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Interest Rate Mismatches in Indian Banking: Causes, Strategies, and Implications

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Abstract

Despite the global trend of rising interest rates, India's Reserve Bank (RBI) has adopted a unique approach, emphasizing a rate pause and a solid anti-inflation stance. This unconventional strategy has sometimes led to periods of credit expansion, even during monetary tightening measures implemented by the RBI. One significant consequence of these policies is the widening gap between deposit and lending rates within the Indian banking sector. This research study aims to comprehensively analyze the implications of interest rate mismatches among Indian banks in this context. Specifically, the investigation focuses on the challenges posed by deposit and lending rate mismatches and explores potential strategies for interest rate hedging. The study concentrates on the period spanning 2022–2023, shedding light on the causes behind these mismatches and highlighting the hedging tactics employed by Indian banks. The findings of this research hold practical significance for both banking institutions and borrowers alike.

Keywords: Deposit rate, Lending rate, Interest rate, Credit policy, Hedging policy

1. Introduction

The pandemic and war-induced tightening cycle led to significant bank failures in the world's largest economy and Europe. This raised considerable concerns for policymakers regarding the vulnerability of financial systems. These concerns were especially relevant for emerging market economies, which might struggle with fiscal packages to stabilize markets. Months after the United States experienced its second and third most extensive banking failures, requiring authorities to intervene to rescue banks and depositors' funds, the Swiss banking giant Credit Suisse was in a severe financial crisis. Banks face interest rate risk when a country's policy rates rapidly increase within a short

period, creating challenges for them. However, it is important to understand why India's banking system is less likely to encounter such incidents. Global interest rates are anticipated to remain elevated for an extended period, with the US Federal Reserve signaling its intent to continue raising rates. In contrast, the Reserve Bank of India (RBI) has emphasized a pause on rate hikes and its commitment to the "war against inflation." High interest rates negatively impact credit growth, forming the foundation of monetary policy. Interestingly, over the past two decades, periods of bank credit growth have often coincided with monetary tightening in India, which may appear counterintuitive. In an environment characterized by rising interest rates and persistent inflation, the RBI maintains a stance



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of changing the bank rates. Combined with a high base effect, this is expected to lead to a deceleration in banking system credit growth to 13.5% in FY24, down from 15% in 2023. The demand for loans from companies and consumers has contributed to an annual credit growth rate of 15% as of March 2023, surpassing the five-year average of 10.3% (2018–2023), as reported by the RBI. However, deposit collection has not kept pace, hovering just above 10%. This has prompted bankers to explore strategies to attract funds. In this context, the present study examines the repercussions of interest rate mismatches among Indian banks.

2. Objectives of the research

We conducted this research to identify the issue of a mismatch between the deposit and lending rates for interest rate hedging. We have established the following objectives:

To identify the causes of the mismatch between deposit and lending rates in the Indian banking sector during 2022–2023.

To identify the hedging strategies followed by Indian banks to mitigate the problems arising from the interest rate mismatch.

This research benefits bankers and borrowers by helping them identify suitable hedging strategies to manage interest rate exposures effectively.

3. Literature review

Previous researchers have identified a mismatch between the deposit and lending rate proportions under different situations. Previous researchers have also identified interest rate swaps as a tool to reduce the gap between the deposit and lending rate proportion. The literature review provides a comprehensive overview of interest rate risk and swaps research.

Perazzi (2019) found that the profitability of deposits during periods of monetary policy contraction helps alleviate the adverse impact of balance sheet pressures on banks. This leads to a substantial reduction in the contraction of new lending at high interest rates. The relationship between interest rates and financial stability is complex and depends on various factors, such as the level of economic activity, the structure of the financial system, and the monetary policy framework. They argue that interest rates can be a valuable tool for managing financial stability and in conjunction with other monetary policy measures. A positive correlation between the interest rate spread and profitability indicators such as return on assets (ROA) and return on equity (ROE). However, the impact of interest

rates on bank profitability was insignificantly negative.

Bikker & Vervliet (2018) examined the effect of a low-interest rate environment on the profitability and risk-taking behavior of the U.S. banking sector. The study found that low interest rates hurt bank performance and net interest margins. The research also highlighted that banks do not compensate for reduced interest income by engaging in higher-risk trading activities. Delis & Kouretas (2011) focussed on the connection between interest rates and bank risk-taking during the early to mid-2000s. Using extensive annual data on euro area banks from 2001 to 2008, the study established a strong empirical link between low interest rates and increased bank risk-taking.

