

# Interest Rate Risk - A Comparative Study of Public and Private Sector Banks in India

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## Abstract

The Indian banks are exposed to so many risks like interest rate risk, liquidity risk, credit risk and exchange rate risk which affect the net interest income and profitability of the banks. This paper is aimed at measuring interest rate risk in public and private sector banks in India with the help of gap analysis. It is also found whether there is any difference in the level of interest rate risk in the selected public and private sector banks of India. The findings revealed that both the private sector banks and public sector banks are exposed to interest rate risk.

**Keywords:** Private sector banks; Public sector banks; Gap analysis; Assets-Liability mismatch

## Introduction

These days, The Indian Economy is going to be a world class economy. The Indian banking industry is one of the most important parameter of the Indian economy which is also adopting new advancements in terms of technology, diversification and expansion. But it is also true that this sector is exposed to so many risks and interest rate risk is one of them. Financial transactions are fraught with ample risk not only because of changes in exchange rates but because of changes in interest rates also. With growing preference for floating interest rates since 1980s, the interest rate risk or exposure has become more significant. Interest rate risk is the risk to earnings or capital arising from movements in interest rates. Sometimes it moves in the favour of the lender, but then the debt burden of the borrower gets bigger. When it moves in the favour of the borrower, the lender has to suffer loss on account of interest. So in banking sector interest rate risk is considered the most important area which affects earnings and liquidity in banks. So it is necessary for the management of the bank to focus on the methods to measure this risk accurately and then do sound efforts to mitigate this risk.

## Literature Review

Carter David A examines that interest rate derivatives can be used to mitigate the exposure of interest rate risk in banks [1]. He measured the level of interest rate risk by considering the absolute value of the 12-months maturity gap analysis. Dhanani A determined various factors like interest rate fluctuations, use of borrowed funds etc. due to which interest rate risk arise [2]. He found that UK companies should hedge their interest rate risk to manage volatility in their profit and cash flows. Shashi Srivastava measured interest rate risk in SBI and ICICI bank and found that SBI is more exposed to interest rate risk as compared to ICICI bank [3]. He analyzed interest rate exposure by using various methods like assets-liability mismatch, gap analysis and sensitivity analysis and suggested to use interest rate derivatives to hedge this risk. Reeta analysed the measurement and management tools of interest rate risk used in Indian firms [4]. She found that interest rate risk is considered the most important risk in Indian firms and maximum firms use gap analysis and Maclay's Duration analysis to measure the level of interest rate risk. She also discussed various factors like monetary policy, inflation rate and fluctuations in money market which are responsible for interest rate changes.

VN Prakash Sharma examined the effect of interest rate changes

on net interest income and on profitability of the Bank of Baroda and ICICI bank [5]. She used earning sensitivity analysis, duration gap analysis and rate adjusted gap to measure the level of interest rate risk.

## Objectives of the Study

- ❖ To discuss the importance of interest rate risk in Indian Banks
- ❖ To compare the level of interest rate risk using Gap Analysis in selected public and private sector banks.

## Research hypothesis

$H_0$  There is no significant difference in the level of interest rate risk in public and private sector banks in India.

$H_1$  There is significant difference in the level of interest rate risk in public and private sector banks in India.

## Research Methodology

The study is analytical in nature. In this paper efforts are done to find out the prevailing level of interest rate risk in the Indian banks. For analysis top 5 banks are selected from public sector as well as from private sector on the basis of sales maximization and value of assets. The study is based on secondary data which has been collected from Indian Banking Association (IBA), Reserve Bank of India, moneycontrol.com, annual reports of the banks and Capita-line Plus database. Data is compiled for the financial year 2011-2015. Assets-Liability Mismatch and Gap analysis have been done to measure interest rate risk. Independent t-test has been used to evaluate the significance of results. SPSS and MS-Excel are used for analysis [6].

