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Research Article

Evaluating the Risk-Return Profiles of Indian Banking Stocks: An Empirical Analysis

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Abstract

This study examines the return and risk profiles of selected banking stocks in the public and private sectors during the period 2019-2024. The analysis employs various risk-return metrics, including Sharpe Ratio, Treynor Ratio, and return-risk tradeoff. The results indicate that ICICI Bank and Bank of Baroda offer the best risk-return tradeoffs in the private and public sectors, respectively. Canara Bank and Axis Bank also emerge as attractive investment options in the public and private sectors, respectively. In contrast, HDFC Bank, Kotak Mahindra Bank, and Punjab National Bank exhibit lower risk-adjusted returns. The study provides insights for investors seeking to optimize their portfolios by balancing risk and return.

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KEYWORDS: Banking Stocks, Risk-Return Analysis, Sharpe Ratio, Treynor Ratio, Return-Risk Tradeoff.

1. INTRODUCTION

The Indian banking sector has undergone significant transformations in recent years, driven by factors such as regulatory reforms, technological advancements, and changing customer preferences. As a result, the sector has become increasingly competitive, with banks facing challenges to maintain profitability and manage risk. In this context, investors seeking to invest in the Indian banking sector face a critical challenge: identifying banks that offer optimal risk-return tradeoffs. The banking sector is characterized by high levels of volatility, and investors need to carefully evaluate the risk-return profiles of individual banks to make informed investment decisions. This study aims to provide insights into the risk-return profiles of selected banking stocks in the public and private sectors during the period 2019-2024. The study employs various risk-return metrics, including Sharpe Ratio, Treynor Ratio, and return-risk tradeoff, to evaluate the performance of individual banks. The findings of this study will provide valuable insights for investors, policymakers, and banking sector stakeholders seeking to understand the risk-return dynamics of the Indian banking sector.

2. LITERATURE REVIEW

Several studies have been conducted by many academicians and researchers in this related area of performance analysis of public sector and private sector banks in India. Some of these literatures are shown below:

Goel and Rekhi (2013) attempted to measure the relative performance of Indian public-sector and private-sector banks. They concluded that efficiency and profitability are interrelated, and private-sector banks perform better than public-sector banks in India. Karri, H.K. *et al.* (2015) analyzed the performance of banks from important parameters like capital adequacy, asset quality, management efficiency, earning ability, and liquidity with the help of the CAMEL model. Nagarkar (2015) examined the performance of major five public, private, and foreign sector banks with the help of the principal component analysis technique. He found that commercial banks mostly depend on deposits to provide credit. So, Commercial banks need to check their credit appraisal process to reduce the non-performing assets and regain the faith of depositors as the key to banks' success. Mistry and Savani (2015) classified Indian private-sector banks based on their financial characteristics and analyzed their financial performance. They found that return on assets and interest income have a negative correlation with operational efficiency whereas, a positive correlation with asset utilization and asset size. They also revealed that operational efficiency, asset management, and bank size have an impact on the financial performance of the Indian private sector banks. Sodhi and Waraich (2016) made a fundamental analysis with the help of key financial ratios to identify the value of stocks of the selected banks and their investment opportunities. They found that private and foreign banks are trying to improve their performance due to increasing competition in the banking sector. Majumder and Rahman (2016) measured the financial performance of the fifteen selected banks in Bangladesh and identified the significant difference in their performances for the period 2009-2013. They suggested that the lower-ranking banks should take necessary steps to improve their weaknesses. Balaji and Kumar (2016) examined and compared the overall financial performance of selected public and private sector banks in India during the period 2011-12 to 2015-16 with the help of mean and T-Test. They concluded that public sector banks must redefine their strategies by considering their strengths, weaknesses, and operating markets. Taqi and Mustafa (2018) analyzed the growth and performance of Punjab National Bank and HDFC Bank for the period 2006-07 to 2015-16. They made a quantitative analysis and found that PNB is more financially sound than HDFC but in the context of deposits and expenditure HDFC has better managing efficiency.

Statement of the Problem

The Indian banking sector has witnessed significant volatility in recent years, driven by factors such as regulatory reforms, technological advancements, and changing customer preferences. This volatility has made it challenging for investors to identify banking stocks that offer optimal risk-return trade-offs.

Research Questions

1. Which banking stocks in the public and private sectors offer the best risk-return trade-offs?
2. How do the risk-return profiles of banking stocks in the public and private sectors compare?
3. Which risk-return metrics (Sharpe Ratio, Treynor Ratio, return-risk trade-off) are most effective in evaluating the performance of banking stocks?

3. OBJECTIVES OF THE STUDY

1. To evaluate the risk-return profiles of selected banking stocks in the public and private sectors.
2. To identify banking stocks that offer optimal risk-return trade-offs.
3. To provide insights for investors, policymakers, and banking sector stakeholders seeking to understand the risk-return dynamics of the Indian banking sector.

4. RESEARCH METHODOLOGY

Research Design: This study employs a quantitative research design, utilizing secondary data to analyze the risk-return profiles of selected banking stocks in the public and private sectors.