Ashraf & Shen (2019) investigated the relationship between economic policy uncertainty (EPU) and bank loan pricing using a news-based EPU index and bank-level data from seventeen countries between 1998 and 2012. The findings revealed a significant positive correlation between government economic policy uncertainty and interest rates on gross bank loans. A 21.84 basis point rise in average interest rates on bank gross loans is caused by a one standard deviation increase in economic policy uncertainty (EPU).

Ampudia & Van den Heuvel (2022) found that the negative correlation between bank equity values and interest rate changes is reversed when interest rates are near the zero lower bound. This reversal can be explained by the fact that banks are unable to pass on lower interest rates to their retail depositors, which reduces their profitability. The results are based on a high-frequency event study methodology and intraday data. Mian, Sufi, & Verner (2020) examined the impact of credit supply expansion on an economy and concluded that credit supply expansion boosts household demand, non-tradable sector employment and prices, but has limited effects on tradable sector employment. Beshears et al. (2020) studied how people divide money between a liquid and a commitment account. They find that higher early withdrawal penalties on the commitment account attract more deposits, even when both accounts offer the same interest rate.

A higher level of interest rates leads to lower swap spreads, while a higher interest rate volatility and stock market volatility leads to higher swap spreads. Beshears et al. (2020) studied how people divide money between a liquid and a commitment account. They find that higher early withdrawal penalties on the commitment account attract more deposits, even when both accounts offer the same interest rate. Chen, Shen, Kao, & Yeh (2018) proposed a two-stage stochastic programming model that weighs transaction costs against portfolio variance to hedge

interest rate risk. It can effectively reduce transaction costs while maintaining a desired level of portfolio variance.

The findings from past research reviews suggest that interest rate risk is a significant challenge for banks and that interest rate swaps can be an effective tool for hedging this risk. However, the effectiveness of interest rate swaps in hedging interest rate risk depends on several factors, such as the specific features of the swap contract and the prevailing market conditions. This research strategic agenda identifies a hedging strategy to reduce high deviations between deposit and lending rates.

4. Methodology

We conducted the research in four stages. In the first stage, we collected the deposit rate, lending rate, deposit growth, and lending growth monthly from April 1, 2021, to March 31, 2023. Data were obtained from the CEIC database. In the second stage, we used co-integration to identify the lagged time relationship between deposit and lending growth. In the third stage, we measured the relationship between the variables using vector error correction modelling. In the fourth stage, we identified the hedging variables based on the literature review and a case example from HDFC Bank was used. In India, the monetary policy is fully governed by RBI, hence all the banks must follow the directives of RBI. HDFC Bank is India's most valuable bank and the fourth-largest bank in the world by market capitalization, demonstrating its dominance in the Indian banking sector and its global standing. Hence, we identified HDFC bank data for the case study.

5. Discussion – workarounds of interest rate

In India, deposit rates vary among banks and across diverse types of accounts. Rates are influenced by factors such as the Reserve Bank of India's monetary policy, market conditions, competition among banks, and the demand and supply dynamics of funds in the banking system. Banks in India typically offer different deposit rates depending on the duration of the deposit and the type of account. Interest rates offered on deposits are expressed as annual percentages and are subject to change over time. The Reserve Bank of India (RBI) plays a significant role in regulating deposit rates. The RBI sets certain guidelines and regulations that banks should follow regarding interest rates on deposits to ensure transparency and protect the interests of depositors. By increasing deposit rates, the RBI encourages individuals and businesses to save more (Bihari, 2011). In some cases, the willingness of

people to accept negative interest rates (NIRs) on their savings is observed. This tolerance strongly depends on the amount of savings, time horizon, actual savings behaviour, and anchoring. Higher deposit rates can make saving a more attractive option than spending, which can help reduce consumer spending and inflationary pressures. Higher interest rates on deposits can attract foreign capital inflows as investors seek to take advantage of higher returns on their investments. This can help strengthen a country's foreign exchange reserves and support economic stability. By promoting domestic savings, the RBI fosters financial stability and supports the growth of the banking sector. By increasing deposit rates, the RBI can influence the overall cost of borrowing and lending in the economy. This can impact credit growth, investment levels, and overall economic activity.

