

IMPLICATIONS OF INTEREST RATE RISK IN INDIAN COMMERCIAL BANKS

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ABSTRACT

Recently, due to various scams existed in the banking sectors, The Reserve Bank of India clearly stated that there is a necessity to carry-out the study on the subject of “Risk Management in Banks” and has issued a number of regulations covered with the various aspects of risk management, The measurement of interest rate risk is essential to establish the risk management process in commercial banks. The prudence level of interest rate risk is an essential determination for all the risk management process.

1.1 INTRODUCTION

The entry of risk management in 1943 started with publication of the first risk management paper title “The Impact of the War on Work-men's Compensation Underwriting and Loss Prevention". The importance of risk management and idea to measure the emerged risk began after the completion of World War II, (1939 to 1945). Development of the banking sectors and emerging of the latest technology paved way for analyzing various techniques such as econometric techniques and different models for the measurement of the identified risks. These techniques and models became the point of inception for all the risk management process for identifying the total losses to avoid bankruptcy. The field of risk management and methods of measuring the risk has undergone an enormous change since the past 40 years and there are several attempts to quantify the interest rate risk and its measurement for the financial institutions by the previous researchers in order to give the exact application of the interest rate risk.

Recently, due to various scams existed in the banking sectors, The Reserve Bank of India clearly

stated that there is a necessity to carry-out the study on the subject of “Risk Management in Banks” and has issued a number of regulations covered with the various aspects of risk management,. Appropriate risk and there are directions defined by the RBI. The risk and revenue potentials or considered to determine a trade off to measure the risk and to give the solutions for the risk such as credit risk, liquidity risk, market risk, operating risk, interest rate risk and has appointed necessary regulatory bodies for monitoring in regular intervals the progress of the banks in India through the implementation of appropriate risk guidelines issued by Reserve Bank of India.

Banks in India need to better equip themselves to the updated trend to face the competition and manage risk for which the Banks require a proper risk management and measures essential for its survival and allocate their resources to various risk units based on a trade-off between risk and revenue potential. The managers of the banks shall regulate important risk policies necessary for quick identification, measuring, and monitoring the prevailing risk in banks.

EMERGING OF INTEREST RATE RISK

In the late 1950s and 1960s the commercial banks are showing special interest to measure the implications of credit risk and liquidity risk because of the conspicuous role in earning the profitability of banks. At that time many bankers realize the role of interest rate risk which is affecting their profitability and they were in the unprepared position to face the risk in that financial institution. Therefore in 1970s RBI has given special regulations to reduce the risk in the blanks and also strategies to increase their profitability Deposits were accepted at mandatory rates and loans were sanctioned at legally declared rates and maintained unaffected by market pressure. In the midst of market pressure the commercial banks started accepting the deposits at the legal rates simultaneously disburse the loans in a rational rate.

These scenarios create their existence for bank interest rate risk. Banks accepted numerous deposits from different financial institutions in this country based on the size of the assets and liabilities as well as the wallet realities of the assets deposited in the banks. At the same time banks are duty-bound to regulate the lending rates for the borrower years as well as lending rates for the depositors. Therefore it is compulsory for the banks to manage this scenario of interest lending to measuring the interest rate risks involved in these transactions. They frequently

change the interest rates to the customers, the challenges of interest rate risk as well as to concentrate more on growth orientation of the banks. Therefore the banks frame their own strategies to meet out the consequences of interest rate risk in these deposit mobilization as well as credit operations.

These banking operations of accumulation of assets and settlement of all liabilities severely demand the existence of interest rate risk in the banks. They are able to monitor the adverse movements of interest rate risks during these banking transactions. The interest rate risk arises from the consequences of profitability, loose of shareholders source of profitability, shareholders value and risk involved in the interest lending. These sources of profitability and risk involved in this transaction or able to do serious threat to the banks especially in dealing with capital involved in the banking system. The continuous changes in the interest rate would affect the earnings of the banks. These significant effects can also be noticed in the profitability of banks. It is a direct correlation with interest rate expenses as well as income and overall operating expenses of these banking operations.

