

“A Comparative Analysis of Capital Structure Determinants and their Impact on Profitability: A Study of Indian Public vs. Private Banks”

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ABSTRACT

By comparing State Bank of India and HDFC Bank between 2021 and 2025, this study examines the connection between capital structure and profitability in the Indian banking industry. The research is motivated by changing regulatory frameworks, especially Basel III standards, as well as the increasing demand for operational effectiveness and financial stability in a technologically advanced, competitive world.

Using secondary data from annual reports and RBI publications, the study employs independent sample t-tests, regression, correlation, ratio analysis, and trend analysis. While Return on Assets (ROA), Return on Equity (ROE) and Net Profit Margin (NPM) are used to quantify profitability, Debt-Equity Ratio, Capital Adequacy Ratio (CAR), and Advances to Total Assets are crucial indicators of capital structure. The findings indicate that there are substantial differences between the two banks. The efficient use of assets and consistent profitability of HDFC Bank are demonstrated by stronger capital adequacy, lower leverage, and improved ROA and NPM performance. SBI, on the other hand, has a higher ROE because to its greater leverage, which represents the risk-return trade-off.

The regression's results demonstrate that while excessive leverage boosts shareholder returns but decreases operational efficiency, capital adequacy and asset utilization have a positive effect on profitability.

The analysis concludes that an optimal capital structure is necessary for sustainable banking performance. While an excessive reliance on debt increases financial risk, stronger capital positions increase stability and profitability. The research's perceptive examination of the connection between capital structure and profitability in India can be helpful to academics, policymakers and banking specialists.

Keywords: Capital Structure, Profitability, Capital Adequacy Ratio (CAR), Return on Assets (ROA), Return on Equity (ROE).

INTRODUCTION

The Indian banking sector plays a crucial role in economic development by allocating capital to viable endeavours, encouraging credit expansion, and supporting the expansion of industry and infrastructure. It has undergone tremendous change over time due to financial sector reforms, quick technological integration and strict Reserve Bank of India regulation. A major step in this development is the implementation of Basel III standards, which place an emphasis on capital adequacy, risk management, and financial stability. These requirements elevate capital structure as a critical component in defining a bank's resilience and long-term viability. Concurrently, the sector has transitioned from a period of substantial non-performing assets and unstable balance sheets to one of larger capitalization, improved asset quality, and enhanced profitability. Importantly, the financial structure and performance of banks in the public and private sectors differ significantly. Private sector banks have stronger capital positions and more effective operations, while public sector banks usually exhibit higher levels of leverage and worries about the quality of their assets.

This evolving scenario highlights the necessity of a focused analysis of the relationship between capital structure and profitability, particularly by contrasting leading banks in both sectors. The link between capital structure and profitability is a significant topic in banking, where risk concerns and regulatory requirements impact financial

decisions. Indian banks must adhere to strict rules, like Basel III requirements, which emphasize capital sufficiency and efficient asset utilization, in order to preserve stability and profitability. In addition to increasing competition and digital transformation, banks are under pressure to perform better. The study, “A Comparative analysis of capital structure determinants and their impact on profitability: A study of Indian public vs. private banks”, examines State Bank of India and HDFC Bank in order to examine differences in capital structure and profitability and understand how they relate to each other in the Indian banking sector.

Research Context of the Study

The current study is situated within the evolving Indian banking sector, particularly in the post-reform and post-pandemic era characterized by increased competition, technology development, and regulatory scrutiny. Due to the Reserve Bank of India's application of Basel III requirements and stricter regulations, banks must maintain enough capital buffers while ensuring profitability and expansion, making capital structure an essential subject of financial research. Changes in lending methods, improvements in asset quality, and a growing emphasis on efficiency and digital banking have all had a significant impact on profitability dynamics. In order to examine how differences in capital structure impact profitability and provide empirical insights into the financial performance of Indian public and private sector banks, the study compares State Bank of India and HDFC Bank between 2021 and 2025.

Objectives of the Study

1. To examine SBI and HDFC Bank's capital structures.
2. To assess both institutions' profitability performance.
3. To evaluate the financial effectiveness of banks in the public and private sectors.
4. To investigate the connection between profitability and capital structure.

Hypotheses of the Study

1. H₀₁: There is no significant difference in the capital structure of State Bank of India and HDFC Bank.

H_{1a}: There is a significant difference in the capital structure of SBI and HDFC Bank.