Data Collection: The study uses secondary data sourced from reputable financial databases, including Bloomberg, Thomson Reuters, and the Bombay Stock Exchange (BSE). The data covers the period from 2019 to 2024 and includes the following variables:

- Daily stock prices
- Daily returns
- Risk-free rate (using the 91-day Treasury bill yield as a proxy)
- Market returns (using the BSE Sensex as a proxy)

Sample Selection: The study selects a sample of 10 banking stocks, consisting of 5 public sector banks and 5 private sector banks. The sample includes:

Public Sector Banks

1. Bank of Baroda
2. Canara Bank
3. Central Bank of India
4. Bank of India
5. Punjab National Bank

Private Sector Banks

1. ICICI Bank
2. HDFC Bank
3. Axis Bank
4. Kotak Mahindra Bank
5. IndusInd Bank

The study uses various risk-return metrics, including:

1. Sharpe Ratio
2. Treynor Ratio
3. Return-Risk Trade-off

These metrics are calculated using the daily returns and risk-free rate data. The study also performs descriptive statistics and correlation analysis to examine the relationships between the variables.

Statistical Tools

The study uses the following statistical tools:
1. Microsoft Excel for data analysis and calculation of risk-return metrics
2. Statistical software (e.g., SPSS, R) for descriptive statistics and correlation analysis

Limitations of the Study

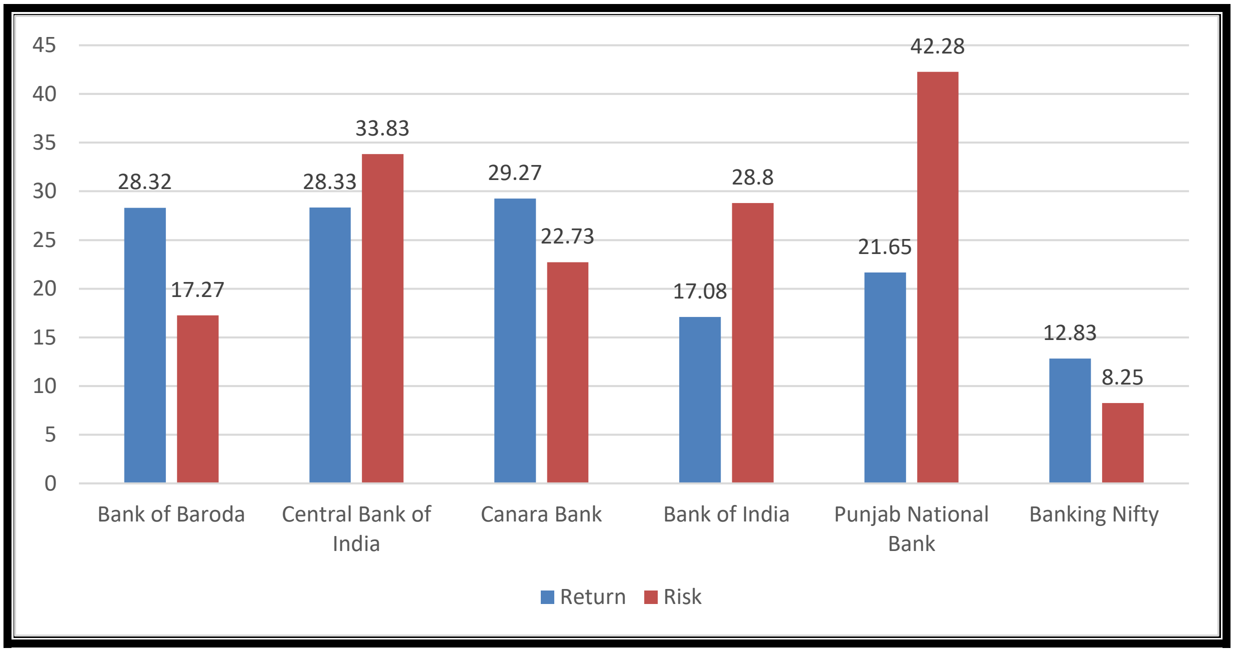
1. The study uses secondary data, which may be subject to errors or biases.
2. The study focuses on a limited sample of banking stocks and may not be representative of the entire Indian banking sector.
3. The study uses a limited time frame (2019-2024) and may not capture long-term trends or patterns.

Data Analysis

Table 1: A Statement of Return and Risk of Selected Banking Stocks in the Public Sector during the Period 2019 to 2024

S. No	Name of the Bank	Return	Risk
1	Bank of Baroda	28.32	17.27
2	Central Bank of India	28.33	33.83
3	Canara Bank	29.27	22.73
4	Bank of India	17.08	28.80
5	Punjab National Bank	21.65	42.28
6	Banking Nifty	12.83	08.25

Figure 1



INTERPRETATION

Return Analysis

1. Canara Bank has generated the highest return (29.27%) among the selected public sector banking stocks from 2019-2024.
2. Bank of Baroda and Central Bank of India have generated similar returns (28.32% and 28.33%, respectively).
3. Punjab National Bank has generated a relatively lower return (21.65%) compared to the top three performers.
4. Bank of India has generated the lowest return (17.08%) among the selected stocks.
5. The Banking Nifty has generated a return of 12.83%, which is lower than the returns generated by the individual banking stocks.