MEASUREMENT OF INTEREST RATE RISK

It is necessary to measure the risk at different stages in the banks. Before venturing in the measurement of risk it is very important to identify the risk and its respective quantification. Look thorough investigation of balance sheet through light upon the betterment of risk. Directly A bank cannot measure the current existence of risk as well as to frame a strategy to manage the risk and their consequences. Hence the blanks required separate risk management strategies and techniques to measure the risk. These strategies are completely based on observations of balance sheet of the banks for the span of certain significant number of years.

There are some complexities in the measurement of risk using the techniques namely static simulation method under dynamic risk modeling techniques which are completely based on futuristic projection of growth and development of banks. These are risk management measurements and techniques are based on numerical a ratio which was introduced by Euclid in 300 BC.

The ratio measurement of return on asset completely based on the measurement of risk through profitability information of banks. The risk measurement also involves the measurement of net

income after profitability which can be considered as the correlation value with the average total cost. An increase in the ratio explains the banker's capability of using the deposits in full use of their resources. Investment deposit ratio measures the investment made by the banks from the total deposits. Increase in the ratio explains the safety and security of Banks position and is more focused by the investor, depositor, and shareholder.

Non-interest income to total asset is considered to be a bank's business model whose primary source of income is interest and asset is cash. Interest rates are high sources of non-interest income shall be lowered and makes easy for the banking customers to choose one bank over another. Burden to interest income often lead to the need for expanded non-interest income and typically shown as the difference between operating expenses and other income over interest income.

1.2 REVIEW OF LITERTURE

Raymond Chaudon(2020). This particular study focused on measuring the effectiveness that exists between decreasing the interest rates and net interest margins. This particular study is conducted over Dutch banks during the period of late years from 2008 to 2016. It is absorbed from the research that there is a significant difference between net interest income and maturity transformation of deposits. During this process the residual part is able to represent the power of the market, risk involved in the market and nature of interest rate risk involved in these operations. The compensation of risk depends upon the net interest margins and loss in income during the period of maturity transformation.

Noor Ulain Rizvi, Smita Kashiramka (2018). The main aim of this study is to develop a theoretical expression for the Basel III norms imposed on Indian banking system. This system depends upon interest rate risk, credit risk involved in the banks and their respective consequences over their financial performance. This study in fact compares the risk involved in the pre-and post-financial crisis and also compares the different of phase's implementation in the 36 listed banks in India. The study revealed that I capital adequacy required for all the banks is able to exhibit your positive correlation with gross non-performing assets and net interest margin. The study concluded that the banks are duty bound to enhance the risk management strategies with respect to the factors of interest rate risks.

Raymond F.D.D. (2018). These authors thoroughly investigated the existing risk positions affecting the performance of Dutch banks during the financial years 2008 to 2015. The authors observed that due to the ageing process where you interest-rate risk became conspicuous and affected the profitability of the banks. The concept of maturity transformation transformed net interest margin on their return on assets to interest rate risk in the banks. The authors also suggested that diminishing the size of interest-rate risk is able to increase the performance of the banks through government assistance during the period of financial crisis.

Jacob A. Bikker(2017) . In another empirical study the authors are able to measure the impact of low interest rate situations in the banks of United States of America on the profitability and interest-rate risk. Since it is an empirical paper they are able to exploit dynamic and static modelling approach for the estimation of interest rate risk even though the banks lend money for low-interest environment. The low interest rate risk also affect the bank performances and able to give pressure on net interest margins during the operations of banking.

Zangina Isshaq(2019). This study mainly focused on examining the various determinants involved in the non-interest income as well as risk return trade-offs. It also encounters with the problem of correlating medium-term profitability and profitability existence to cost efficiency measurement process. It is able to founder the profit generating approach from the non-interest income and the volume of loans. The liquidity services also playing a very important vital role in measuring the interest rate risk. The study concluded that the launch banks under the profitability are able to change the non-interest income during the crisis period.

Jeevan Jayant Nagarkar(2015). These authors simultaneously measure the performance of the major public and private sector as well as foreign banks including the period of crises. They applied the principle component method analysis and other financial parameters based on the ratio analysis. It is concluded from the research that the commercial banks or leaning upon as well as non-performing assets and objectives of the elected government the national level banks or able to maintain themselves based on the directions of the elected governments which is affecting the financial performance unable to bear more risks.