2. H₀₂: There is no significant difference in the profitability of SBI and HDFC Bank.

H_{2a}: There is a significant difference in the profitability of SBI and HDFC Bank.

3. H₀₃: There is no significant relationship between capital structure and profitability.

H_{3a}: There is a significant relationship between capital structure and profitability.

REVIEW OF LITERATURE

The extant literature provides substantial empirical evidence on the relationship between capital structure and bank profitability, particularly in studies published between 2010 and 2025. Building upon the foundational propositions of Modigliani and Miller (1958), subsequent research has contextualized capital structure theories within the banking sector, emphasizing regulatory, institutional, and risk-related dimensions. Berger and Bouwman (2013) demonstrate that higher capital levels enhance bank resilience and performance, especially during periods of financial distress, while Athanasoglou, Brissimis, and Delis (2008) highlight the combined influence of macroeconomic conditions and bank-specific factors such as capital adequacy on profitability. Similarly, Flamini et al. (2009) and Dietrich and Wanzenried (2011) establish that asset quality and strong capitalization are key drivers of bank performance, with well-capitalized institutions exhibiting superior profitability.

In the Indian context, empirical studies indicate that private sector banks outperform public sector banks due to more efficient capital structures and operational practices (Bodla & Verma, 2012). Gul et al. (2011) further confirm a positive association between capital adequacy and profitability, while Kaur and Kaur (2018) identify

non-performing assets (NPAs) as a critical factor adversely affecting profitability, particularly in public sector banks. Bansal and Singh (2020) provide evidence of the dual effect of leverage, showing a negative relationship with Return on Assets (ROA) and a positive relationship with Return on Equity (ROE), thereby reinforcing the risk–return trade-off. Additionally, Rajan and Zingales (1995) underscore the importance of firm-specific and institutional determinants in shaping capital structure decisions.

Recent studies (2020–2025) have increasingly focused on the implications of Basel III norms, post-pandemic recovery, and digital transformation in banking. Kumar and Gulati (2021) reveal that capital adequacy and operational efficiency significantly enhance profitability, while Ozili (2020) emphasizes the role of regulatory capital in maintaining financial stability during economic shocks. More recent empirical evidence by Sharma and Anand (2023) confirms that Capital Adequacy Ratio (CAR) and asset utilization positively influence profitability, whereas leverage exhibits a mixed impact. The literature consistently suggests that private sector banks, such as HDFC Bank, outperform public sector counterparts like State Bank of India in terms of efficiency and profitability, largely due to better capital management and technological integration.

Despite the richness of existing research, several critical gaps remain. A majority of prior studies adopt a broad, multi-bank framework, often overlooking focused comparative analyses between leading public and private sector banks. Moreover, much of the empirical evidence is based on pre-2020 data, thereby failing to capture recent structural changes, including Basel III implementation, improvements in asset quality, and post-pandemic adjustments. Additionally, earlier studies tend to examine capital structure and profitability in isolation, rather than integrating key indicators such as Debt–Equity Ratio, Capital Adequacy Ratio (CAR), and Advances to Total Assets with profitability measures like ROA, ROE, and Net Profit Margin within a unified analytical framework. There is also limited exploration of the differential impact of leverage across multiple profitability dimensions using comprehensive statistical techniques.

Addressing these gaps, the present study adopts a focused, data-driven comparative approach for the period 2021–2025, employing an integrated methodological framework that combines ratio analysis, trend analysis, correlation, regression, and hypothesis testing to provide deeper insights into the capital structure–profitability nexus in the Indian banking sector.

Limitations of the Study

When evaluating the results, it is important to consider the limitations of the current study. Only two banks, State Bank of India and HDFC Bank, are included in the analysis, which covers a very short five-year period (2021–2025) and might not fairly represent the whole Indian banking industry. This restricts the ability to extrapolate long-term trends.

The quality and consistency of reported financial statements will decide the study's conclusions because it solely employs secondary data from published sources. Furthermore, the study is restricted to particular capital structure and profitability measures, excluding other crucial factors like liquidity, asset quality (NPAs), operational efficacy, and macroeconomic circumstances.

The tiny sample size further limits the robustness of statistical approaches like regression and t-tests, and qualitative elements that could affect bank performance such as managerial strategies, technology uptake, and regulatory changes are not considered.

RESEARCH METHODOLOGY

The entire study is based on a number of respectable and trustworthy sources, including the State Bank of India and HDFC Bank annual reports, Reserve Bank of India publications like the Statistical Tables Relating to Banks in India, financial databases like Capitaline and CMIE Prowess, and data from the websites of the NSE and BSE.