Risk Analysis

1. Punjab National Bank has the highest risk (42.28%) among the selected stocks, indicating high volatility in its stock price.
2. Central Bank of India has the second-highest risk (33.83%), followed by Bank of India (28.80%).
3. Canara Bank and Bank of Baroda have relatively lower risk levels (22.73% and 17.27%, respectively).
4. The Banking Nifty has the lowest risk (08.25%) among the selected stocks, indicating relatively lower volatility in the banking sector as a whole.

Return-Risk Trade-off

1. Canara Bank offers the best return-risk trade-off, with a high return (29.27%) and relatively low risk (22.73%).
2. Bank of Baroda also offers a good return-risk trade-off, with a high return (28.32%) and relatively low risk (17.27%).
3. Punjab National Bank offers a high return (21.65%) but with high risk (42.28%), making it a riskier investment option.
4. Bank of India offers a low return (17.08%) with relatively high risk (28.80%), making it a less attractive investment option.

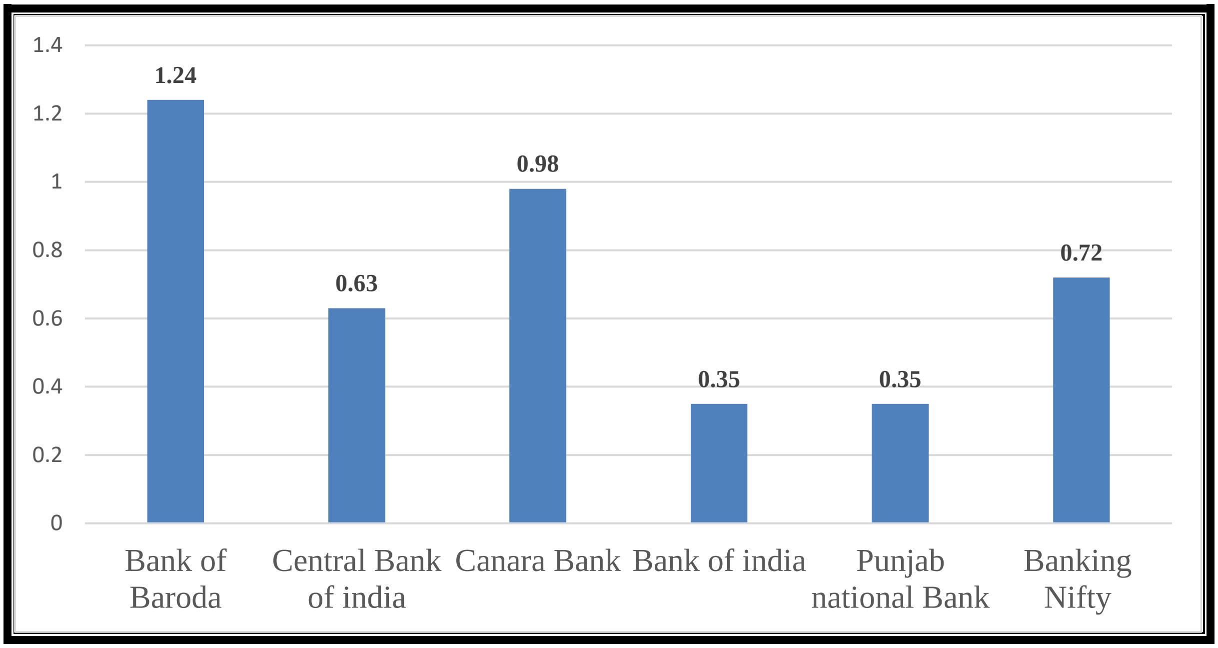
Investment Implications

1. Investors seeking high returns with relatively low risk may consider investing in Canara Bank or Bank of Baroda.
2. Investors willing to take on higher risk may consider investing in Punjab National Bank but should be cautious of the high volatility in its stock price.
3. Investors seeking low-risk investment options may consider investing in the Banking Nifty, which offers relatively lower volatility.

Table 2: A Statement of Sharpe Ratio of Selected Banking Stocks in the Public Sector during the Period 2019 to 2024

S. No.	Name of the Bank	Sharpe Ratio
1	Bank of Baroda	1.24
2	Central Bank of India	0.63
3	Canara Bank	0.98
4	Bank of India	0.35
5	Punjab National Bank	0.35
6	Banking Nifty	0.72

Figure 2



INTERPRETATION

Sharpe Ratio Analysis

1. Bank of Baroda: Has the highest Sharpe Ratio (1.24), indicating that it has generated the highest excess return per unit of risk among the selected banking stocks.
2. Canara Bank: Has a Sharpe Ratio of 0.98, which is relatively high, indicating that it has generated a good excess return per unit of risk.
3. Banking Nifty: Its Sharpe Ratio is 0.72, which is relatively moderate. This indicates that it has generated a moderate excess return per unit of risk.
4. Central Bank of India: Its Sharpe Ratio is 0.63, which is relatively low, indicating that it has generated a lower excess return per unit of risk.
5. Bank of India and Punjab National Bank: Have the lowest Sharpe Ratios (0.35), indicating that they have generated the lowest excess return per unit of risk among the selected banking stocks.