Arun Prakash(2016) This particular study measured the relationship between net interest margin and the interest rate risk involved in 43 public and private sector commercial banks

during the period of 10 years from 2003 to 2014. They have used to linear multiple regression analysis to measure the influence of return on investment, operating profits to total assets on provisions and contingencies to total assets. These total asset ratios are able to determine the existence of interest-rate risk in public and private sector commercial banks.

Chelik(2019) This particular study focused on estimation of market risk, exchange risk and interest-rate risk for the period of 17 years from 2000 to 2019. These periods were segmented into two groups namely pre crisis period from 2000 to 2018 and the post crisis period from 2010 to 2019. This particular research is conducted over all the banks in Turkey. This result is completely based on analysis namely risk betas for the measurement GARCH model. The authors particularly shows rolling window estimation to determine the existence of three different risks namely interest-rate risk profitability risk and financial performance risk.

Paul, Pascal (2020). These authors investigated the sources of risk and its inhabitants from the linking process of the banks stop the short-term interest changes in bond banks or mainly due to the structure of the balance sheet and its avoidance of lending risks. The study concluded that the profitability of Guangxi is able to reflect the interest rate risk compensation of the banks and advanced stock prices. The stock prices become highly volatile than the change in the interest-rate risk creating significant impact on cash and values. In fact they used unconventional monetary policies and risk exposures to exactly measured the interest rate risks.

Haupt.J.V (1991) This particular study evaluated the performance of commercial banks in United States of America through the measurement of interest-rate risk and the assets of the banks. It is followed from the study that the fundamental element of banking transaction is depending upon adequacy capital ratio of the banks. It is further identified that the level of interest-rate risk of commercial banks difference of Paul interest lending process. The author in fact to develop the basic screening model for comparing the interest-rate risk of the banks and capital adequacy ratio.

1.3 GAPS IN THE LITRATURE

The national and international literature argued that risk existing in Private sector banks is not a unique phenomenon but it is a conglomeration of various risks like interest rate risk, credit risk,

operational risk, market risk and liquidity risk. None of the studies addressed the issues regarding establishing the required procedures as well as the policies for measuring the interest rate risk and to manage it. Therefore, the present research work focuses microscopically analyzing various components of interest rate risk in Banks for creating special policies and procedures.

1.4 SCOPE AND LIMITATION OF THE STUDY

1. The study is restricted to only one Private sector bank in India .
2. The study considered only Interest rate risk and has ignored other types of risks prevailing in the considered bank in India

1.5 OBJECTIVE OF THE STUDY

To identify interest rate risk involved in Banks and tools applied for measuring the same.

1.6 HYPOTHESIS

There is no significant difference in interest rate risk for the span of five years 2015-16 to 2019-20

1.7 METHODOLOGY

The study is based on secondary data taken from the Annual reports of Private sector Bank for measuring the identified interest rate risk ratios for the period 2015-2016 to 2019-2020. The various information's in this paper is obtained from latest journals and magazines.

1.8 DATA ANALYSIS

After studying the past reviews on interest rate risk, the author used selected ratios such as credit deposit ratio, investment deposit ratio, return on asset ratio, non interest income to total asset ratio, net interest margin to total asset and burden to interest income ratio along with the formulas for measuring the interest rate risk prevailing in Private sector which is a new entry among the Private sector Banks in India.

1.9 ANALYSIS AND INTERPRETATION.

Considered Bank , is a Private sector Bank in India and on 17 June 2015, the Reserve Bank of India granted the universal banking license to this Bank. The Banking operations were started from 23 August 2015, with 501 branches, 50 ATMs and 2,022 DSC. This Bank has its main branch in Kolkata, West Bengal. It has spread towards 34 states and Union Territories of India.

Presently, this Bank has 5,371 banking outlets and serves more than 2.30 crore customers. The study considered six important ratios based on the information from RBI and past reviews for measuring interest rate risk.

1. Credit deposit ratio is analyzed as increase in the ratio values relates to increases in the loan assets, created from deposits and vice-versa. The size of the lending bank taken in the study and the consequent credit deposit ratio only mirrors that reality and probably is not a causative factor (Narayan.D 2003).The following table analysis the credit deposit ratio performance of Private sector Bank.