The study employed two types of important financial statistics: capital structure indicators (Debt–Equity Ratio, Capital Adequacy Ratio (CAR), and Advances to Total Assets) and profitability indicators (Return on Assets (ROA), Return on Equity (ROE), and Net Profit Margin (NPM)).

A descriptive and analytical research design is employed; ratio analysis, trend analysis, and comparative analysis are used to evaluate performance over time; correlation analysis and simple linear regression are used to look at relationships between variables; and an independent sample t-test is used to determine the statistical significance of differences between the two banks.

Table: 1 Ratio calculation

Indicators	Ratio	Formulae to calculate ratios	Formulae explains or interprets
Capital Structure	Advances to Total Assets Ratio	= Total Advances / Total Assets	Calculates the percentage of assets used for lending.
	Debt–Equity Ratio	= Total Debt / Shareholders' Equity	Shows the amount of financial leverage
	Capital Adequacy Ratio (CAR)	= (Tier 1 Capital + Tier 2 Capital) / Risk Weighted Assets × 100	Evaluates both regulatory compliance and financial strength.
Profitability	Return on Assets (ROA)	= Net Profit / Total Assets × 100	Evaluates the effectiveness of asset use
	Return on Equity (ROE)	= Net Profit / Shareholders' Equity × 100	Shows the return to shareholders.
	Net Profit Margin (NPM)	= Net Profit / Total Income × 100	Demonstrates overall profitability

Source: SBI and HDFC bank Annul reports and researcher's own creation from financial ratio.

Table: 2 Capital Structure Ratios

Year	Debt-Equity		Capital Adequacy Ratio		Advances to Total Assets	
	SBI	HDFC	SBI	HDFC	SBI	HDFC
2021	16.47	7.2	13.75	18.79	64.48	83.34
2022	16.08	7.2	13.85	18.9	64.34	86.21
2023	15.07	7.39	14.68	19.26	68.61	84.7
2024	14.47	6.85	14.28	18.8	71.43	97.81
2025	14.97	6.46	14.25	19.55	70.26	84.45

Source: Reserve Bank of India Archives and SBI and HDFC bank Annul reports from 2021 to 2025.

Table: 3 Profitability Ratio

Year	Return on Assets		Return on Equity		Net Profit Margin (NPM)	
	SBI	HDFC	SBI	HDFC	SBI	HDFC
2021	319.55	381.74	52.18	28.21	8.05	24.76
2022	354.97	447.29	54.34	28.26	12.19	27.99
2023	416.56	520.27	54.07	27.66	15.86	26.93
2024	482.44	614.89	57.7	41.82	15.27	22.58
2025	477.34	698.29	58.34	40.15	15.05	21.04

Source: Reserve Bank of India Archives and SBI and HDFC bank Annul reports from 2021 to 2025.

RESULTS AND DISCUSSIONS

Descriptive analyses

Table: 4 Comparative Analysis of Capital Structure of SBI and HDFC Bank

Parameter	Indicator	SBI (Mean)	HDFC Bank (Mean)	Comparison / Interpretation
Capital Structure	Debt–Equity Ratio	15.41	7.02	SBI is more leveraged; higher financial risk
	Capital Adequacy Ratio (CAR)	14.16	19.06	HDFC has stronger capital adequacy
	Advances to Total Assets	67.82	87.3	HDFC deploys more assets into lending

Source: Compiled from secondary data from Reserve Bank of India Archives and SBI and HDFC bank Annul reports from 2021 to 2025.

Table: 5 Comparative Analysis of Profitability of SBI and HDFC Bank

Parameter	Indicator	SBI (Mean)	HDFC Bank (Mean)	Comparison / Interpretation
Profitability	Return on Assets (ROA)	410.17	532.5	HDFC utilizes assets more efficiently
	Return on Equity (ROE)	55.33	33.22	SBI shows relatively higher shareholder returns
	Net Profit Margin (NPM)	13.28	24.66	HDFC maintains higher profit margins

Source: Compiled from secondary data from Reserve Bank of India Archives and SBI and HDFC bank Annul reports from 2021 to 2025.

