

Interest Rate Risk Management: A Comparative Study of Bank of Baroda and ICICI Bank

M Guru Santhosh¹, Prof V N Prakash Sharma²

¹ MBA (Finance) Student,

² Assistant Professor

Department of Management and Commerce, Sri Sathya Sai Institute of Higher Learning, India

Abstract: The Indian banking sector is exposed to various types of risks such as liquidity risk, interest rate risk, credit risk, exchange risk etc. which affects the bank's Net Interest Income (NII) which is the basic source of a bank's profitability. The phased deregulation of interest rates and the operational flexibility given to banks in pricing most of the assets and liabilities have exposed the banking system to Interest Rate Risk (IRR). This study is aimed at measuring the interest rate risk in Bank of Baroda and ICICI bank using the traditional gap analysis model. The findings revealed that the banks were exposed to Interest Rate Risk (IRR).

Keywords: Interest rate risk, Net Interest Income

I. Introduction

The effect of interest rate movements on the financial condition of a bank is called interest rate risk. Since, it has a direct impact on the profitability of a bank, it becomes an important area for the management of a bank to focus on the methods to manage and mitigate this risk. The earnings perspective and the economic value perspective are the two most common perspectives of assessing a bank's exposure to interest rates. Traditional gap analysis, earnings sensitivity analysis, rate adjusted gap, duration gap analysis are some of the various techniques used to measure the exposure of earnings and economic value to changes in interest rates.

II. Objective of the study

Using the information available to the public domain, this paper attempts to assess the interest rate risk carried by the above mentioned banks in 2010, 2011, 2012, 2013 and 2014.

III. Research Methodology

The present study has used analytical research design to assess the interest rate risk situation in Bank of Baroda and ICICI bank. It has used secondary information from the RBI website and the annual reports of Bank of Baroda and ICICI bank.

IV. Analysis and Interpretation

The data has been treated using the traditional gap analysis model wherein a repricing gap report has been prepared by distributing the Rate Sensitive Assets (RSA's) and Rate Sensitive Liabilities (RSL's) into various time buckets based on the time remaining for their next repricing or maturity, whichever is earlier. The rate sensitive assets and liabilities are distributed into eight time buckets. They are:

- 1 – 14 days
- 15 – 28 days
- 29 days to 3 months
- Over 3 months to 6 months
- Over 6 months to 1 year
- Over 1 year to 3 years
- Over 3 years to 5 years
- Above 5 years.

Then the gap between the rates sensitive assets and liabilities has been calculated which is the difference between the RSA's and RSL's for each of the time buckets.

A positive gap indicates that,

- The bank has more rate sensitive assets than rate sensitive liabilities, which means that the bank is "asset sensitive."
- In such a scenario where the RSA's > RSL's, an upward movement in the interest rates will result in an increase in the NII of the bank since more assets are repriced than liabilities provided the rise in interest rates is equal for both RSA's as well as RSL's at given point in time.

- However, a downward movement in interest rates will lead to a decrease in the NII of the bank. A negative gap indicates that,
- The bank has more rate sensitive liabilities than rate sensitive assets, which means that the bank is “liability sensitive.”
- In such a scenario where the RSA’s < RSL’s, an upward movement in the interest rates will result in a decrease in the NII of the bank since more liabilities are repriced than assets provided the rise in interest rates is equal for both RSA’s as well as RSL’s at given point in time.
- But, a downward movement in interest rates will lead to an increase in the NII of the bank.
- In case a bank has a gap of zero, then RSA’s = RSL’s, in such a scenario, an equal change in the interest rates will not lead to any changes in the NII of the bank since, the interest income and interest expense is the same.

Therefore, we can conclude that the sign of the gap determines whether there is any change in the interest income or expense of a bank due to changes in interest rates.

V. Measurement of Interest Rate Risk

1.1 **Asset Liability Mismatch:** Based on the time frame, the assets and liabilities of Bank of Baroda and ICICI bank have been categorized into short-term assets and liabilities (less than 1 year) and long-term assets and liabilities (more than 1 year). The present study has focused only on short-term assets and liabilities, since, the fluctuations in interest rates is more important for short-term assets and liabilities. A positive gap signifies that the assets are more than liabilities and a negative gap signifies that the liabilities are more than assets.