India has experienced robust economic growth in recent years, creating opportunities for both businesses and individuals. As the economy expands, the demand for credit increases, leading to higher lending growth rates. Individuals and businesses may seek loans to finance investments, expand operations, or make large purchases. The Indian government has implemented various initiatives to promote financial inclusion and boost lending. Programs such as Pradhan Mantri Jan Dhan Yojana, Mudra Yojana, and Housing for All aim to increase access to credit for individuals and businesses, particularly those from underserved segments of the population. These initiatives have facilitated lending growth and supported the expansion of credit in the country. This increased consumer demand has contributed to the growth of lending in various sectors, including housing personal loans and durable goods financing. The growth of digital lending platforms and biotech companies has made accessing credit easier and more convenient for individuals and businesses. These platforms leverage technology to streamline loan application processes, reduce paperwork, and expedite loan approvals. The increased availability of digital lending options has expanded the credit landscape, leading to higher lending growth rates. If debt growth increases significantly in banks, it could put upward pressure on interest rates. When banks lend more, they may demand higher interest rates to compensate for the increased risk associated with a larger debt burden. This can impact borrowing costs for individuals, businesses, and even governments. In the areas where the local economy is not performing well, the portion of private loans increases. Hedging of interest rate fluctuations is common with interest rate swaps. The long-term interest rate exposure of

a bank and the likelihood and extent of swap market participation are positively related (Chen et al., 2018). Derivative instruments are used by banks to adjust the amount of assumed interest rate risk. These instruments include interest rate swaps, interest rate futures, and forward rate agreements.

Fig. 1 shows the deposit interest and lending rates of Indian banks from April 2021 to March 2023.

The exhibit shows that the lending rate remains stable, whereas the deposit rate increased from April 2022. A higher deposit rate can make it more attractive for individuals and businesses to deposit their funds in banks. This can incentivize savers to allocate more of their money into bank deposits, increasing the overall deposit base of banks. With a higher deposit rate, banks may experience an influx of funds as more customers choose to deposit their money in their bank accounts. This influx of deposits can result in growth in the bank's deposit liabilities. The increased deposit base provides banks with a larger pool of funds that they can use for lending. With a stable lending rate, banks can leverage the increased deposits to fund loans and meet the credit demands of borrowers. While a stable lending rate allows banks to maintain consistent interest income from loans, an increase in deposit rates can squeeze their net interest margins (NIMs). A higher cost of funds from increased deposit rates may limit banks' profitability if they are unable to offset it through higher loan yields or other income sources. The stability of the lending rate coupled with an increase in deposits can influence credit growth. Banks may be able to offer loans at competitive rates because of the availability of funding from increased deposits. This can lead to

an expansion in credit supply, potentially stimulating economic growth through increased borrowing and investment. During an interest rate rise cycle, banks' profitability may increase, but they may be faced with higher credit costs and weaker loan quality (Naceur & Kandil, 2009). Provisional numbers released by banks show remarkable credit growth, with most lenders reporting double-digit numbers. Fig. 2 shows the trend of deposits and lending growth from April 2021 to March 2023.

The lending growth has been higher than the deposit growth since April 2022. With loans increasing while deposits remain stagnant, banks may face liquidity challenges. To avoid the well-known spurious regression problem, it is important to assess the pre-co-integration between the growth of deposits and loans in each equation (Acharya & Viswanathan, 2011). Because the mentioned variables were of the same order of integration, it was necessary to test for co-integration in the system before establishing the regression equation. In this test, a regression is performed to generate residuals that can be interpreted as equilibrium pricing errors. This allows the estimation and testing of the equilibrium relationship among the nonstationary series while disregarding short-term deviations from equilibrium. Table 1 reports the critical values.

The critical values of Trace statistic at a 5% level of significance are $(\Pi_0)18.39$ and $(\Pi_1) 3.84$. There is a co-integration between the deposit and growth rate. This is reflected in loan to deposit ratio. The lack of deposit growth means that there are fewer funds available to cover the increased lending activity. This can strain the bank's ability to meet its obligations and fulfil withdrawal requests from customers.