Investment Implications

1. Investors seeking high-risk adjusted returns may consider investing in the Bank of Baroda or Canara Bank.
2. Investors seeking moderate-risk adjusted returns may consider investing in the Banking Nifty.
3. Investors should exercise caution when investing in the Central Bank of India, Bank of India, and Punjab National Bank, as they have generated lower excess returns per unit of risk.

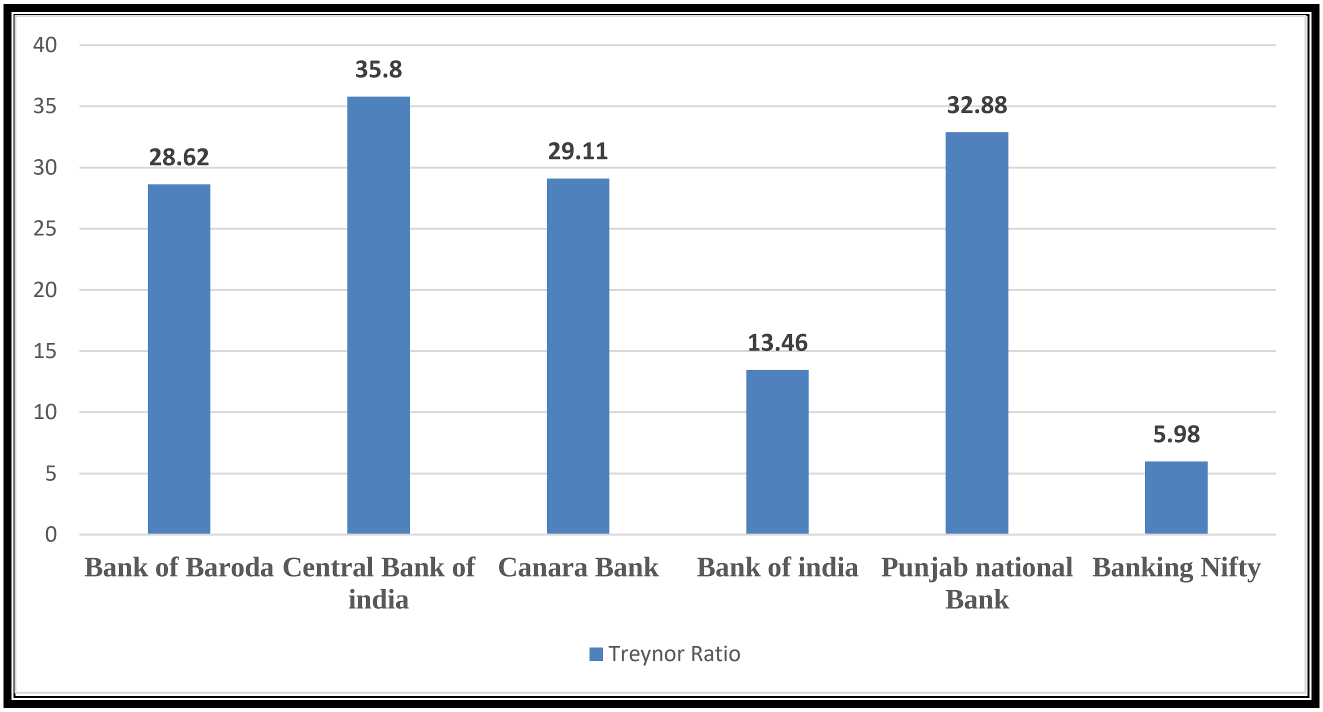
Risk-Return Trade-off

1. Bank of Baroda offers the best risk-return tradeoff, with a high Sharpe Ratio (1.24).
2. Canara Bank offers a good risk-return tradeoff, with a relatively high Sharpe Ratio (0.98).
3. Bank of India and Punjab National Bank offer the worst risk-return tradeoff, with low Sharpe Ratios (0.35)

Table 3: A Statement of Treynor Ratio of Selected Banking Stocks in the Public Sector during the Period 2019 to 2024

S. No.	Name of the Bank	Treynor Ratio
1	Bank of Baroda	28.62
2	Central Bank of India	35.8
3	Canara Bank	29.11
4	Bank of India	13.46
5	Punjab National Bank	32.88
6	Banking Nifty	5.98

Figure 3



INTERPRETATION

Treynor Ratio Analysis

1. Central Bank of India: Has the highest Treynor Ratio (35.8), indicating that it has generated the highest excess return per unit of systematic risk (beta) among the selected banking stocks.

2. Punjab National Bank: Has a high Treynor Ratio (32.88), indicating that it has generated a high excess return per unit of systematic risk.

3. Bank of Baroda: Has a Treynor Ratio of 28.62, indicating that it has generated a moderate excess return per unit of systematic risk.

4. Canara Bank: Has a Treynor Ratio of 29.11, indicating that it has generated a moderate excess return per unit of systematic risk.

5. Bank of India: Has the lowest Treynor Ratio (13.46), indicating that it has generated the lowest excess return per unit of systematic risk among the selected banking stocks.

6. Banking Nifty: Has the lowest Treynor Ratio (5.98), indicating that it has generated the lowest excess return per unit of systematic risk.