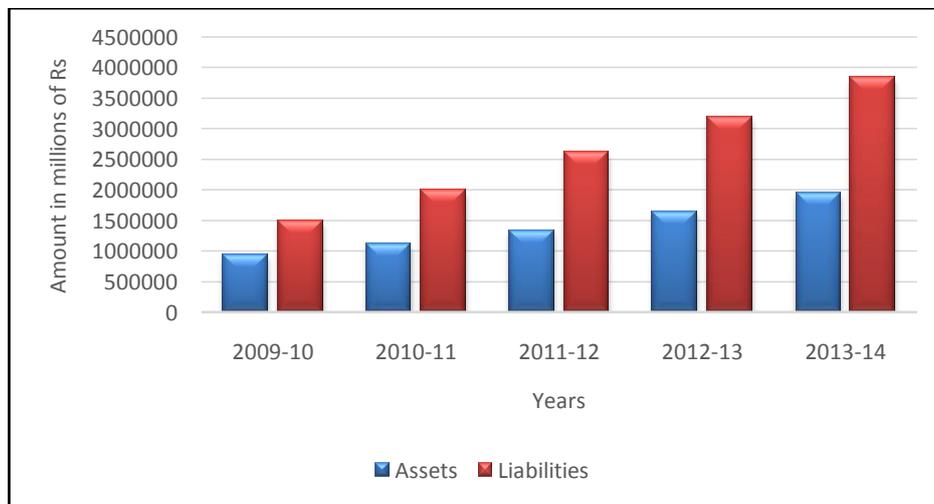


Figure 1 Short Term Asset Liability in Bank of Baroda

The above graph depicts that during the period of study 2009-14, short-term assets are lower than short-term liabilities in Bank of Baroda. The gap remained negative throughout the period of study. It was Rs (547675) million in 2009-10, Rs (874056) million in 2010-11, Rs (1272757) million in 2011-12, Rs (1553153) million in 2012-13 and Rs (1885916) million in 2013-14. Under such circumstances, an increase in interest rates will adversely affect the banks position, but, a decline will positively impact as they will have a direct impact on the profitability of the bank.

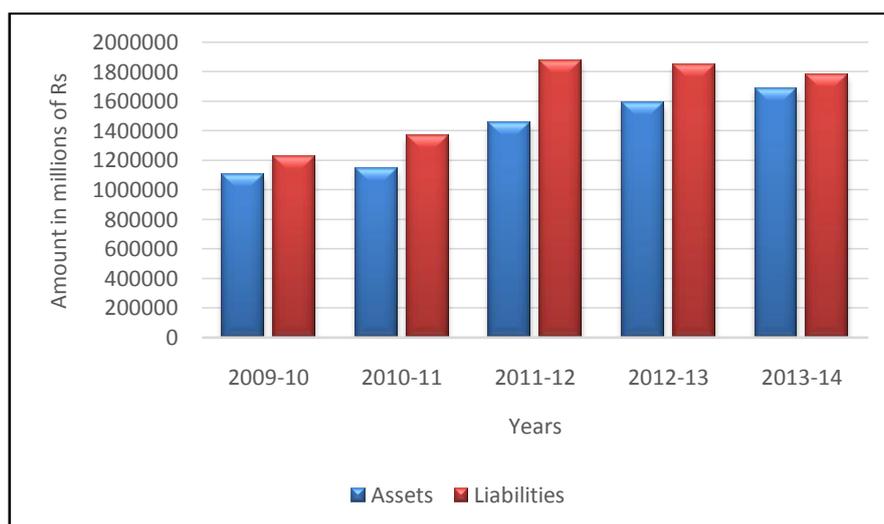


Figure 2 Short Term Asset Liability in ICICI Bank

The above graph implies that during the period of study 2009-14, short-term assets are lower than short-term liabilities in ICICI Bank. The gap remained negative throughout the period of study. It was Rs (120415) million in 2009-10, Rs (226265) million in 2010-11, Rs (426758) million in 2011-12, Rs (261489) million in 2012-13 and Rs (85591) million in 2013-14. In such a scenario, an increase in interest rates will adversely affect the banks position, on the other hand, a decline will positively affect as they will have a direct impact on the profitability of the bank.

GAP Analysis

Bank	2009-10	2010-11	2011-12	2012-13	2013-14
Bank of Baroda	(181767)	(278106)	(178574)	(508752)	(925894)
ICICI Bank	58182	158954	176228	236880	290516

Table 1: GAP in Bank of Baroda and ICICI Bank (in millions of Rs)

Table 1 presents the difference between the rate sensitive assets (RSA's) and rate sensitive liabilities (RSL's) which is called as gap. Bank of Baroda has a negative gap in all the five financial years, 2009-14. There has been a continuous increase in the gap except for the year 2011-12. It has reduced from Rs (278106) million in 2010-11 to Rs (178574) million in 2011-12. The gap was Rs (181767) million in 2010, Rs (278106) million in 2011, Rs (178574) million in 2012, Rs (508752) million in 2013 and Rs (925894) million in 2014. Unlike Bank of Baroda, ICICI bank has a positive gap in all the five financial years 2009-14. There has been a continuous increase in the gap in all the five years. It was Rs 58182 million in 2010, Rs 158954 million in 2011, Rs 176228 million in 2012, Rs 236880 million in 2013 and Rs 290516 million in 2014. Since, both the banks are either asset sensitive or liability sensitive during the period of study, they should adopt measures to manage interest rate risk.

