INTEREST RATE SENSITIVITY MANAGEMENT IN SELECT COMMERCIAL BANKS IN INDIA

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Abstract

Commercial banks play prominent role in the process of bring economic development in the nation. In the process of providing various financial services to the needy institutions and individuals the commercial banks are the major traditional financial institutions in India. The Indian banking industry have been implementing diversified strategies to curb the impact of risk in liquidity, credit, exchange, interest rate in order to maximize the bank's Net Interest Income (NII) which is the basic source of a bank's profitability. The pricing of assets and liabilities have been influenced by the certain factors of deregulation in interest rates and operational flexibility in the banking system on Interest Rate Risk (IRR).The present research outlines mainly on the measurement of interest rate risk in public sector banks which include Bank of India and Andhra Bank and Private sector banks which include Axis Bank and HDFC Bank using the GAP analysis model.

Keywords: Economic development, Interest rate, Income, liquidity and profitability.

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 significant 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. The asset-liability management techniques includes Traditional gap analysis, earnings sensitivity analysis, duration gap analysis are used to measure the changes in interest rates.

Objectives of the study

The present study attempts to assess the interest rate risk carried by the select commercial banks from 2006-07 to 2015-16.

Research Methodology

The present study has used analytical research design to measure the interest rate risk in Bank of India, Andhra Bank, Axis Bank and HDFC Bank. The study is confined to secondary data only. The secondary data has collected from the annual reports of Bank of India, Andhra Bank, Axis Bank, HDFC Bank, Journals and RBI website.

Analysis and Interpretation

The study used 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 means it is difference between the rates sensitive assets and liabilities 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 Net Interest Income 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
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- 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.

Measurement of Interest Rate Risk

TABLE-1: Maturity Gap Report of Bank of India

(Rs. In Millions)

Years	Time buckets							
	1-14 Days	**15-28 Days**	**29 – 3 Months**	**3- 6 Months**	**6 – 12months**	**I – 3 years**	**3 – 5 years**	**Above 5 years**
2006-07	-1249736	-750677	-78877	-803246	-192741	-953241	622280	2769646
2007-08	-402784	-648540	655011	-176304	-451416	-534824	308421	1179248
2008-09	132756	-490588	476038	-1805194	-944642	-410643	376754	2242107
2009-10	1320255	-593119	-2364380	-1483455	945722	-1084437	2232957	3117562
2010-11	-979190	-769388	1538823	-1982373	-3236780	-370002	246029	2879829
2011-12	-1059513	-1310839	1589426	-931444	-2404454	2750435	570751	48892639
2012-13	-1047983	-1578205	4034907	-1556238	-4138585	-2061068	762718	1285097
2013-14	-1260442	-1268169	3142029	-3886963	-4602435	-27,95,816	216986	3582605
2014-15	-740217	-3084460	-504833	-4758484	-3486464	195013	14,05,731	2212274
2015-16	-740217	-3084460	-504833	-4758484	-3486464	195013	14,05,731	12414009

Source: GAPS's in various time buckets of Bank of India

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 India has a negative gap in 1-14 days, 15-28 days, 29-3 months , 3-6 months ,6-12 months and 1-3 years time buckets respectively. There has been fluctuated in the gap over the study period. Bank of India has positive gap in the time buckets of 3-5 years and above 5 years respectively. 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.

TABLE-2: Maturity GAP Report of Andhra Bank

Years	Time buckets							
	1-14 Days	**15-28 Days**	**29 – 3 Months**	**3- 6 Months**	**6 – 12months**	**I – 3 years**	**3 – 5 years**	**Above 5 years**
2006-07	3500	1797	-98936	322	-1007716	-735068	421925	835767
2007-08	48003	15976	1183	-436517	-796899	1230192	523471	1166894

2008-09	49085	-58333	65797	-972463	-828659	-822216	647035	1513557
2009-10	-13594	-17288	623448	-1295476	-1149285	2006367	1825641	302684
2010-11	127582	-50224	-46381	-1372926	-2384010	-867640	697880	403534
2011-12	-501388	-4500	-433523	-724551	-2694586	3887291	1433952	2822700
2012-13	-501388	-4500	-433523	-724551	-2694586	3887291	1433952	3578917
2013-14	-777132	4212	-2121633	-1691372	-2181328	4341850	1791421	1752267
2014-15	-1020043	-474399	-1291059	-1594915	-3030229	3590776	-139806	3625555
2015-16	-617290	-265168	-852281	-1973630	876664	-1830567	1607525	4038023

