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IMPACT OF ASSET LIABILITY MANAGEMENT FOR THE GROWTH OF SELECTED PRIVATE SECTOR BANKS IN INDIA

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Abstract: *The bank plays an important role in mobilization of deposits and disbursement of credit to various classes of customers in the economy. The financial strength of the bank is the first line of defense against financial risks. The banks should be smart enough to protect themselves against the financial risks. As we all know the primary source of funds for the bank is coming from customers as deposits and majority of the deposits are short term in nature and results in shortest maturity period. On the other side banks usually provide loans which are long term in nature leads to longest maturity. The risk for the banks starts at this juncture. The situation of providing long term loan with short maturity funds is called as Asset liability mismatch and managing this mismatches by the bank is Asset liability management. The Asset Liability Management (ALM) process in a bank is multidimensional in nature. The objective of this research is to find the relative importance of rate sensitivity assets, rate sensitivity liabilities, interest sensitivity ratio, net interest income ratio, net interest margin ratio in managing the mismatches of the selected top 5 private sector banks in India like ICICI Bank, HDFC Bank, City Union Bank, Karnataka Bank and Lakshmi Vilas Bank. For this study, the secondary data has been collected from Capitaline between 2004-05 and 2013-14. For examining the asset liability management of the selected banks, Rate sensitivity assets, Rate sensitivity liabilities, Interest Sensitivity Ratio, Net Interest Income Ratio, Net Interest Margin Ratio and Gap Analysis have been calculated and to examine its impact with the help of mean, standard deviation and co-efficient of variation. The graphical representation of the result is also included in analysis. The research found that ICICI recorded positive gap and HDFC, Karnataka Bank, City Union Bank, Lakshmi Vilas Bank have negative gap. The study also suggested the Banks to take necessary steps to reduce the asset liability mismatches that will lift the bank to retain its market in the public.*

Key Words: *Asset Liability Management, Private Sector Banks, RSA, RSL, NII, GAP analysis.*

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1. INTRODUCTION

Asset Liability Management (ALM) is a comprehensive and dynamic framework for measuring, monitoring and managing the market risk of a bank. The management of (liabilities and assets) in a structured way so that the net earnings from interest is maximized within the overall risk-preference of the institutions is normally referred as ALM. The ALM has diverse functions which includes management of Credit risk Interest rate risk, Liquidly risk, Market risk and so on. The concept of ALM is of recent origin in India and it has been introduced in Indian Banking industry with effect from 1st April, 1999. ALM is dynamic in nature and it needs to be closely integrated with the banks' business strategy.

Banks provide various services which results in various kinds of risks also. The major risks associated with banks are credit risk, interest risk and liquidity risk. Asset liability management is an approach that provides institutions with protection and helps the bank to accept the risk at tolerant level. Asset-liability management models provide suitable strategies for bank's efficient management. The Reserve Bank of India (RBI) has implemented the Basel norms for the regulation of Indian banks which provided a framework for banks to develop sound ALM policies. It is a first step in the long-term strategic planning process so it can be considered as a planning function for an intermediate term.

2. RELATED REVIEWS

According to Prasad (2013), the Asset-Liability Management (ALM) is concerned with strategic management of assets and liabilities of banks, against risks caused by changes in the liquidity position of the bank, interest rates, and exchange rates, and against credit risk and contingency risk. The authors suggested that An effective ALM technique aims to manage the volume, mix, maturity, rate sensitivity, quality and liquidity of the assets and liabilities as a whole so as to attain a predetermined acceptable risk/reward ratio.

Amit Kumar Meena and Joydip Dhar (2014) reported in their research on the analysis and comparison of liquidity ratios and asset liability management practices in top three banks from public, private and foreign sector in India. The analysis is based upon the liquidity ratios calculation and the determination of maturity gap profiles for the banks under study. The research also compares these banks maturity gap profiles with their corresponding group's maturity gap profiles. Also, they identified the interest rate sensitivity of the balance sheet items of these banks to determine the gap between rate sensitive assets and rate sensitive liabilities. The results of this research suggest that overall banks in India have very good short term liquidity position and all banks are financing their short term liabilities by their long term assets.