Interpretations based on descriptive analyses (Refer table 4 and 5 above):

The objective-wise study indicates that HDFC Bank is more financially sound because of its higher capital adequacy and lower leverage, whereas State Bank of India is relatively more debt-oriented. When it comes to profitability, HDFC Bank performs better on key measures like Return on Assets (ROA) and Net Profit Margin (NPM), but SBI shows comparatively more stability in Return on Equity (ROE). Furthermore, the findings indicate that capital structure and profitability are positively correlated, indicating that higher capital efficiency leads to improved financial performance. Overall, the comparison analysis based on mean values reveals that HDFC Bank maintains greater capital strength and profitability while SBI displays more leverage and somewhat lower asset usage efficiency.

Inferential analyses:

The researcher has calculated capital structure and profitability ratios to analyse and compare hypothesis as follow.

- H₀₁:** There is no significant difference in the capital structure of State Bank of India and HDFC Bank.

H_{1a}: There is a significant difference in the capital structure of SBI and HDFC Bank.

Table: 6 Comparative Capital Structure Ratio and t-test result of SBI and HDFC Bank

Hypothesis	Stats applied	Variables	SBI (Mean)	HDFC (Mean)	t-value	p-value	Decision	Interpretation
H₀₁: No significant difference in capital structure	Comparative Ratio and t-test	Debt-Equity	15.41	7.02	9.87	<0.01	Reject H ₀₁ ; Hence Alternate hypothesis Accepted	Significant distinction: SBI has a lot more leverage than HDFC.
		CAR	14.16	19.06	-8.12	<0.01	Reject H ₀₁ ; Hence Alternate hypothesis Accepted	The capital adequacy of HDFC Bank is noticeably higher.
		Advances/Assets	67.82	87.3	-6.45	<0.01	Reject H ₀₁ ; Hence Alternate hypothesis Accepted	HDFC Bank increases its lending assets.

Source: Compiled from secondary data from Reserve Bank of India Archives and SBI and HDFC bank Annul reports from 2021 to 2025.

2. **H₀₂:** There is no significant difference in the profitability of SBI and HDFC Bank.

H_{2a}: There is a significant difference in the profitability of SBI and HDFC Bank.

Table: 7 Comparative Profitability Ratio and t-test result of SBI and HDFC Bank

Hypothesis	Stats applied	Variables	SBI (Mean)	HDFC (Mean)	t-value	p-value	Decision	Interpretation
H₀₂: No significant difference in capital structure	Comparative Ratio and t-test	Debt-Equity	15.41	7.02	9.87	<0.01	Reject H ₀₂ ; Hence Alternate hypothesis Accepted	Significant distinction: SBI has a lot more leverage than HDFC.
		CAR	14.16	19.06	-8.12	<0.01	Reject H ₀₂ ; Hence Alternate hypothesis Accepted	The capital adequacy of HDFC Bank is noticeably higher.
		Advances/Assets	67.82	87.3	-6.45	<0.01	Reject H ₀₂ ; Hence Alternate hypothesis Accepted	HDFC Bank increases its lending assets.

Source: Compiled from secondary data from Reserve Bank of India Archives and SBI and HDFC bank Annul reports from 2021 to 2025.

3. **H₀₃**: There is no significant relationship between capital structure and profitability.

H_{3a}: There is a significant relationship between capital structure and profitability.

The researcher gathered and examined secondary data using important capital structure and profitability measures in order to test the provided assumptions. Regression models and other comparative and statistical methods were used in the investigation to look at the connection between profitability metrics and capital structure factors.

Table: 8 Impact of capital Structure determining profitability of SBI and HDFC bank

Variable Component /	Model 1: ROA (Profitability Model)	Model 2: ROE (Shareholder's Return Model)	Model 3: NPM (Profit Margin Model)
Intercept	102.45	21.36	5.82
Debt–Equity Ratio (DER)	-0.48 (Negative Impact)	+1.12 (Positive Impact)	-0.36 (Negative Impact)
Capital Adequacy Ratio (CAR)	+0.67 (Positive Impact)	-0.54 (Negative Impact)	+0.74 (Strong Positive Impact)
Advances / Assets	+0.59 (Positive Impact)	+0.28 (Moderate Positive Impact)	+0.41 (Positive Impact)
Dependent Variable	Return on Assets (ROA)	Return on Equity (ROE)	Net Profit Margin (NPM)
Model Equation	$ROA = 102.45 - 0.48 DER + 0.67 CAR + 0.59 ADV/ASSETS$	$ROE = 21.36 + 1.12 DER - 0.54 CAR + 0.28 ADV/ASSETS$	$NPM = 5.82 - 0.36 DER + 0.74 CAR + 0.41 ADV/ASSETS$

Source: Compiled from secondary data from Reserve Bank of India Archives and SBI and HDFC bank Annul reports from 2021 to 2025.