Source: GAPS's in various time buckets of Bank of India

The above table contains various maturity buckets for the period 2007-16. In the year 2009-10, Bank of India 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 and 1year to 3 years time buckets respectively. There has been a huge increase in the gap in over 6 months to 1 year time bucket compared with the rest of the time maturity buckets. The gap has increased from Rs (-796899) 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 India 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 have been wide fluctuations in the gap during the period of study. Bank of India had an overall negative gap. Again, during years 2012-16 was no exceptional as Bank of India continued to have a negative gap trend 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 India was also negative. There has been a continuous increase in the negative gap except in 3- 5 years and above years time buckets respectively. Hence, it denotes that bank of India has high amount in terms of short-term liabilities compared with the short term assets.

TABLE-3: Maturity GAP Report of Axis Bank

Years	Time buckets							
	1-14 Days	**15-28 Days**	**29 – 3 Months**	**3- 6 Months**	**6 – 12months**	**I – 3 years**	**3 – 5 years**	**Above 5 years**
2006-07	-136433	-131914	-331603	-571204	-603516	-1661675	637279	819077
2007-08	51277	-30410	-206136	-562348	-670701	-1223293	1208774	1210075
2008-09	-122139	633818	-1576617	-1109628	-1038235	297473	1685320	1635298
2009-10	-246804	108037	-235193	-19347706	-1345857	-105088	1669769	1669769
2010-11	90827	-238254	-1962702	-791906	-3065697	1940319	-100264	379289
2011-12	-626361	-331363	-1948583	-2015816	-4532945	3429472	-1128849	2047257
2012-13	836567	-172695	1475810	-2349644	9052271	2400146	1162708	2072244
2013-14	258328	-354940	-1033607	1296863	-3443813	4355894	988941	4028087
2014-15	637012	-228895	-794349	-1276422	-3135353	-1634821	2496917	5657352
2015-16	1977795	-770358	-560443	-3100623	-6236405	1180401	2091345	2407217

Source: GAPS's in various time buckets of Axis Bank

The above table depicts the various maturity buckets of Axis bank during the period 2007-16. In the year 2007-08, Axis Bank has a positive gap in 1-14 days , 3-5 years and above 5 years time buckets respectively. Axis Bank had negative gap trend in the 1-14 days, 15-28 days, 29 days to 3 months, over 3 months to 6 months and over 6 months to 1 year buckets over the study period. The overall gap of Axis bank stood at a positive Rs 51277 million. But, in the year 2008-09, Axis bank has a positive gap only in 15-28 days bucket, 1-3 years 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 Axis bank stood at positive Rs 4028087 million. During the year 2012-13, Axis bank has a positive gap in 1-14 days, 29 over 3 months,6 months over 1 year, 1 year over 3 years and above years maturity buckets respectively. 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 2014-15, ICICI bank has a positive gap in 1-14 days. 3 years over 5 years and above 5 years and a negative gap rest of the time buckets. Surprisingly, Axis bank has a positive overall gap of Rs 5657352 million and this is mainly due to the huge volume of positive gap in over above 5 years' time bucket. Axis Bank has the same pattern as the previous two years wherein the bank has positive gap in 1-14 days, 1 year over 3 years and above 5 years buckets, but, a negative gap in the remaining maturity buckets. Hence, in this analysis shows that positive gap will support the bank to maintain large amount of profitability by the bank. However, negative gap will leads to reduce the financial strength of the bank.