Maturity GAP Report

Time Buckets	1-14 days	15-28 days	29 days to 3 months	Over 3 months to 6 months	Over 6 months to 1 year
2009-10	(53148)	(40447)	(62318)	(29038)	(362724)
2010-11	(239469)	(62291)	(66850)	(38843)	(466603)
2011-12	(173822)	(68213)	(155687)	(168170)	(706865)
2012-13	(160317)	(88621)	(134324)	(164590)	(1005301)
2013-14	(504999)	(34846)	(59777)	(112707)	(1173587)

Table 2: Table showing GAPS's in various time buckets of Bank of Baroda (in millions of Rs)

The above table contains various maturity buckets for the period 2009-14. In the year 2009-10, Bank of Baroda has a negative gap in 1-14 days, 15-28 days, 29 days to 3 months, over 3 months to 6 months and over 6 months to 1 year time buckets. There has been a huge increase in the gap in over 6 months to 1 year time bucket. The gap has increased from Rs (29038) million in over 3 months to 6 months to Rs (362724) million in over 6 months to 1 year bucket. However, the overall gap of Bank of Baroda is negative.

During 2010-11, the bank has a negative gap in 1-14 days, 15-28 days, 29 days to 3 months, over 3 months to 6 months and over 6 months to 1 year time buckets. There has been wide fluctuations in the gap during the period of study. Bank of Baroda has had an overall negative gap. The year 2011-12 was no

exceptional as Bank of Baroda continued to have a negative gap in 1-14 days, 15-28 days, 29 days to 3 months, over 3 months to 6 months and over 6 months to 1 year time buckets. As a result, the overall gap of Bank of Baroda was also negative. The year 2012-13 also continued the same trend of a negative gap in all the maturity buckets, 1-14 days, 15-28 days, 29 days to 3 months, over 3 months to 6 months and over 6 months to 1 year. There has been a continuous increase in the negative gap except in 15-28 days bucket. The overall gap of Bank of Baroda remained negative in the year 2012-13. During the financial year 2013-14, Bank of Baroda has a negative gap in all the maturity buckets, 1-14 days, 15-28 days, 29 days to 3 months, over 3 months to 6 months and over 6 months to 1 year. The overall gap of Bank of Baroda is also negative.

Time Buckets	1-14 days	15-28 days	29 days to 3 months	Over 3 to 6months	Over 6 to 1 year
2009-10	13409	32543	(115699)	(42658)	(8010)
2010-11	(46414)	30902	(58991)	(19807)	(131955)
2011-12	40254	10751	(134469)	(153405)	(189889)
2012-13	4471	87751	(103573)	(110332)	(139806)
2013-14	10634	54285	(56303)	(45597)	(48610)

Table 3: Table showing GAPS's in various time buckets of ICICI Bank (in millions of Rs)

The above table depicts the various maturity buckets of ICICI bank during the period 2009-14. In the year 2009-10, ICICI bank has a positive gap in 1-14 days and 15-28 days buckets. In the 29 days to 3 months, over 3 months to 6 months and over 6 months to 1 year buckets, the bank has a negative gap. The overall gap of ICICI bank stood at a positive Rs 58182 million. But, in the year 2010-11, ICICI bank has a positive gap only in 15-28 days bucket and a negative gap in 1-14 days, 29 days to 3 months, 3 months to 6 months and over 6 months to 1 year time bucket. But due to huge volumes of positive gap in over 3 years to 5 years and above 5 years' time buckets, the overall gap of ICICI bank stood at positive Rs 158954 million.

During the year 2011-12, ICICI bank has a positive gap in 1-14 days and 15-28 days buckets. The bank has huge volumes of negative gap in the time buckets 29 days to 3 months, 3 months to 6 months and over 6 months to 1 year. There is a continuous increase in the negative gap in these time buckets. However, the banks overall gap has been positive due to the huge volumes of positive gap in over 1 year to 3 years, over 3 years to 5 years and above 5 years' time buckets. In the year 2012-13, ICICI bank has a positive gap in 1-14 days and 15-28 days buckets and a negative gap in 29 days to 3 months, 3 months to 6 months and over 6 months to 1 year time buckets. Surprisingly, ICICI bank has a positive overall gap of Rs 236880 million and this is mainly due to the huge volume of positive gap in over 1 year to 3 years' time bucket. The year 2013-14 follows the same pattern as the previous two years wherein the bank has positive gap in 1-14 days and 15-28 days buckets, but, a negative gap in 29 days to 3 months, over 3 months to 6 months and over 6 months to 1 year buckets. Like in the case of the previous years this year also ICICI bank has an overall positive gap of Rs 290516 million.

VI. Conclusion

Bank of Baroda and ICICI bank were exposed to interest rate risk during the period of study 2009-2014. A few strategies that the banks can implement to mitigate the interest rate risks to attain a desirable gap position are discussed. To reduce a negative gap, the banks can reduce the maturity of the investment portfolio, or increase long-term deposits, or increase short-term lending or increase floating rate lending. To reduce a positive gap, the banks can extend the maturities in the investment portfolio, increase floating rate deposits, increase short-term borrowings, increase long-term lending or increased fixed rate lending.

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