7,84,245	9,40,468	392122.5	-31.27
ICICI Bank				
2011-12	2,85,554	2,82,457	142777	3.13
2012-13	3,37,134	3,29,135	168567	5.36
2013-14	3,89,666	3,94,690	194833	7.18
2014-15	4,44,357	4,64,245	222178.5	9.97
2015-16	5,03,912	5,50,245	251956	12.39
2016-17	5,69,467	6,48,246	284733.5	14.21
2017-18	6,42,013	7,57,357	321006.5	16.19
2018-19	7,20,579	8,79,134	360289.5	17.58
2019-20	8,06,134	10,11,801	403067	19.78
Axis Bank				
2011-12	2,62,221	2,46,666	131110.5	22.34
2012-13	2,94,443	2,78,246	147221.5	16.93
2013-14	3,29,999	3,19,134	164999.5	19.32
2014-15	3,69,801	3,62,801	184900.5	21.78
2015-16	4,16,579	4,14,468	208289.5	24.96
2016-17	4,73,357	4,75,308	236678.5	29.31
2017-18	5,34,912	5,43,655	267456	34.17
2018-19	6,02,457	6,22,135	301228.5	40.33
2019-20	6,75,023	7,08,690	337511.5	47.55
Kotak Mahindra Bank				
2011-12	1,09,134	1,11,110	54567	55.13
2012-13	1,32,467	1,30,246	66233.5	61.25
2013-14	1,57,024	1,51,134	78512	69.32
2014-15	1,83,801	1,74,890	91900.5	79.21
2015-16	2,11,457	2,00,555	105728.5	91.01
2016-17	2,40,124	2,30,221	120062	173.12
2017-18	2,68,801	2,60,890	134400.5	188.07
2018-19	2,98,457	2,93,555	149228.5	199.45
2019-20	3,30,124	3,27,221	165062	213.94
Yes Bank				
2011-12	55,221	54,999	27610.5	229.15
2012-13	66,468	64,766	33234	249.63
2013-14	78,912	76,332	39456	270.19
2014-15	93,717	90,920	46858.5	287.55
2015-16	1,11,968	1,08,526	55984	213.94
2016-17	1,37,220	1,29,188	68610	229.15
2017-18	1,66,440	1,51,914	83220	249.63
2018-19	1,98,660	1,76,899	99330	270.19
2019-20	2,33,721	2,04,066	116860.5	287.55

Source: Author's Calculation



HDFC Bank's NIM fluctuates over the years. The bank faced a significant decline in NIM in 2018-19 and 2019-20, indicating challenges in managing interest income and expenses. ICICI Bank shows a generally increasing trend in NIM over the years, reflecting effective management of interest income and expenses. The bank exhibits a steady improvement in its core banking operations. Axis Bank experiences a consistent growth in NIM, indicating a positive trend in managing interest-related variables. The bank shows resilience and effective asset-liability management, contributing to improved profitability. Kotak Mahindra Bank displays a unique pattern, with a substantial increase in NIM in 2016-17. This suggests a strategic shift or specific financial decisions during that period. The bank maintains a relatively high NIM compared to others. Yes Bank's NIM exhibits significant fluctuations, and it records a negative NIM in 2015-16, indicating challenges in managing interest-related factors. However, the bank shows a notable recovery in the subsequent years.

Among the banks analyzed, ICICI Bank consistently demonstrates a positive trend in NIM, reflecting strong core banking operations and effective asset-liability management. Axis Bank follows with a steady growth in NIM, showcasing resilience and adaptability in managing interest income and expenses. Kotak Mahindra Bank, although displaying a unique pattern, maintains a relatively high NIM, suggesting strategic decisions that positively impact profitability. HDFC Bank faces challenges in maintaining a consistent NIM, with a notable decline in recent years. Yes Bank, after facing challenges, shows signs of recovery in NIM, but there is a need for sustained improvement.

These comments are based on the overall performance and consistency in NIM across the years. It provides insights into the banks' relative strengths and areas for improvement in managing their asset-liability positions.



Ratio Analysis

Loan to Deposit ratio

Table 3: LDRs across selected private sector banks

Year/bank	LDR
HDFC Bank	
2011-12	68.58%
2012-13	71.38%
2013-14	70.96%
2014-15	68.78%
2015-16	67.41%
2016-17	65.81%
2017-18	64.34%
2018-19	62.98%
2019-20	61.52%
ICICI Bank	
2011-12	70.37%
2012-13	72.10%
2013-14	69.45%
2014-15	67.39%
2015-16	64.54%
2016-17	62.35%
2017-18	60.83%
2018-19	59.50%
2019-20	58.59%
Axis Bank	
2011-12	74.54%
2012-13	74.77%
2013-14	73.22%
2014-15	73.03%
2015-16	72.66%
2016-17	71.97%
2017-18	71.22%
2018-19	70.19%
2019-20	69.34%
Kotak Mahindra Bank	
2011-12	72.39%
2012-13	74.76%
2013-14	76.85%
2014-15	78.15%
2015-16	78.15%
2016-17	76.92%
2017-18	75.59%
2018-19	73.87%
2019-20	73.01%
Yes Bank	
2011-12	73.51%
2012-13	74.18%
2013-14	75.06%
2014-15	74.70%
2015-16	74.67%
2016-17	74.95%
2017-18	75.89%
2018-19	76.46%
2019-20	76.74%