Giokas, D., and Vassiloglou, M. (1991) Asset and liability management is one of the most important issues in bank strategic planning. In the past, this problem has often been addressed through conventional mathematical programming, *i.e.* linear programming. However, bank management typically involves several conflicting goals, such as the maximisation of returns, minimisation of risk, expansion of deposits and loans, etc. The complexity of this problem can be captured more adequately by multi objective mathematical programming. This paper discusses the construction and application at the Commercial Bank of Greece of a goal programming model that takes into account the essential institutional, financial, legal and bank policy considerations.

Narayanan (2014) observed that Asset-Liability Management (ALM) is a framework for measuring, monitoring and managing the market risk of a bank. Author further found in the research that all transactions of the banks revolve around to raise and to deploy the funds, ALM gains more significance as an initiative towards the risk management practices by the Indian banks. Author also inferred risks and maintaining Asset Quality so as to ensure profitability with the help of ALM techniques and the effectiveness of Asset Liability Management plays a vital role to the progress and development of the Indian banking sector in particular and the economy in general.

Clarke (2009) Asset/liability management is the art of structuring a bank's balance sheet to take advantage of the current environment and to be successful as the economy and interest rates change. This article focuses on the interest rate environment, which should be "Job One" for most ALCOs. In the fall of 2007, the subprime crisis surfaced and the economy began to weaken. On Sep 18, 2007, the Federal Reserve took the first step in what would be a substantial lowering of short-term interest rates. Liability-sensitive banks benefit as rates fall, as was the case in 2008, but experience a declining margin when rates rise. With all the problems facing banks, especially the largest banks, there are opportunities for the ALCO to consider, but also some unique threats. The past few years have kept ALCO members on their toes, but 2009 and 2010 may be the toughest test they have faced in three decades.

3. OBJECTIVES OF THE STUDY

- To explore the Asset Liability Management for the selected private sector banks in India.
- To identify the performance of the selected private sector banks through gap analysis.

4. RESEARCH DESIGN

The study considered top 5 private sector banks in India viz., ICICI Bank, HDFC Bank, City Union Bank, Karnataka Bank and Lakshmi Vilas Bank which are having the highest net profit during the study period of 2004-05 to 2013-14. The financial data have collected from Capitaline database.

5. TOOLS USED

The tools employed in this study to understand the impact of ALM in determinining the banks profitability condition are

- Rate Sensitivity Assets
- Rate Sensitivity Liabilities
- Interest Sensitivity Ratio
- Net Interest Income Ratio
- Net Interest Margin Ratio
- Gap Analysis

The statistical tools like mean, standard deviation, co-efficient of variation has also been used.

6. RESULTS AND DISCUSSION

6.1 Rate Sensitivity Assets

Assets held by a bank that are vulnerable to changes in interest rates. This change can occur either when the asset matures or when it is repriced according to an index rate. The value of these assets is adjusted according to the rise or fall of a published rate or index. Rate sensitivity assets have been calculated through the addition of advances and investments and the results are discussed in the following table.

Rate Sensitivity Assets = Advances + Investments

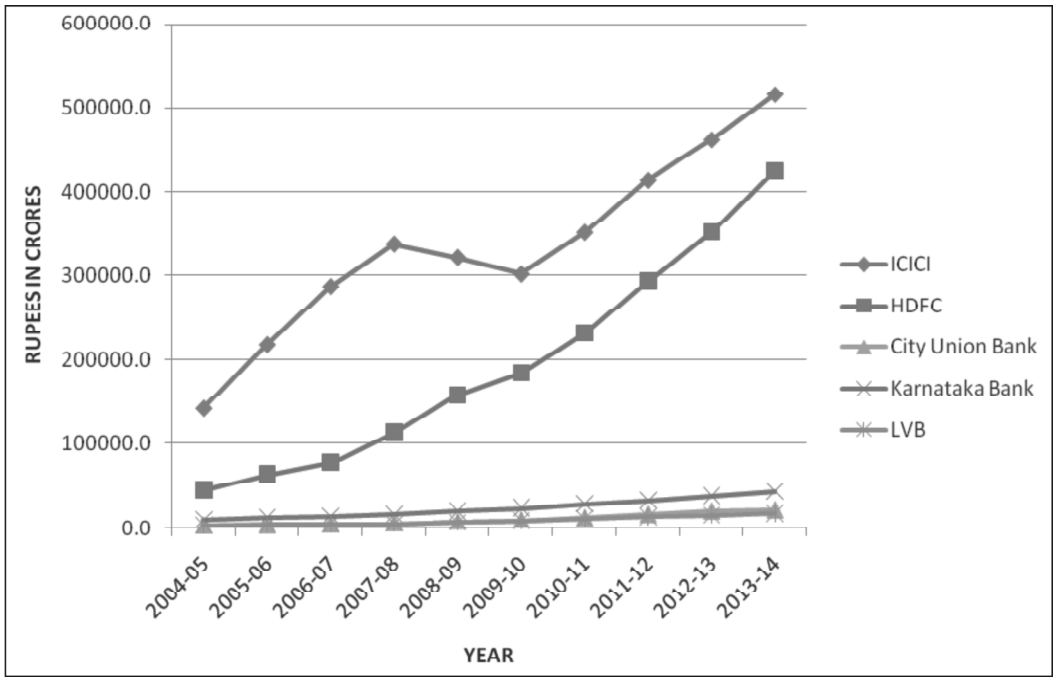
Table 1
Rate Sensitivity Assets (in Crores)