Investment Implications

1. Investors seeking high-risk adjusted returns may consider investing in the Central Bank of India or Punjab National Bank.
2. Investors seeking moderate-risk adjusted returns may consider investing in Bank of Baroda or Canara Bank.
3. Investors should exercise caution when investing in the Bank of India, as it has generated the lowest excess return per unit of systematic risk.
4. The Banking Nifty may not be an attractive investment option, given its low Treynor Ratio.

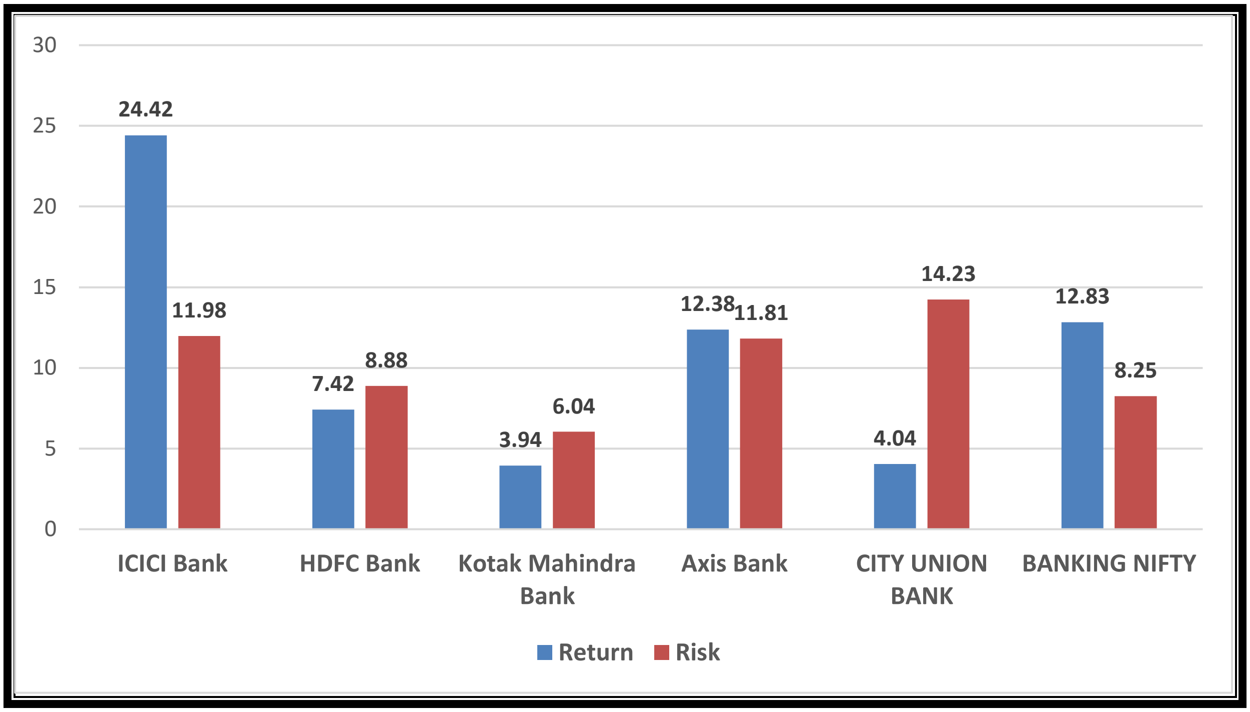
Risk-Return Trade-off

1. The Central Bank of India offers the best risk-return trade-off, with a high Treynor Ratio (35.8).
2. Punjab National Bank offers a good risk-return trade-off, with a high Treynor Ratio (32.88).
3. Bank of India offers the worst risk-return trade-off, with a low Treynor Ratio (13.46)

Table 4: A Statement of Return and Risk of Selected Banking Stocks in the Private Sector during the Period 2019 to 2024

S. No.	Name of the bank	Return	Risk
1	ICICI Bank	24.42	11.98
2	HDFC Bank	7.42	8.88
3	Kotak Mahindra Bank	3.94	6.04
4	Axis Bank	12.38	11.81
5	City Union Bank	4.04	14.23
6	Banking Nifty	12.83	8.25

Figure 4



INTERPRETATION

Return Analysis

1. ICICI Bank: Has generated the highest return (24.42%) among the selected private sector banking stocks, indicating strong growth and profitability.
2. Axis Bank: Has generated a moderate return (12.38%), indicating stable growth and profitability.
3. HDFC Bank: Has generated a relatively low return (7.42%), indicating slower growth and profitability.
4. Kotak Mahindra Bank: Has generated the lowest return (3.94%) among the selected stocks, indicating sluggish growth and profitability.
5. City Union Bank: Has generated a low return (4.04%), indicating moderate growth and profitability.

Risk Analysis

1. City Union Bank: Has the highest risk (14.23%) among the selected stocks, indicating high volatility in its stock price.
2. ICICI Bank: Has a moderate risk (11.98%), indicating relatively stable volatility in its stock price.
3. Axis Bank: Has a similar risk profile (11.81%) to ICICI Bank, indicating moderate volatility.
4. HDFC Bank: Has a relatively low risk (8.88%), indicating stable volatility in its stock price.
5. Kotak Mahindra Bank: Has the lowest risk (6.04%) among the selected stocks, indicating low volatility in its stock price.