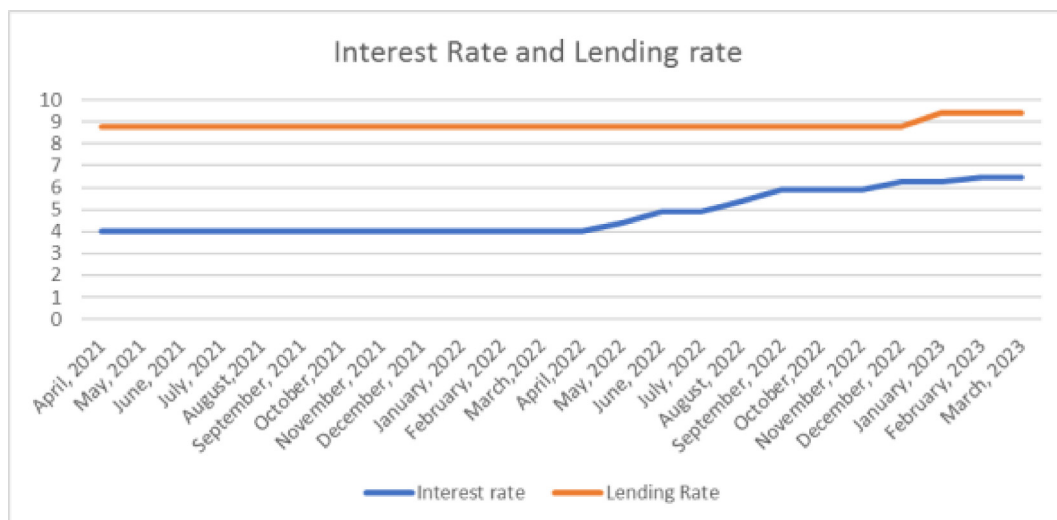


Fig. 1. Interest rate vs lending rate. Source of data: CEIC Data, 2023.

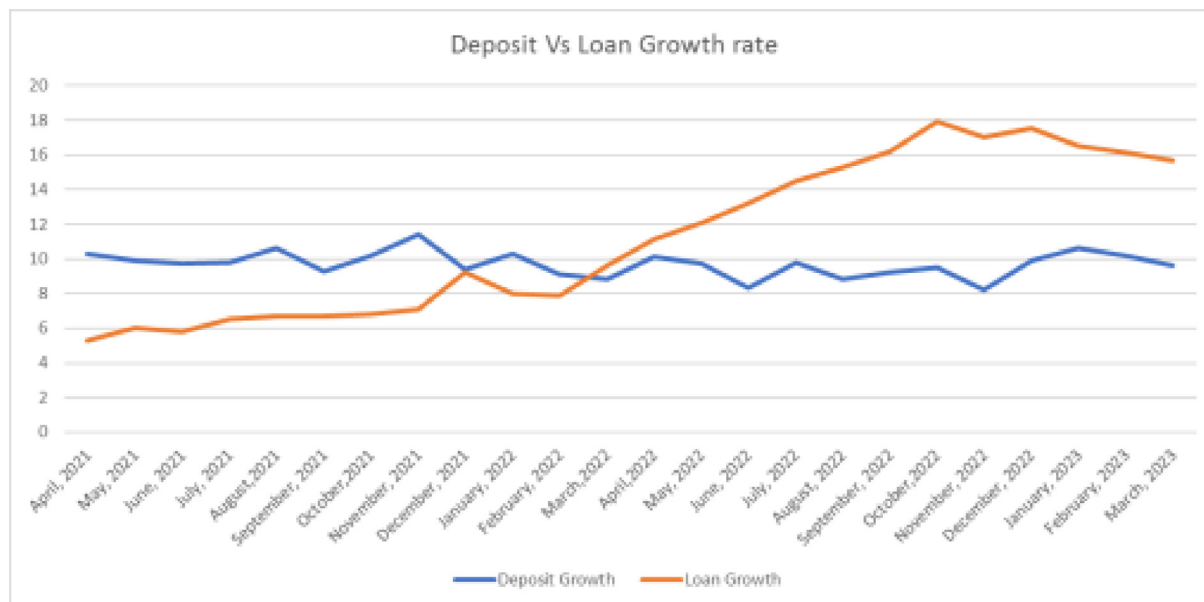


Fig. 2. Growth rate of deposits & loans. Source of data: CEIC Data, 2023.

Table 1. Cointegration Test between deposit growth and lending growth.

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.
None *	0.518507	16.96792	18.39471	0.0298
At most 1	0.039601	0.888931	3.841466	0.3458

Source: Author Calculation.