Year	*ICICI*	*HDFC*	*City Union Bank*	*Karnataka Bank*	*LVB*
2004-05	141892.50	44916.11	3115.20	10843.16	3498.57
2005-06	217710.50	63455.22	3607.01	13340.15	4232.69
2006-07	287123.44	77509.58	4636.23	14600.84	4922.00
2007-08	337070.42	112820.44	6255.02	16805.68	5552.47
2008-09	321369.16	157700.60	8042.71	20771.54	7108.89
2009-10	302098.40	184438.21	10043.89	24427.73	9260.72
2010-11	351051.86	230912.04	12871.69	28854.41	11613.27
2011-12	413287.70	292902.94	16723.65	33561.93	14583.80
2012-13	461643.04	351334.24	20512.86	38640.16	16027.35
2013-14	515724.47	423951.34	22050.40	43572.27	18577.87
Mean	334897.15	193994.07	10785.87	24541.79	9537.76
SD	110402.50	128932.86	6975.43	11288.69	5389.17
CV (%)	32.97	66.46	64.67	46.00	56.50

Source: Annual Report of the respected banks.

The mean value of rate sensitivity assets of ICICI is Rs. 334897.15 crores, HDFC is Rs. 193994.07 crores, City Union Bank is Rs. 10785.87 crores, Karnataka Bank is Rs. 24541.79 crores and LVB is Rs. 9537.76 crores. During the study period, all the selected banks accounted fluctuating trend. The co-efficient of variation of rate sensitivity assets endowed by 32.97 per cent in ICICI followed by 66.46 per cent in HDFC, 64.67 per cent in City Union Bank, 46.00 per cent in Karnataka Bank and 56.50 per cent in LVB. It clears that the rate sensitivity assets of 32.97 per cent in ICICI is constant against 66.46 per cent in HDFC. All other selected private sector banks' rate sensitivity assets are moderate during the study period. The pictorial representation of the rate sensitivity assets is given below.

Chart 1
Rate Sensitivity Assets



6.2 Rate Sensitivity Liabilities

The short-term deposit held by a bank pays a variable rate of interest to the customer. Interest sensitive liabilities include money market certificates, savings accounts and the super now account. The rate sensitivity liabilities have been calculated by using the following formula and results are discussed in the following table.

Rate Sensitivity Liabilities = Deposits + Borrowings

Table 2
Rate Sensitivity Liabilities (in Crores)

Year	*ICICI*	*HDFC*	*City Union Bank*	*Karnataka Bank*	*LVB*
2004-05	133363.28	41644.26	3117.43	11080.72	3564.87
2005-06	203605.08	60357.30	3592.92	13425.85	4341.68
2006-07	281766.22	71113.33	4719.22	14458.18	5099.62
2007-08	310079.48	105247.46	6427.60	17158.39	5671.28
2008-09	285671.51	145497.42	8206.77	20337.26	7393.50
2009-10	296280.17	180320.13	10324.62	24072.29	9409.31
2010-11	335156.39	222980.47	13100.44	28422.78	11874.62
2011-12	395664.87	270552.96	16689.46	32755.39	14694.14
2012-13	437955.12	329253.58	20781.50	37635.98	16098.98
2013-14	486672.71	406776.47	22321.87	42498.02	19030.98
Mean	316621.48	183374.34	10928.18	24184.49	9717.90
SD	104995.40	122804.71	7041.19	10821.73	5444.99
CV (%)	33.16	66.97	64.43	44.75	56.03

Source : Annual Report of the respected banks.