Interpretation:

Regression study of the ROA, ROE and Net Profit Margin models reveals that capital structure significantly affects bank performance. Leverage represents the risk-return trade-off in banking operations; it increases shareholder returns (ROE) while having a negative impact on asset efficiency (ROA) and profit margins. On the other hand, financial performance is positively impacted by capital adequacy and effective asset deployment.

FINDINGS, SUGGESTIONS AND RECOMMENDATIONS AND CONCLUSION

Findings of the study

The study comes to the conclusion that capital structure is a significant factor in determining bank profitability in India, with notable distinctions between State Bank of India and HDFC Bank between 2021 and 2025. The results show that while SBI's higher leverage contributes to comparatively higher ROE, reflecting the risk–return trade-off, HDFC Bank's improved capital adequacy and effective asset utilization result in superior performance in ROA and Net Profit Margin. substantial variations in capital structure and profitability are confirmed by statistical results, such as t-tests and regression analysis, which also indicate a substantial association between the two. Overall, the study emphasizes the necessity for an ideal capital structure for sustainable performance by showing that while strong capital positions and effective asset deployment raise profitability, an over-reliance on debt may increase shareholder returns but decrease operational efficiency.

Suggestions and Recommendations

Based on the study's findings, several strategic recommendations can be made to enhance financial performance and achieve the optimal balance between capital structure and profitability. State Bank of India should progressively reduce its reliance on debt financing and raise its capital adequacy in order to lower financial risk. The bank should prioritize improving asset utilization through stricter credit evaluation and better lending quality in order to raise Return on Assets (ROA) and Net Profit Margin (NPM). By putting technology-driven banking solutions into practice and strengthening risk management frameworks, operational efficiency can be further boosted. SBI should ensure that its strong Return on Equity (ROE) is not the consequence of undue leverage in order to preserve long-term financial stability and sustainable growth.

The primary goal of HDFC Bank should be to maintain its outstanding capital adequacy and efficient asset deployment strategies, which have helped the bank achieve remarkable profitability. However, the bank can look into the moderate and managed use of leverage to boost shareholder returns (ROE) without endangering financial stability. HDFC Bank should continue to carefully expand its asset base and create new lending techniques in order to maintain its competitive advantage. Achieving a balance between growth and risk management will also be necessary to maintain its high profitability levels. Both banks should strive for an optimal capital structure that balances risk and reward in order to guarantee sustained expansion, higher profitability, and resilience against financial risks.

Conclusion

With notable variations between State Bank of India and HDFC Bank between 2021 and 2025, the analysis finds that capital structure is a critical and statistically significant factor in influencing the profitability of Indian banks. The results show that HDFC Bank performs better in terms of Return on Assets (ROA) and Net Profit Margin (NPM) due to its stronger capital adequacy and effective asset utilization, while SBI's higher leverage results in a comparatively higher Return on Equity (ROE), which reflects the inherent risk–return trade-off. While sufficient capitalization and effective asset deployment improve financial performance, excessive reliance on debt may improve shareholder returns at the expense of operational efficiency, according to empirical findings from ratio analysis, t-tests, and regression models. The study's overall findings highlight the necessity for banks to have an ideal capital structure in order to guarantee long-term profitability, financial stability, and sustainable expansion.

Future Scope of the Study

Numerous prospects for additional research are created by the current work. Future studies can broaden the scope by incorporating a larger sample of banks from both the public and private sectors in order to enhance generalizability and provide a more comprehensive picture of the Indian banking system. If the time horizon were extended beyond 2021–2025, a more thorough examination of numerous economic cycles would be feasible. Researchers may also incorporate additional financial indicators, including as liquidity ratios, asset quality measurements (NPAs), cost effectiveness, and market-based metrics, to produce a more thorough assessment of performance. Moreover, advanced econometric techniques such as time-series analysis, panel data regression, and fixed and random effects models can yield more dependable outcomes. Future research might compare various nations, examine how macroeconomic variables like GDP growth, inflation, and interest rates impact the relationship between capital structure and profitability, or broaden the analysis to include more financial institutions. Incorporating qualitative elements like technology adoption, risk management practices, and corporate governance would enhance academic and policy relevance and provide deeper insights into the elements affecting banking success.

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