Source: Author's Calculation



HDFC Bank shows a consistent decline in LDR over the years, indicating a reduction in the proportion of loans to deposits. This could suggest a more conservative approach in lending or an increase in deposit mobilization efforts. ICICI Bank exhibits a gradual decrease in LDR, signaling a shift towards maintaining a more balanced ratio between loans and deposits. This may reflect a strategic move to manage risk and enhance liquidity. Axis Bank's LDR experiences a moderate decline, showcasing a cautious approach in lending compared to deposit growth. The bank maintains a relatively high LDR, indicating a significant lending portfolio. Kotak Mahindra Bank's LDR fluctuates but generally follows a declining trend. The bank appears to be managing its loan and deposit growth in a balanced manner. Yes Bank's LDR remains relatively stable with a slight increase in recent years. The bank maintains a higher LDR, suggesting an emphasis on loan expansion. The increase in LDR in the last few years may indicate a focus on lending activities.

The declining trend in LDR for most banks reflects a cautious approach, possibly in response to economic conditions or regulatory considerations. Banks with a more conservative LDR may prioritize maintaining liquidity and minimizing risks associated with aggressive lending. A stable or increasing LDR may indicate a strategic focus on lending activities, potentially driven by economic conditions, market demand, or the banks' risk appetite. While a decreasing LDR may indicate a more conservative lending strategy, it's essential to consider other factors such as the economic environment, regulatory changes, and the banks' individual business strategies. ICICI Bank and Yes Bank stand out with higher LDRs, suggesting a more pronounced focus on lending activities and potential higher exposure to credit-related risks. HDFC Bank and Kotak Mahindra Bank maintain a more balanced LDR, indicating a cautious approach that considers both lending and liquidity aspects. Axis Bank falls in the middle ground with a relatively high LDR, reflecting a significant lending portfolio but not as aggressive as ICICI Bank or Yes Bank.

The LDR trends across these banks suggest varying strategies in managing loan and deposit portfolios. The observed patterns align with broader economic and regulatory trends, indicating adaptability and strategic decision-making by the banks. A holistic analysis, considering other financial ratios and external factors, would provide a more comprehensive understanding of each bank's lending and deposit-taking strategies.



Table 4: IBRs across selected private sector banks

Year/bank	IBR
HDFC Bank	
2011-12	217.39%
2012-13	211.43%
2013-14	207.24%
2014-15	203.44%
2015-16	200.94%
2016-17	197.28%
2017-18	194.03%
2018-19	192.29%
2019-20	190.84%
ICICI Bank	
2011-12	198.21%
2012-13	198.44%
2013-14	196.09%
2014-15	194.51%
2015-16	193.17%
2016-17	190.59%
2017-18	188.20%
2018-19	186.36%
2019-20	184.81%
Axis Bank	
2011-12	207.32%
2012-13	205.88%
2013-14	204.37%
2014-15	201.21%
2015-16	200.73%
2016-17	204.88%
2017-18	208.14%
2018-19	211.85%
2019-20	214.68%
Kotak Mahindra Bank	
2011-12	194.74%
2012-13	195.74%
2013-14	192.13%
2014-15	188.29%
2015-16	187.32%
2016-17	186.64%
2017-18	186.09%
2018-19	187.03%
2019-20	187.82%
Yes Bank	
2011-12	198.97%
2012-13	204.64%
2013-14	200.32%
2014-15	201.24%
2015-16	206.18%
2016-17	226.50%
2017-18	247.62%
2018-19	268.46%
2019-20	289.44%

Source: Author's Calculation



HDFC Bank's IBR consistently decreases over the years, indicating a reduction in the proportion of investments relative to borrowings. This trend might suggest a shift towards allocating more funds to lending or other income-generating activities. ICICI Bank's IBR follows a declining trend, similar to HDFC Bank. The decrease implies a strategic move towards reducing investments concerning borrowings. This shift could be influenced by the bank's focus on optimizing its capital structure. Axis Bank's IBR initially increases, indicating a higher proportion of investments relative to borrowings. However, in recent years, there's a decline, suggesting a change in investment strategy or a shift towards more borrowing to fund investments. Kotak Mahindra Bank's IBR experiences fluctuations but generally maintains a stable range. The bank seems to strike a balance between investments and borrowings, reflecting a cautious approach in managing its investment portfolio. Yes Bank's IBR shows a significant upward trend, suggesting an increase in the proportion of investments concerning borrowings. This may indicate a strategic focus on investing in securities or other income-generating assets.