The mean value of rate sensitivity liabilities of ICICI is Rs. 316621.48 crores, HDFC is Rs. 183374.34 crores, City Union Bank is Rs. 10928.18 crores, Karnataka Bank is Rs. 24184.49 crores and LVB is Rs. 9717.90 crores. During the study period, the selected banks viz., HDFC, City Union Bank, Karnataka Bank and LVB accounted fluctuating trend except ICICI. The co-efficient of variation of rate sensitivity liabilities endowed by 33.16 per cent in ICICI followed by 66.97 per cent in HDFC, 64.43 per cent in City Union Bank, 44.75 per cent in Karnataka Bank and 56.03 per cent in LVB. It clears that the rate sensitivity liabilities of ICICI as 33.16 percent is constant and on the other hand fluctuating in HDFC as 66.97 percent. The other selected private sector banks' rate sensitivity liabilities are moderate during the study period. The pictorial representation of the rate sensitivity liabilities is given below.

6.3 Interest Sensitivity Ratio

A measure of how much the price of a fixed-income asset will fluctuate as a result of changes in the interest rate environment. Securities that are more sensitive will have greater price fluctuations than those with less sensitivity. Normally this type of sensitivity must be taken into account when selecting a bond or other fixed-income instrument that the investor may sell in the secondary market. The interest sensitivity ratio is calculated by using following formula and the results are discussed in the following table.

Interest Sensitivity Ratio = Rate Sensitivity Assets/Rate Sensitivity Liability

The mean value of interest sensitivity ratio of ICICI is 1.06 times, HDFC is 1.06 times, City Union Bank is 0.99 times, Karnataka Bank is 1.01 times and LVB is 0.98 times. It is evident that all the banks are fluctuating regard o sensitivity ratio. The co-efficient of variation of interest sensitivity ratio endowed by 2.95 per cent in ICICI followed by 2.18 per cent in HDFC, 1.14 per cent in City Union Bank, 1.83 per cent in