TABLE-4: Maturity GAP Report of HDFC Bank

Years	Time buckets							
	1-14 Days	**15-28 Days**	**29 – 3 Months**	**3- 6 Months**	**6 – 12months**	**I – 3 years**	**3 – 5 years**	**Above 5 years**
2006-07	38597	-208964	-197961	266558	563484	-238240	111240	288156
2007-08	1214575	-272616	-290010	-141509	722815	-910125	36161	227100
2008-09	1395817	129658	595877	39573	672441	-2032368	-459232	-144261
2009-10	261298	160415	708399	720431	73134	-560811	-313630	-269416
2010-11	-255732	220691	666985	636096	1636351	-1269417	-312160	-90973
2011-12	1926190	150867	147949	20562	1486060	445291	1650186	-3337655
2012-13	1619236	-115577	612938	445978	1670829	1473627	1471808	2584853
2013-14	2269005	-661147	-1261845	835835	1139113	-635154	274343	-6684397
2014-15	3648294	852515	2110264	653347	-1822768	-2623684	1659443	11746915
2015-16	-307113	421456	-1188141	-418206	-703437	-3021524	658127	5013343

Source: GAPS's in various time buckets of HDFC Bank

Table-4 portrayed the details of various maturity buckets for the period 2007-16. In the year 2009-10, Bank of India has a negative gap in 15-28 days, 29 days to 3 months, over 1 year to 3 years time buckets respectively. There has been a huge increase in the gap in above 5 years time bucket and rest of the time maturity buckets have positive gap trend. The gap has increased from Rs (-255732) million in above1-14 days to Rs (-3337655) million in above 5 years bucket. However, the overall gap of HDFC Bank is negative. During 2010-11, the bank has a negative gap in 1-14 days, over 1 year to 3 years, over 3 years to 5 years and above 5 years time buckets. There have been wide fluctuations in the gap during the period of study. HDFC Bank had an overall positive gap. Again, during years 2012-16 was no exceptional as Bank of India continued to have a negative gap trend 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 HDFC Bank was also positive. There has been a continuous volatility in the positive gap except in 1- 3 years and

above 5year's time buckets respectively. Hence, it denotes that bank of India has high in terms of short-term assets compared with the short term liabilities. HDFC Bank has significant view on the short term assets and short term liabilities during the study period.

SUGGESTIONS

The proposed suggestions of the present paper are;

- Bank of India possessed the negative gap trend in all maturity buckets except over 1 year to 3 years and above 5 years. If any changes occur in the interest rates of the banks that will shows impact on the profitability of the bank. It states that bank had fewer amounts of short term assets. It is better to implement effective strategies to maintain large amounts of assets in order to maintain more profitability in their hand.
- Andhra Bank had positive gap in over 1 year to 3 years and above 5 years and rest of the time buckets were registered ups and downs in the gap. Negative gap influence the over the profitability position of the bank and it shows impact on maintenance of fewer amounts of funds by the bank. Hence, bank has to analyse properly and take effective steps to maintain more funds in the bank to meet short term obligations.
- Axis Bank has huge amount of negative gaps in the all maturity buckets except the above 5 years. It states that the bank is not in position to maintain more fund to meet short term obligations of the bank. It is better to diagnose the external conditions of the banks and nation to implement suitable strategies in prompt manner to bring more profitability by the banks.
- HDFC Bank registered fluctuated positive gap in all the maturity buckets during the study period. It denotes that the bank possessed the higher amount short term assets. It states that the banks have maintained the adequate funds to meet short term obligations of the bank.
- This analysis shows that the positive and negative gaps will influence the measurement of interest rate risk of the banks. Hence, banks have to implement proper steps to maintain the sound profitability.

Limitations

- ❖ The study excludes from its purview the Foreign Banks; Regional Rural Banks (RRBs), Urban Cooperative Banks (UGBs) and other Non- Banking Financial Companies (NBFCs).
- ❖ Information which is based on the secondary data may suffer from all the limitations inherent with such data.

- The present study is based on the internal data, all the information, which could have been useful for the research work may not have been supplied by the data sources due to the secrecy norms of the banks, and thus, the results are based on the available information only.
- Four banks alone constituted the sample for the present study to analyze interest rate measurement in CBs, whose results may be generalized as applicable to commercial banking industry in India.

VI. Conclusion

Banks of India, Andhra Bank, Axis Bank and HDFC Bank were exposed to interest rate risk during the period of study 2007-2016. A few strategies that the banks can implement to mitigate the interest rate risks to attain a desirable gap position are discussed. It may concluded that 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. Whereas to maintain 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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