The loan-to-deposit ratio (LTD) is around 66% in Indian banks during the period 2021–2022. The LTD indicates that the bank relies more heavily on loans rather than customer deposits to fund its lending activities. This can pose a risk to the bank's financial stability and increase its vulnerability to funding shortages. When deposits are not increasing, banks may need to rely more on external sources of funding, such as borrowing from other financial institutions or raising capital through debt or equity issuance. This dependency on external funding can come with higher costs, including interest expenses and potential risks associated with obtaining funding in a competitive market. If deposits are not increasing, banks may face challenges in funding new loan requests or supporting the growth of their loan portfolio. They may need to resort to alternative measures, such as reducing lending activities, seeking additional sources of funding, or tightening lending standards. The limited growth in deposits relative to loan growth can put upward pressure on interest rates. Banks may need to attract more deposits by offering higher interest rates to encourage savers to deposit their funds. Conversely, they may also increase the interest rates on loans to

compensate for the increased funding costs associated with the lack of deposit growth.

We conducted an empirical study on the deposit growth discovery process, focusing on the stochastic trend between deposit growth and lending growth. We employed the threshold vector error correction model (TVECM) and used the deposit rate as the exogenous variable. This analysis identified the collinearity variation between deposit and lending growth. We include deposit and lending rates as heteroscedasticity variables to capture the volatility mechanism between growth rates. By using the Vector Error Correction Model (VECM), we gained a better understanding of the non-stationarity among the different component series and improved longer-term forecasting compared with an unconstrained model. As deposit growth and lending growth are co-integrated, causality must exist in at least one direction. Therefore, we employed the threshold vector error correction model (TVECM) to identify bidirectional causality

$$\Delta Y_t = a_y z_{t-1} + \sum_{i=1}^p b_{yi} \Delta Y_{t-i} + \sum_{i=1}^p c_{yi} \Delta X_{t-i} + \varepsilon_{y,t} \quad (1)$$

$$\Delta X_t = a_x z_{t-1} + \sum_{i=1}^p b_{xi} \Delta Y_{t-i} + \sum_{i=1}^p c_{xi} \Delta X_{t-i} + \varepsilon_{x,t} \quad (2)$$

Where ΔX_t is the output series from the deposit rate and ΔY_t is the output series from the lending rates. b_{yi} , c_{yi} , b_{xi} , and c_{xi} represent the short-run coefficients. ε_y , ε_x and $\varepsilon_{x,t}$ are residuals. The speed of adjustment in long-run equilibrium due to market information was determined by the coefficient α_x and α_y . When these coefficients were high, the adjustment was rapid. Table 2 displays the estimates of the adjustment coefficients obtained by TVECM using Eqs (1) and (2) and 'F' statistic value.

We find the error correction to be significant in both equations, indicating a bidirectional error correction. However, the absolute magnitude of the error correction in the deposit rate equation (Dependent - Lending growth) was greater than that in the lending rate equation. This suggests that if the co-integrated series were in disequilibrium in the short run, the deposit rate would make a larger adjustment to reestablish equilibrium. This concludes that deposit growth leads to lending growth.

The estimated values were tested using the 'F' statistic, which was found to be significant. This indicates significant causality from lending growth to deposits and even more significant causality from deposit rates to lending rates. While bidirectional causality exists, deposit growth is a better predictor of lending growth. Therefore, adjustments in lending rates are necessary to hedge against interest rate fluctuations, and lending rates can be swapped with short-term rates. To identify the short-term lending rate for interest rate swaps, we focussed on the Mumbai Interbank Offered Rate (MIBOR). The correlation between lending rate growth and MIBOR during the period from April 1, 2021, to March 31, 2023, was 0.71. This suggests that MIBOR can be used as a short-term source for hedging even the long-term lending rate. HDFC Bank uses MIBOR to hedge the lending rate, and a case study has been conducted to demonstrate the effectiveness of the derivative strategy using interest rate swaps.

6. Workarounds – Case of HDFC bank

The HDFC Bank of India has addressed the phenomenon of interest rate mismatch. The primary

Table 2. Variance analysis.

Variables	VCM Co-efficient	F Statistics
Dependent – Deposit growth	0.82	24.8
Dependent – Lending Growth	0.91	18.6

Source: Author Calculation. Significant at 0.05 level.

cause of the mismatch was the increase in repo rates by the RBI during the period 2022–2023. Figure 3 shows the Repo rate changes initiated by the RBI from 2006 to 2023.