## Analysis and interpretation

**Asset-liability management:** For banks and financial institutions assets and liabilities are most important factors which get affected

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because of interest rate changes. So doing proper match of assets and liabilities are advisable to mitigate the effect of interest rate changes. In the balance sheet of banks balances with banks and money at call, investment and advances are given at the assets side and in liabilities side deposits and borrowing are shown. When interest rate rises, it will affect both the assets as well as the liabilities. Now what will be the overall impact of this interest rate rise it depends on the total amount of assets and liabilities which a bank has? If interest rate sensitive assets of a bank are more as compared to interest rate liabilities then this interest rate changes will be beneficial for the concerned bank and vice versa. Here in the Table 1 interest rate sensitive assets and interest rate sensitive liabilities are shown of the selected private and public sector banks. The researcher compared the Rate Sensitive Assets (RSA) and Rate Sensitive Liabilities (RSL) of private sector banks with the public sector banks and found gap analysis which is shown with the help of Figure 1. Mean value of RSA and RSL are calculated for the financial year 2011-15 to evaluate the overall gap of public and private sector banks. Table 1 and Figure 1 show that except Bank of India (Rs. -1813 cr.) all selected banks have RSA>RSL, it means they all have positive Gap and any changes in interest rate will positively affect the banks' net interest income and profitability [7]. But in case of Bank of India profitability will be affected negatively due to any changes in interest rates so it has to use some hedging techniques to mitigate interest rate exposure. In public sector banks SBI has the highest gap i.e. Rs. 607680 cr. and in case of private sector banks ICICI bank has the highest gap of Rs. 428111 cr (Table 1 and Figure 1).

Table 2 shows year wise gap analysis of each selected bank for the period of 2011 to 2015 and it shows the fluctuations of assets and liabilities throughout the research period. This table depicted that on an average all the banks either private or public (except Bank of India) have positive gap in maximum years. In 2011 three public sector banks (Punjab National Bank, Canara Bank and Bank of India) have negative value of gap. In case of private sector banks not even a single bank has negative gap in any year which is a symbol of appropriate assets-liability management.

**Descriptive statistics and hypothesis testing:** This paper is aimed to compare the level of interest rate risk using gap analysis in private and public sector banks so mean and standard deviation are calculated of public and private sector banks using SPSS which is shown in the Table 3. Here it shows that there is a difference in the mean value and the standard deviation of private and public sector banks. To check the homogeneity of variances of public and private sector banks Levene's test has been used and to check the significance of the mean difference independent t-test has been applied with the help of SPSS. Table 4 depicts that significance value under Levene's test is 0.591>0.05 so t-test assuming equal variance is applicable here. Result of t-test using equal variance shows that t statistics of 0.209 (Sig. 0.840>0.05) indicate that there is no significant difference in the level of interest rate risk in private and public sector banks which means that the interest rate risk is the most important risk for public and private sector banks and both the sector are doing proper assets-liability management to make their

Interest Rate Sensitive Assets and Liabilities (Mean Value computed in Crores for Financial Years from 2011-2015)										
Assets/Banks	ICICI	HDFC	AXIS	KM*	INDUSIND	SBI	PNB	CB*	BOI*	BOB*
Balances with Banks and money at Call+	175351	92453	87748	15657	33806	454254	160361	175461	319327	765286
Investments +	1658483	1134874	1049625	246935	188399	3705005	1285659	1158001	1002368	1028864
Advances +	2973135	2527237	2040566	472132	458881	10359540	3148962	2634075	3048112	3338621
Total RSA	4806969	3754564	3177939	734723	681085	14518799	4594982	3967538	4369807	5132771
Liabilities										
Deposits+	2934384	3139346	2530684	505518	530961	12303043	4073645	3741819	4015644	4701296
Borrowings +	1444474	311799	468680	147551	118094	1608077	404360	205945	355976	289075
Total RSL	4378858	3451145	2999364	653069	649055	13911120	4478005	3947764	4371620	4990371
GAP (RSA-RSL)	428111	303419	178575	81654	32030	607680	116977	19774	-1813	142401

Source: Capita-Line Data Base, Calculation done by Author

\*KM: Kotak Mahindra Bank, CB: Canara Bank, BOI: Bank of India, BOB: Bank of Baroda

Table 1: Assets-Liability Mismatch between private and public banks.