Table: 1.1 Credit Deposit ratio

Year	Total advances	Total deposit	Credit deposit ratio
2015-2016	12437546.16	12088748.08	102.89
2016-2017	16839077.86	23228657.86	72.49
2017-2018	29713036.06	33869002.00	87.73
2018-2019	39643393.74	43231620.27	91.70
2019-2020	66629947.67	57081503.55	116.73

During the span of five years from 2015- 2016 to 2019-20, the credit deposit ratio showed a decreasing value from 2016-2017 to 2018-2019, when compared to the average value of 94.3%. Later in the year 2019-2020 the ratio showed an increasing trend. This proves that the Bank faced interest rate risk and later in the year 2019-2020 focused on using its entire resource efficiently showing a favourable sign by increasing the credit deposit ratio and earned high interest from the deposits.

2. Investment deposit ratio measures the successful bank's investment decisions to reduce the Banks debt situation. The banks consider their first priority to sanction loans from the deposits received from their customers to avoid interest rate risk. The following investment deposit ratio analysis establishes the performance of Private sector Bank.

Table:1.2 Investment deposit Ratio

Year	Total Investment	Total deposit	Investment deposit ratio
2015-2016	3758033.63	12088748.08	31.09
2016-2017	5516487.23	23228657.86	23.75
2017-2018	8371940.82	33869002.00	24.71
2018-2019	10037484.81	43231620.27	23.22
2019-2020	15351774.40	57081503.55	26.89

It is analyzed that the investment deposit ratio percentage showed an increase when compared to an average of 22.98% during the five years from 2015-2016 to 2019-202 and concluded that the bank maintained moderate ratio values as a good sign for maintaining a steady balance in interest rate rather facing interest rate risk.

3. Return on Asset Ratio is a profitability ratio that measures the net profit produced by total assets during a specified period. This financial ratio measures the percentage of profit a bank has earned from its total assets. The following return on asset ratio analysis and percentage analysis establishes the performance of the Private sector Bank.

Table 1.3 Return on Asset Ratio

Year	Return on Asset ratio
2015-2016	3.18%
2016-2017	4.46%
2017-2018	4.03%
2018-2019	4.25%
2019-2020	4.18%

It is inferred that the return on asset ratio shows a increasing trend from 3.18% in 2015-2016 to 4.25% in the year 2018-2019 and later the value decreased to 4.18%. The study shows that the bank maintained a moderate ratio avoiding interest rate risk by efficiently using the total assets to generate interest income and other income to avoid interest rate risk.

4. Non-Interest income to Total Asset ratio focus on reducing banking risks by diversifying their transactions across various lines of banking activities both profitable and non-profitable activities by increasingly the yield from non-interest income. The following ratio of non-interest income to total asset establishes the performance of Private sector Bank.

Table 1.4 Non-Interest incomes to Total asset

Year	Net Profit	Total asset	Non Interest income to total asset
2015-2016	328.58	16195.58	2.03
2016-2017	411.41	30236.09	1.36
2017-2018	706.18	44310.06	1.59
2018-2019	1063.05	56441.72	1.88
2019-2020	1549.20	91717.80	1.69

It is inferred from the above table, the ratio is decreasing from 2.03% to 1.69% in the year 2020. When compared to the average value of 1.71%, the study found that the bank faced interest rate risk in the year 2016-2017, 2017-18, and 2019-20. The study suggested that the banks shall target on the increasing their other interest income to reduce the existing risks in this ratio.

5. Net interest margin to Total Asset ratio spread over a number of years with different economic cycles related to the capability of the bank efficiently managing profitability during an adverse increase in interest rate scenarios.

Table 1.5 Net interest margin to total asset

Year	Net Interest Income	Total asset	Net Interest margin to total asset
2015-2016	932.84	16195.58	5.76
2016-2017	2403.05	30236.09	7.95
2017-2018	3032.24	44310.06	6.84
2018-2019	4495.42	56441.72	7.96
2019-2020	6323.91	91717.80	6.89

It is analyzed that the ratio of net interest margin to total asset has maintained its ratio without much fluctuation in their values. The study when compared to the average value of 7.08% the banks has increased its performance only to a minimal level and focused on reducing interest rate risk.