According to Bank sources, the causes of interest rate mismatch arise due to four factors, that include asset-liability mismatch, increase in cost of funds, high risk premium and competitive pressures on bank deposit rate. Indian banks typically have a shorter liability maturity (i.e., deposit tenure) than their asset maturity (i.e., loan tenure). The average tenure of deposits is 4.5 years, whereas the average tenure of loans is 8.5 years. This forces Indian banks to borrow short-term funds to finance long-term loans. This mismatch can be exacerbated during periods of rising interest rates, when the cost of borrowing short-term funds increases.

The cost of funds for Indian banks has been rising due to several factors, including inflation, increased competition for deposits, and higher regulatory requirements. Bank cost to income ratio (%) in India was reported at 45.2%, 47.82%, and 47.9% in 2020, 2021, and 2022, respectively. Gupta, Makwana, Naik, & Rao (2023) found that the rising cost of funds makes it more difficult for banks to maintain a narrow spread between deposit and lending rates. Contagion risks associated with Indian banks increased in March 2022 vis-à-vis September 2021 on account of deepening inter-bank market linkages.

Banks charge a risk premium on loans to cover the potential for defaults. An increase in default risk leads to a rise in interest rate spread and a decline in credit growth. As the credit score gets lower, the bank charges a risk premium or a spread over its best rate. For customers with a credit score between 701 and 725, the bank charged a risk premium of 25 basis points (bps) above its best rate. A positive shock to risk premium increased the interest rate spread by 30 basis points in 2021. The risk premium is higher for riskier loans, such as those to borrowers with lower credit scores. This can lead to a wider spread between deposit and lending rates for riskier loans. The Indian banking sector is highly competitive, which also puts pressure on banks to lower their deposit rates to attract and retain customers. These are the causes for mismatch of interest rates in Indian banks.

Indian banks, especially those engaged in corporate and commercial lending, offer various interest rate hedging products to their customers. These products include interest rate swaps, interest rate caps, and other derivatives that help borrowers manage their exposure to interest rate changes (Sen, 2023). By entering such hedging agreements, borrowers can protect themselves against adverse

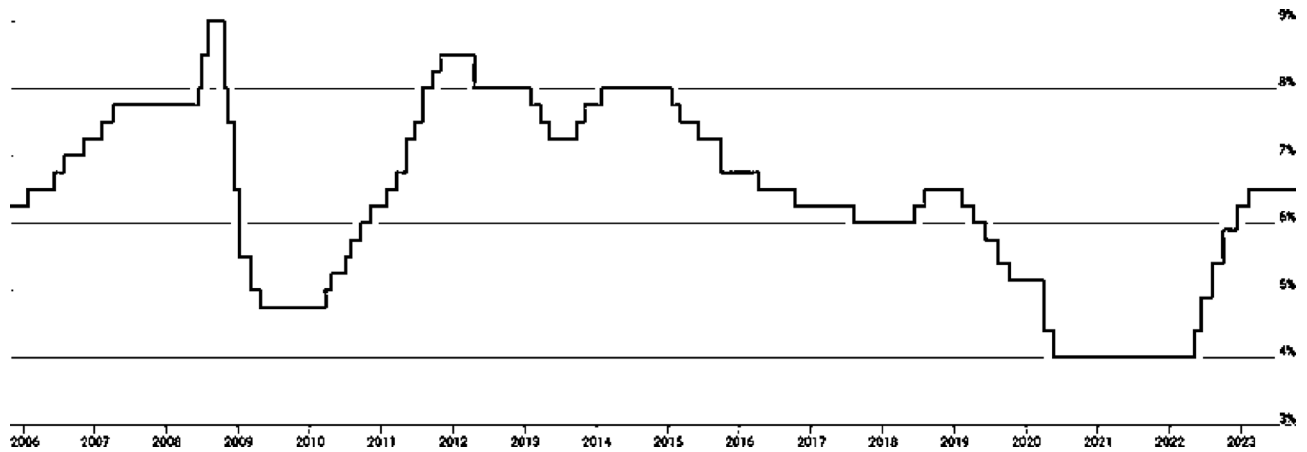


Fig. 3. Repo rate of RBI. Source: RBI, 2023.

movements in interest rates and establish more predictable interest expense profiles (Kashyap, Rajan, & Stein, 2002). In India, the Mumbai Interbank Offered Rate (MIBOR) is the floating benchmark against which companies settle their swaps (Nath & Reddy, 2003). In India, MIBOR rates are increasing. Fig. 4 shows the increase in MIBOR (3 months) rates.