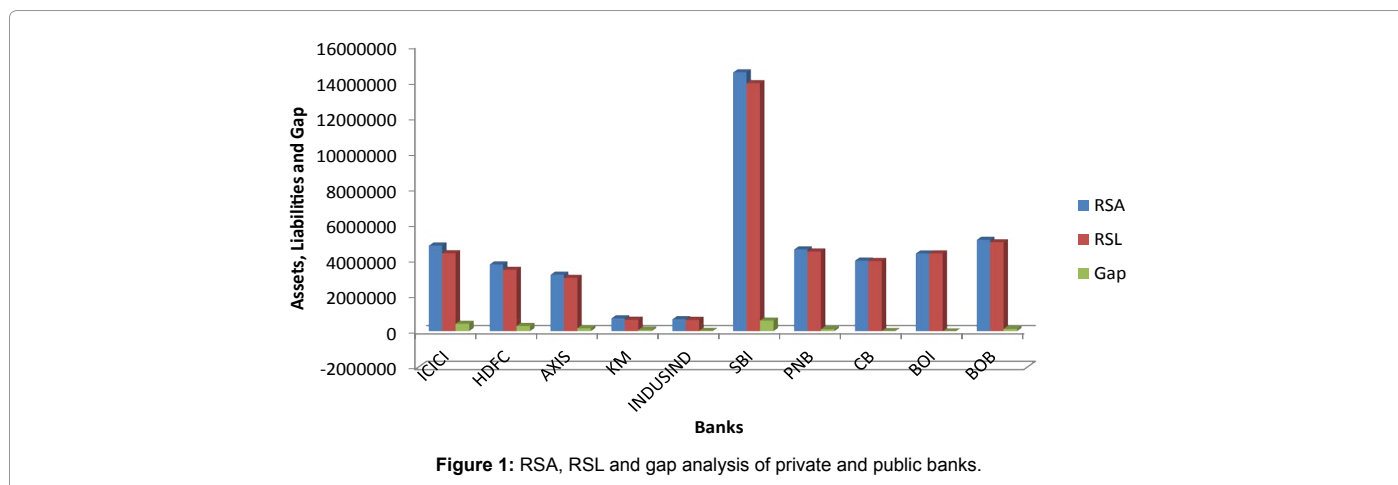


Figure 1: RSA, RSL and gap analysis of private and public banks.

Bank Wise Annual GAP Analysis in crores						
Banks\Year	2015	2014	2013	2012	2011	Average
ICICI	567737.3	487595.3	460527.1	333908.5	290785.8	428111
HDFC	447667.8	314128.8	347334.3	282966.2	124995.8	303419
AXIS	275058.4	235770.7	197816.8	120066.5	64162.6	178575
KOTAK MAHINDRA	119058.4	95759.3	73842.8	61320.6	58290.9	81654.4
INDUSIND BANK	56391.5	37560.7	39973.9	12283.8	13942.3	32030.4
STATE BANK OF INDIA	720877.1	786828.8	735615.3	522107.9	272968.9	607680
PUNJAB NATIONAL BANK	164768	165963.3	167602.5	99601.7	-13050.9	116977
CANARA BANK	25391.6	26172.1	64788.6	23523.9	-41006.5	19773.9
BANK OF INDIA	-9125.1	17932.7	-3574.2	49812.2	-64110.2	-1812.9
BANK OF BARODA	234256.1	196599.3	210636.9	46596.2	23915	142401

Source: Capita-Line Data Base, Calculation done by Author.

Table 2: Bank Wise Gap Analysis for the period 2011-2015.

	Banks	N	Mean	Std. Deviation	Std. Error Mean
GAP	Private	5	204758	162246	72558.7
	Public	5	177004	248485	111126

Table 3: Group statistics.

		Levene's Test		t-test for Equality of Means				
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
GAP	Equal Variances Assumed	0.312	0.591	0.209	8.000	0.840	27754.196	132716.6
	Equal variances not assumed			0.209	6.886	0.840	27754.196	132716.6

Table 4: Hypothesis testing using t-test.

gap value positive so the benefit of interest rate changes can be achieved and negative exposure can be hedged (Tables 3 and 4).

## Conclusion

Hence on the basis of the analysis done above it can be said that both the banks either it is private sector or public sector have been facing interest rate risk during the research period of the study but on an average except Bank of India all the banks have done their assets-liability management very well and they have positive value of gap throughout the research period and this thing has been proved by t-test also which shows that there is no significant difference in the level of interest rate risk in both sector banks. By doing this assets-liability management banks will be able to mitigate interest rate exposure up to a large extent and when their  $RSA > RSL$  they can always get benefit of interest rate changes in terms of increased net interest income which leads to increase liquidity and profitability of the banks.

## Research Implications and Future Work

This study is helpful for the selected banks for research to evaluate their performance and to develop some other innovative techniques to measure and manage interest rate risk. This study will also provide help to govt. to evaluate public sector banks and to instruct the officials of the public sector banks (in this research Bank of India has negative gap) to focus on proper assets-liability management to convert negative gap into positive. This study is done at small level by selecting 5 sample banks from private sector and 5 sample banks from public sector, in future this research can be done at large level by selecting all the banks of private sectors and public sectors to get more specific results. The research period of the study also can be expended to do further research.

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