6. Burden to interest income ratio is measured by deducting Operating expenses and other income by interest income. The following ratio of burden to interest income analyses the performance of Indian overseas bank

Table 1.6 Burden to interest income

Year	Operating expenses	Other income	Interest income	Burden to Interest income
2015-2016	615917.53	149893.92	1581360.56	29.47
2016-2017	1022004.96	411413.44	3908709.15	15.62
2017-2018	1308310.34	706184.57	4802296.32	12.54
2018-2019	1810279.07	1063047.80	6643369.42	11.25
2019-2020	2426542.17	1549197.44	10885493.34	36.52

The above table explains the percentage of burden on interest income shows a decreasing level from 29.47% in the year 2015-2016 to 8.06% in 2019-20 when comparing with the average value of 15.39%. The study found that the bank has taken important measures to reduce its

operating expenses and has reduced its burden towards interest income and tried to maintain its interest rate risk.

1.10 FINDINGS

1. The credit deposit ratio showed a decreasing trend identifying the existing of interest rate risk from 2015-16 to 2018-19 and later increased in the ratio values in the year 2019-20 by efficiently using the entire resource.

2. Investment deposit ratio showed a decreasing trend identifying the existing of interest rate risk from 2015-16 to 2018-19 and later increased in the ratio values in the year 2019-20 by maintaining a steady balance in interest rate.

3. Return on asset ratio is a profitable ratio and an interest in the percentage explains the growth of the Bank. This ratio showed a increasing trend from 3.18% in 2015-2016 to 4.25% in the year 2018-2019 and later in the year 2019-20 the value decreased to 4.18% explaining th growth rate is decreasing and cautioned the bank to focus on the interest rate risk.

4. The Non-Interest income to Total Asset ratio is decreasing from 2.03% to 1.69% in the year 2020, This ratio is favourable only when the it shows an increasing trend. The study analysed that the bank faced interest rate risk in the year 2016-2017, 2017-18, 2019-20 .

5. The ratio showing an increasing trend up to 2017-2018 in net interest margin to Total Asset ratio was favourable, whereas in the year 2019-20 the ratio decreased cautioning the banks interest rate risk.

6. Burden to interest income ratio is favourable when the ratio shows a decreasing percentage, whereas in the study the ratio showed a decrease in the values till 2018-19 but increased in the year 2019-20 stating the bank is experiencing interest rate risk.

1.11 SUGGESTION

Banks shall concentrate on the various strategies and techniques for the measurement of interest rate risk and capital adequacy ratio to balance the growth and development of banks through financial performance. .The existing financial system in India is not supportive to the banks in

the present scenario therefore the banks are advised to have an independent body to measure the service and also to suggest the elected government the existence of risk which would create problems to the banks of the near future.. The banks are duty bound to have a meticulous observation over interest rate and that they should avoid the frequent changes in the interest rate these strategies will be useful for the banks to develop the cash flows and the more profitability with minimum risk. The banks shall avoid mismatching in the maturities, by holding longer term assets than liabilities failing which the banks may face interest rate risk resulting to economic loss and risk of insolvency. Banks shall appoint supervisors for assessing interest rate risk by measuring its informational requirements, calculating the risk measure and identifying outliers.

1.12 CONCLUSIONS

it is concluded from the research that interest rate is very important risk management strategies to manage the banks successfully and to develop their financial performance. The banks often change the rate of interest according to the directions of RBI in India and the banks in other federal banking systems in the world. The lending operations must be made transparent to all the customers and stakeholders in order to get more profit and less interest rate risk. It is concluded from the study that preferential conditions of all the banks in India are widely fragile due to the continuous change in the lending policies. The banks are widely fragile to acquire the interest rate risk Interest also they are ventured upon the strategies of increasing the profitability of the banks. Profitability alone would not reveal the best performance of the banks whereas interest free risk is the only powerful criteria to say that the banks are in very good condition and they have the potential benefits of growth and development as financial institution. It is also concluded from the study that the banks with powerful corporate governance and internal control system or free from interest rate risk and they are able to control the lending process. The deposit mobilization is also able to create significant impact on interest rate risk.

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