Return-Risk Tradeoff

1. ICICI Bank: Offers the best return-risk tradeoff, with a high return (24.42%) and moderate risk (11.98%).
2. Axis Bank: Offers a good return-risk tradeoff, with a moderate return (12.38%) and moderate risk (11.81%).
3. **HDFC Bank**: Offers a stable return-risk tradeoff, with a low return (7.42%) and low risk (8.88%).
4. **Kotak Mahindra Bank**: Offers a low-return, low-risk tradeoff, which may not be attractive to investors seeking higher returns.
5. **City Union Bank**: Offers a high-risk, low-return tradeoff, which may not be attractive to investors seeking stable returns.

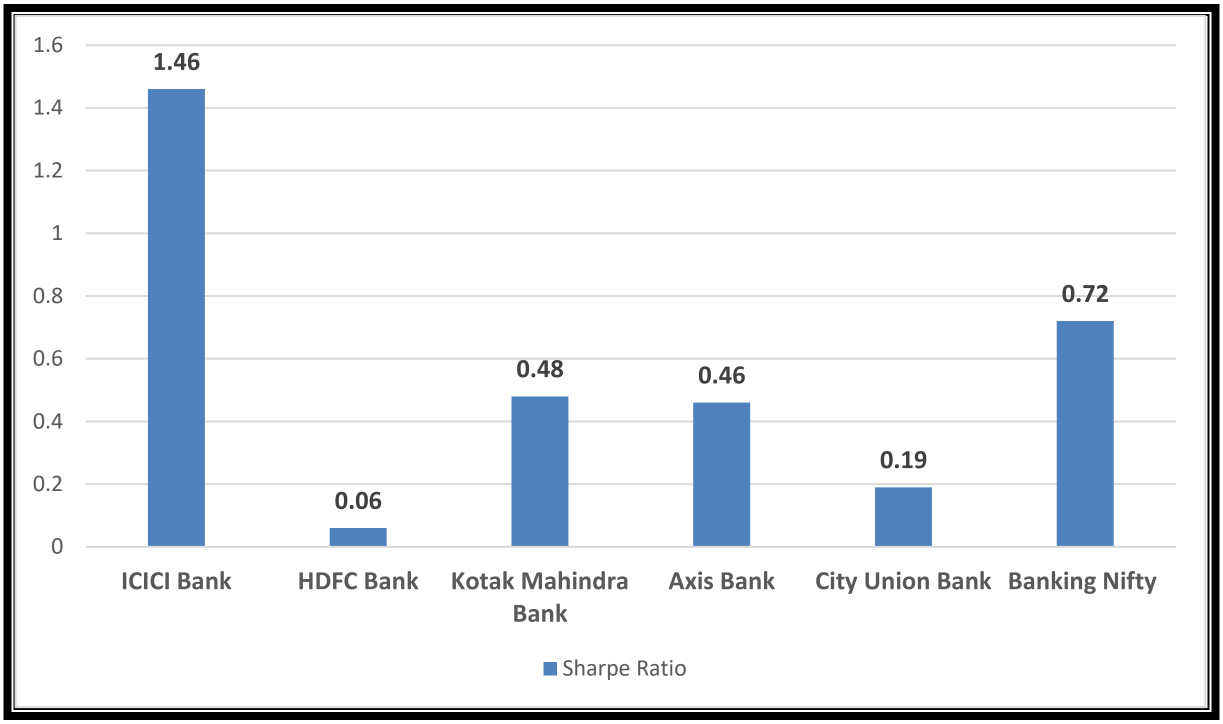
Investment Implications

1. Investors seeking high returns with moderate risk may consider investing in ICICI Bank or Axis Bank.
2. Investors seeking stable returns with low risk may consider investing in HDFC Bank.
3. Investors should exercise caution when investing in City Union Bank, given its high risk and low return.
4. Kotak Mahindra Bank may not be an attractive investment option, given its low return and low risk.

Table 5: A Statement of Sharpe Ratio of Selected Banking Stocks in the Private Sector during the Period 2019 to 2024

S. No.	NAME OF THE BANK	SHARPE RATIO
1	ICICI Bank	1.46
2	HDFC Bank	0.06
3	Kotak Mahindra Bank	0.48
4	Axis Bank	0.46
5	City Union Bank	0.19
6	Banking Nifty	0.72

Figure 5



INTERPRETATION

Sharpe Ratio Analysis

1. **ICICI Bank:** Has the highest Sharpe Ratio (1.46), indicating that it has generated the highest excess return per unit of risk among the selected private sector banking stocks.
2. **HDFC Bank**: Has the lowest Sharpe Ratio (0.06), indicating that it has generated a very low excess return per unit of risk.
3. **Kotak Mahindra Bank:** Has a moderate Sharpe Ratio (0.48), indicating that it has generated a moderate excess return per unit of risk.
4. **Axis Bank:** Has a similar Sharpe Ratio (0.46) to Kotak Mahindra Bank, indicating a moderate excess return per unit of risk.
5. **City Union Bank**: Has a low Sharpe Ratio (0.19), indicating a low excess return per unit of risk.
6. **Banking Nifty:** Has a moderate Sharpe Ratio (0.72), indicating a moderate excess return per unit of risk.