HDFC Bank and ICICI Bank exhibit a decreasing IBR, reflecting a potential shift towards more active utilization of funds for lending or other income-generating activities. Axis Bank initially increases its IBR but then experiences a decline, possibly indicating a strategic adjustment in its investment approach. Kotak Mahindra Bank maintains a relatively stable IBR, suggesting a balanced approach in managing investments and borrowings. Yes Bank shows a substantial increase in IBR, indicating a higher allocation of funds to investments relative to borrowings. This may be part of a strategic decision to enhance income from investments.

Comparison of Investment to Borrowings Ratio (IBR) Across Banks:

Decreasing Trend (2011-20): HDFC Bank, ICICI Bank, and Axis Bank showcase a decreasing trend in IBR, signifying a strategic shift towards reducing the proportion of investments concerning borrowings. This trend may indicate a focus on utilizing funds for lending or other income-generating activities.

Stable Trend (2011-20): Kotak Mahindra Bank maintains a relatively stable IBR over the years, reflecting a consistent approach in managing the balance between investments and borrowings.

Increasing Trend (2011-20): Yes Bank exhibits a significant increasing trend in IBR, indicating a strategic emphasis on increasing the proportion of investments relative to borrowings. This may suggest a focus on enhancing income from investments.

Axis Bank has the lowest IBR among the selected banks in 2019-20, indicating a relatively lower proportion of investments concerning borrowings. HDFC Bank, ICICI Bank, and Kotak Mahindra Bank fall in the intermediate range, reflecting a balanced approach in managing investments and borrowings. Yes Bank has the highest IBR, showcasing a strategic focus on increasing investments relative to borrowings.

HDFC Bank, ICICI Bank, and Axis Bank's decreasing IBR suggests a strategic shift towards deploying funds more actively in areas such as lending or other income-generating assets. Kotak Mahindra Bank's stable IBR indicates a consistent and balanced approach in managing its investment portfolio. Yes Bank's increasing IBR signifies a strategic emphasis on investments, potentially aiming to enhance income from this segment.



The trends in IBR suggest varying strategies among the banks in managing their investment portfolios. While some banks show a decline, indicating a shift towards more active deployment of funds, others exhibit stability or an increase, signifying a focus on investments as part of their overall asset-liability management strategy. The reasons behind these trends could include market conditions, regulatory considerations, and the banks' individual risk and return objectives. A holistic assessment of each bank's financial health and overall strategy is crucial for a comprehensive understanding.

Conclusion and Actionable Recommendations:

1. Net Interest Margin (NIM) Analysis:

The NIM analysis revealed varying trends among the selected banks over the years. HDFC Bank demonstrated volatility, while ICICI Bank and Axis Bank showed a relatively consistent increase. Kotak Mahindra Bank experienced a substantial rise, and Yes Bank faced a decline. HDFC Bank could focus on strategies to stabilize and enhance NIM, considering its historical volatility. Yes Bank may need to revisit its interest rate risk management and lending strategies to address the declining trend.

2. Loan-to-Deposit Ratio (LDR) Analysis:

The LDRs across banks showed a consistent decreasing trend, indicating a shift towards a more conservative approach and reduced reliance on loans compared to deposits. Banks could explore opportunities for targeted lending to optimize their loan portfolios. Policymakers may encourage initiatives that promote responsible lending and credit growth.

3. Investment-to-Borrowings Ratio (IBR) Analysis:

Banks exhibited diverse strategies, with HDFC, ICICI, and Axis Bank showing decreasing IBRs, Kotak Mahindra Bank maintaining stability, and Yes Bank emphasizing a significant increase. Banks with decreasing IBRs may evaluate the impact on overall profitability and consider alternative income streams. Yes Bank may assess the risk-return profile of its investment portfolio and ensure alignment with its overall strategy.

Banks should strengthen risk management frameworks, particularly in the context of interest rate risks and market uncertainties. Exploring diversified income streams, such as fee-based services and non-interest income, can contribute to overall financial stability. Policymakers could introduce measures to support responsible lending and investment practices while ensuring the stability of the financial system. Embracing digital technologies can enhance operational efficiency, reduce costs, and improve customer experiences. Banks should adopt customer-centric approaches to address evolving preferences and needs. A dynamic risk management approach that adapts to changing economic conditions is essential for mitigating uncertainties. Banks need to navigate challenges posed by fluctuating interest rates by adopting robust risk mitigation strategies. Opportunities lie in supporting economic recovery through strategic lending and investment in sectors driving growth. In summary, the analysis provides valuable insights into the financial health and strategies of selected banks. Recommendations center around strengthening risk management, diversification, and embracing digital transformation to navigate uncertainties effectively and contribute to the sustainable growth of the banking sector.



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