HDFC bank used the MIBOR interest swaps to hedge against the gap between the deposit and loan growth rates. HDFC Bank used the fixed interest rate swap. According to this swap, banks enter the contract, receive cash flow through a fixed interest rate, and payout at floating interest rates. The bank uses a predetermined principal amount for calculating the interest amount. The floating interest rates are hedged through the MIBOR benchmark set for three months. As a substitute for paying the short-

term MIBOR floating interest rate, the swap receiver demands a fixed interest rate (Goyal, 2011). These agreements enable participants to manage their interest rate exposure by converting their existing interest rate terms to a different type of interest rate arrangement (Angbazo, 1997). In the context of lending rate mismatches, where a bank's lending rates are not aligned with its funding costs, the bank could enter interest rate swaps to reduce the impact of such mismatches (Hancock & Passmore, 2011). For instance, if a bank has fixed-rate loans and variable-rate funding, it may use an interest rate swap to convert the fixed-rate loan payments into variable-rate payments that align with its funding costs (Chen et al., 2018). This can help the bank mitigate losses arising from a widening gap between its lending rates and funding costs. As the MIBOR is

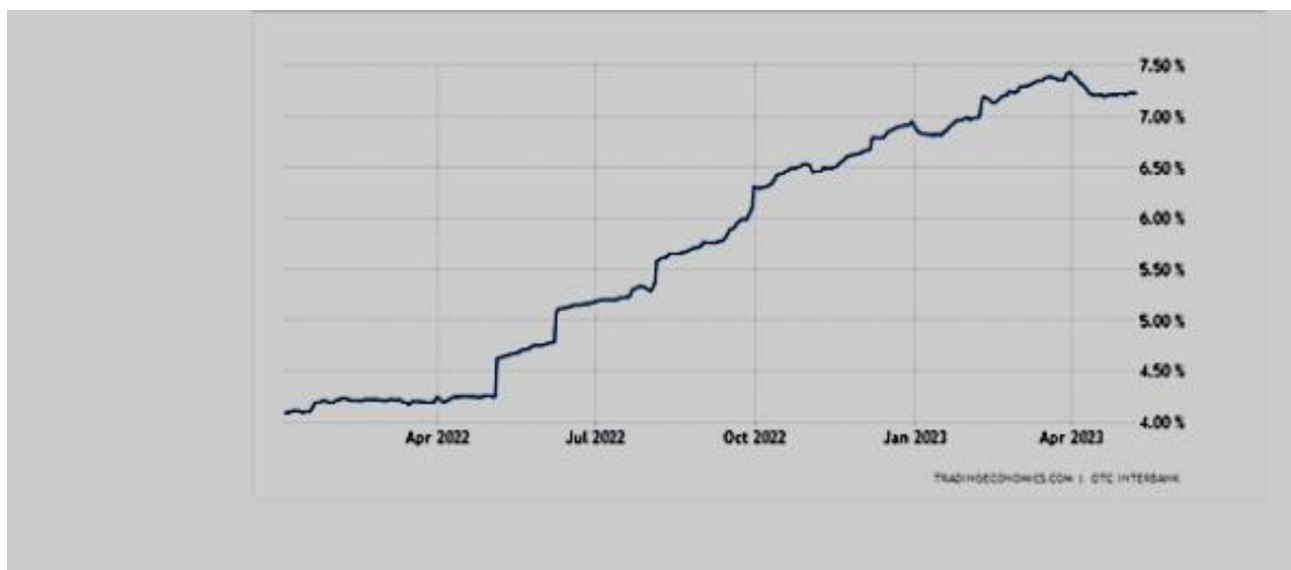


Fig. 4. MIBOR growth. Source data: CEIC Data, 2023.

also increasing, compared to the lending rate, MIBOR can be a better option to create derivatives (Drechsler, Savov, & Schnabl, 2021). HDFC bank used MIBOR to hedge the interest rate fluctuations by entering into forward rate agreements or interest rate swaps with other counterparties. These contracts helped the bank to lock in a certain interest rate and reduce their exposure to the volatility of MIBOR. For example, if a bank expects that MIBOR will rise in the future, it can enter into a forward rate agreement to receive a fixed interest rate and pay a floating one (based on MIBOR) at a future date. This way, the bank can benefit from the higher interest rate and hedge its risk of paying more on its borrowings. Similarly, if a bank expects that MIBOR will fall in the future, it can enter into an interest rate swap to pay a fixed interest rate and receive a floating one (based on MIBOR) for a certain period. This way, the HDFC bank benefited from the lower interest rate and hedged its risk of receiving less on its lending.