Investment Implications

1. Investors seeking high-risk adjusted returns may consider investing in ICICI Bank.
2. Investors should exercise caution when investing in HDFC Bank, given its very low Sharpe Ratio.
3. Investors seeking moderate-risk-adjusted returns may consider investing in Kotak Mahindra Bank or Axis Bank.
4. City Union Bank may not be an attractive investment option, given its low Sharpe Ratio.

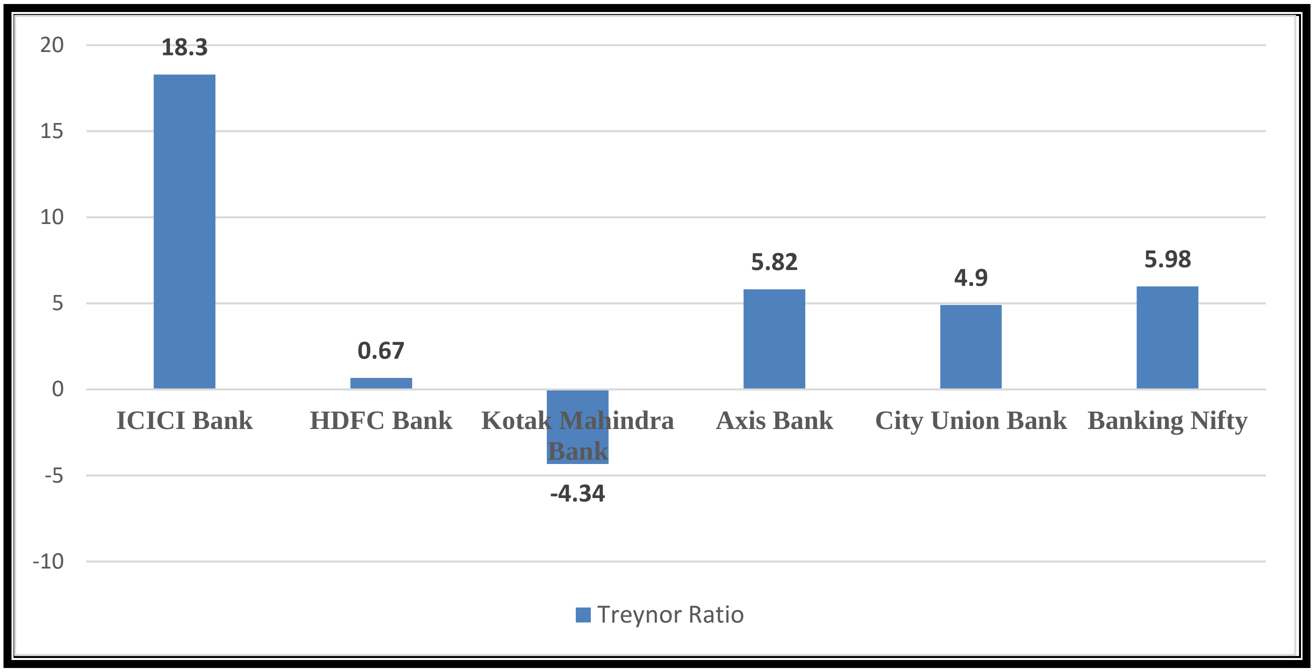
Risk-Return Trade-off

1. ICICI Bank offers the best risk-return trade-off, with a high Sharpe Ratio (1.46).
2. HDFC Bank offers the worst risk-return trade-off, with a very low Sharpe Ratio (0.06).
3. Kotak Mahindra Bank and Axis Bank offer moderate risk-return trade-offs, with Sharpe Ratios of 0.48 and 0.46, respectively.

Table 6: A Statement of Return and Risk of Selected Banking stocks in the private sector during the Period 2019 to 2024.

S. No.	Name of the Bank	Treynor Ratio
1	ICICI Bank	18.30
2	HDFC Bank	0.67
3	Kotak Mahindra Bank	-4.34
4	Axis Bank	5.82
5	City Union Bank	4.90
6	Banking Nifty	5.98

Figure 6



INTERPRETATION

Treynor Ratio Analysis

1. ICICI Bank: Has the highest Treynor Ratio (18.30), indicating that it has generated the highest excess return per unit of systematic risk (beta) among the selected private sector banking stocks.
2. Axis Bank: Has a moderate Treynor Ratio (5.82), indicating a moderate excess return per unit of systematic risk.
3. City Union Bank: Has a similar Treynor Ratio (4.90) to Axis Bank, indicating a moderate excess return per unit of systematic risk.
4. Banking Nifty: Has a moderate Treynor Ratio (5.98), indicating a moderate excess return per unit of systematic risk.
5. HDFC Bank: Has a very low Treynor Ratio (0.67), indicating a very low excess return per unit of systematic risk.
6. Kotak Mahindra Bank: Has a negative Treynor Ratio (-4.34), indicating that it has generated a negative excess return per unit of systematic risk.