However, a significant increase in the lending growth rate may expose banks to higher levels of risk (Boudriga, Boulila Taktak, & Jellouli, 2009). When banks extend more loans, they face the possibility of defaults and non-performing loans. It is crucial for banks to carefully assess the creditworthiness of borrowers and maintain appropriate risk management practices to mitigate potential losses. In this approach, a portion of loans or deposits is allocated a fixed rate, while the remaining portion is allocated a variable rate. In the event of an increase in interest rates, only variable-rate loans or deposits will be affected, while the fixed-rate portion remains unaffected (Blomvall & Hagenbjörk, 2022). This policy of the HDFC bank helped to mitigate the impact of rising interest rates, as the increase in cost is limited to the variable-rate portion, which typically has a lower impact than having all loans or deposits at variable rates.

7. Implications

The RBI intervention in April 2023, raising deposit rates while holding lending rates steady, presents a unique landscape for Indian banks. This research delves into the resulting implications, offering insights into growth patterns, interest rate dynamics, and risk management strategies.

Deposit growth, though stable, finds its counterpart in an increasing loan growth rate. This surge in lending stems from capital infusion directed toward businesses, indicating a revitalized demand for credit. Notably, while there's no direct correlation between these growth rates, a deeper analysis

reveals a co-integration with a one-month lag. Interestingly, this suggests deposit growth acts as a leading indicator for loan growth, providing valuable time for banks to anticipate and prepare for future credit requirements.

Beyond these growth patterns, the study highlights the pressing issue of interest rate mismatch within Indian banks. This mismatch primarily arises from three factors: a structural asset-liability mismatch, a rising cost of funds, and the influence of a high-risk premium coupled with competitive pressures on deposit rates. These combined forces create a complex scenario where banks must navigate conflicting priorities, balancing profitability with risk management.

The research emphasizes the significant impact of interest rate fluctuations on lending rates. To address this volatility, the study proposes an alternative lending rate framework based on swapping lending rates for short-term rates. This innovative approach offers greater flexibility and allows banks to adjust their rates more easily in response to market shifts.

Further strengthening the argument for short-term rate swaps, the analysis reveals a strong relationship between the Mumbai Interbank Bid Rate (MIBOR) and the lending rate. This correlation positions MIBOR as the optimal derivative tool for interest rate swaps, providing banks with a readily available and efficient hedging mechanism.

Finally, the research draws upon the case study of HDFC Bank, demonstrating how its existing hedging policy aligns with the proposed findings. This real-world example further validates the effectiveness of the recommended strategies, showcasing their practical application within the Indian banking landscape. The success of HDFC Bank's hedging policy serves as a testament to the practical relevance of these findings, paving the way for a more adaptable and resilient Indian banking sector.

8. Conclusion

Central banks worldwide have been raising interest rates in response to increasing inflationary pressures. This tightening of monetary policy controls inflation by increasing borrowing and curbing excessive spending. The Indian government has implemented financial inclusion initiatives to bring more individuals and businesses into the formal banking system, thus contributing to the growth in lending. However, this has led to a mismatch between deposit and loan growth rates. To mitigate this risk, Indian banks have identified interest rate swaps with short-term borrowings as a solution.

Interest rate swaps involve contractual agreements with counterparts to exchange interest rate payments, allowing for more customized hedging strategies. In conclusion, to reduce the risk associated with loan growth, banks can effectively use MIBOR to temporarily swap and create more cash for lending.

Authors' contributions

Baba Gnanakumar developed the idea and plan for this project. Baba Gnanakumar, Baby and Ulaganathan Subramanian did the data collection, conducted a literature review and analysis. Baba Gnanakumar, Baby and Ulaganathan Subramanian reviewed and edited the manuscript. All authors read and approved the final manuscript.

Conflict of interest

We declare that there is no conflict of interest in the publication of this article.

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