Investment Implications

1. Investors seeking high-risk adjusted returns may consider investing in ICICI Bank.
2. Investors seeking moderate-risk adjusted returns may consider investing in Axis Bank, City Union Bank, or the Banking Nifty.
3. Investors should exercise caution when investing in HDFC Bank, given its very low Treynor Ratio.
4. Kotak Mahindra Bank may not be an attractive investment option, given its negative Treynor Ratio.

Risk-Return Trade-off

1. ICICI Bank offers the best risk-return trade-off, with a high Treynor Ratio (18.30).
2. HDFC Bank offers the worst risk-return trade-off, with a very low Treynor Ratio (0.67).
3. Kotak Mahindra Bank offers a negative risk-return trade-off, with a negative Treynor Ratio (-4.34).

5. FINDINGS OF THE STUDY

Return Analysis

1. ICICI Bank had the highest return (24.42%) among the private sector banks, followed by Axis Bank (12.38%) and HDFC Bank (7.42%).
2. Canara Bank had the highest return (29.27%) among the public sector banks, followed by Bank of Baroda (28.32%) and Central Bank of India (28.33%).
3. Banking Nifty had a return of 12.83%, which is lower than the returns of the top-performing banks.

Risk Analysis

1. City Union Bank had the highest risk (14.23%) among the private sector banks, followed by ICICI Bank (11.98%) and Axis Bank (11.81%).
2. Punjab National Bank had the highest risk (42.28%) among the public sector banks, followed by the Central Bank of India (33.83%) and the Bank of India (28.80%).
3. Banking Nifty had a risk of 8.25%, which is lower than the risks of the individual banks.

Sharpe Ratio Analysis

1. ICICI Bank had the highest Sharpe Ratio (1.46) among the private sector banks, indicating the highest excess return per unit of risk.

2. Bank of Baroda had the highest Sharpe Ratio (1.24) among the public sector banks, indicating the highest excess return per unit of risk.
3. HDFC Bank had the lowest Sharpe Ratio (0.06) among the private sector banks, indicating a very low excess return per unit of risk.

Treynor Ratio Analysis

1. The Central Bank of India had the highest Treynor Ratio (35.8) among the public sector banks, indicating the highest excess return per unit of systematic risk.
2. ICICI Bank had the highest Treynor Ratio (18.30) among the private sector banks, indicating the highest excess return per unit of systematic risk.
3. Kotak Mahindra Bank had a negative Treynor Ratio (-4.34) among the private sector banks, indicating a negative excess return per unit of systematic risk.

Return-Risk Trade off

1. ICICI Bank offered the best return-risk trade-off among the private sector banks, with a high return (24.42%) and moderate risk (11.98%).
2. Canara Bank offered the best return-risk trade-off among the public sector banks, with a high return (29.27%) and moderate risk (22.73%).
3. HDFC Bank offered a low-return, low-risk trade-off, which may not be attractive to investors seeking higher returns.

Suggestions

Investor Suggestions

1. Diversify portfolios: Investors should consider diversifying their portfolios by investing in a mix of public and private sector banks to minimize risk.
2. Focus on high-performing banks: Investors should focus on high-performing banks like ICICI Bank, Canara Bank, and Axis Bank, which offer attractive return-risk trade-offs.
3. Monitor risk levels: Investors should continuously monitor the risk levels of their investments and adjust their portfolios accordingly.

Banking Sector Suggestions

1. Improve risk management: Banks should focus on improving their risk management practices to minimize risk and maximize returns.
2. Enhance operational efficiency: Banks should strive to enhance their operational efficiency to improve profitability and competitiveness.
3. Invest in technology: Banks should invest in technology to improve their services, reduce costs, and stay competitive.

Regulatory Suggestions

1. Strengthen regulatory framework: Regulators should strengthen the regulatory framework to ensure that banks operate safely and soundly.
2. Enhance supervision: Regulators should enhance their supervision of banks to identify potential risks and take prompt action.
3. Promote transparency: Regulators should promote transparency in the banking sector to enable investors to make informed decisions.

Future Research

1. Expand the scope: Future research could expand the scope of the study to include more banks and a longer period.
2. Use advanced methodologies: Future research could use advanced methodologies like machine learning and artificial intelligence to analyze the data.
3. Examine other factors: Future research could examine other factors that affect the performance of banks, such as macroeconomic factors and industry trends.

6. CONCLUSION

This study examined the risk-return profiles of selected banking stocks in the public and private sectors from 2019 to 2024. It employed various risk-return metrics, including the Sharpe Ratio, Treynor Ratio, and return-risk trade-off. The findings of the study indicate that ICICI Bank, Canara Bank, and Axis Bank offer attractive return-risk trade-offs, while HDFC Bank and Kotak Mahindra Bank exhibit lower risk-adjusted returns. The study also highlights the importance of risk management, operational efficiency, and technological advancements in the banking sector. The study's findings have far-reaching implications for various stakeholders. Investors can leverage these insights to make informed investment decisions in the banking sector, optimizing their risk-return trade-offs. Policymakers can utilize the study's results to shape regulatory policies and supervision, promoting a more stable and efficient banking environment. Meanwhile, banking sector stakeholders can apply these findings to pinpoint areas for improvement, drive strategic growth initiatives, and bolster their competitive edge in the market

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