Chart 2
Rate Sensitivity Liabilities

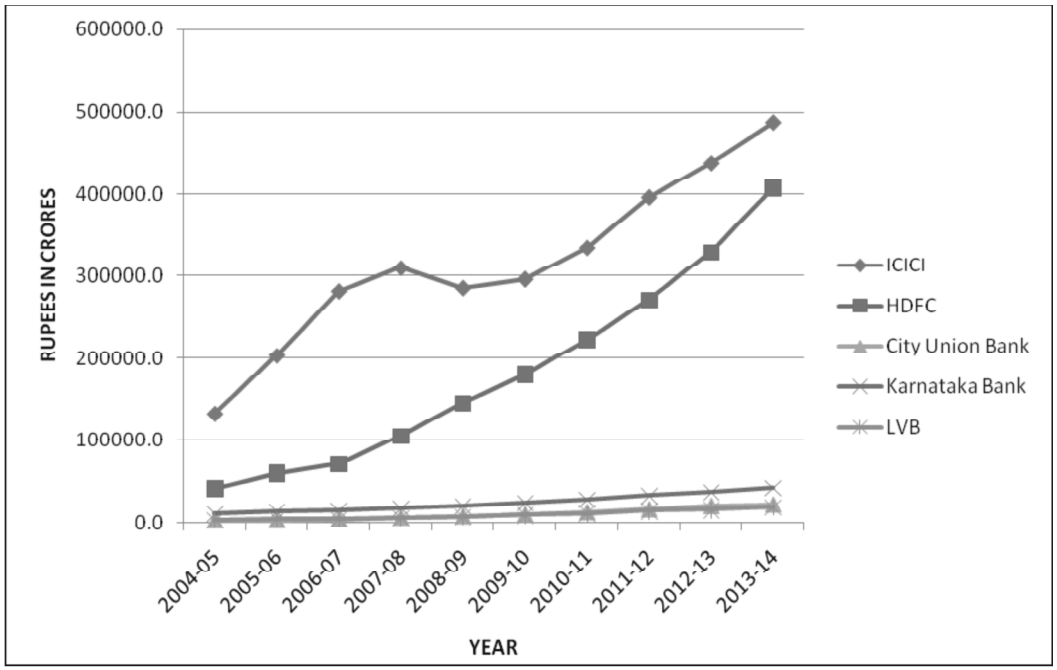


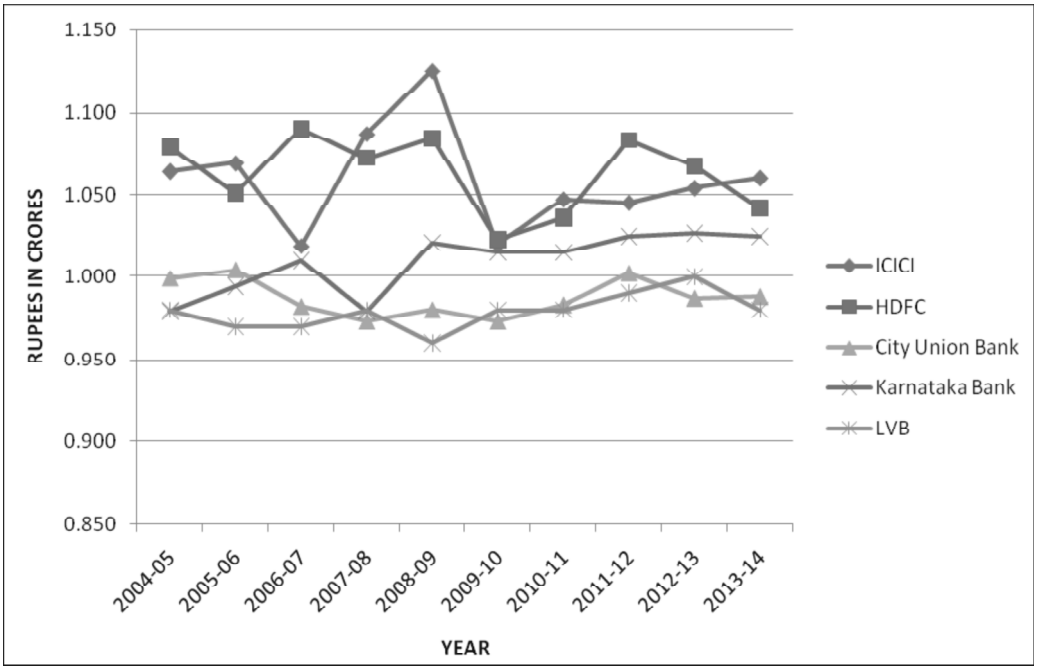
Table 3
Interest Sensitivity Ratio (in Times)

Year	*ICICI*	*HDFC*	*City Union Bank*	*Karnataka Bank*	*LVB*
2004-05	1.064	1.079	0.999	0.979	0.98
2005-06	1.069	1.051	1.004	0.994	0.97
2006-07	1.019	1.090	0.982	1.010	0.97
2007-08	1.087	1.072	0.973	0.979	0.98
2008-09	1.125	1.084	0.980	1.021	0.96
2009-10	1.020	1.023	0.973	1.015	0.98
2010-11	1.047	1.036	0.983	1.015	0.98
2011-12	1.045	1.083	1.002	1.025	0.99
2012-13	1.054	1.067	0.987	1.027	1.00
2013-14	1.060	1.042	0.988	1.025	0.98
Mean	1.06	1.06	0.99	1.01	0.98
SD	0.03	0.02	0.01	0.02	0.01
CV (%)	2.95	2.18	1.14	1.83	1.08

Source: Annual Report of the respected banks

Karnataka Bank and 1.08 per cent in LVB. It clears that the interest sensitivity ratio of LVB as 1.08 percent which is moderate on the other hand ICICI recorded as 2.95 percent. All other selected banks' interest sensitivity ratio is moderate during the study period. The pictorial representation of the interest sensitivity ratio is given below.

Chart 3
Interest Sensitivity Ratio



6.4 Net Interest Income Ratio

The difference between revenues generated by interest-bearing assets and the interest-burdened liabilities are referred as Net Interest Income. For banks, the assets typically include commercial and personal loans, mortgages, construction loans and investment securities. The net interest sensitivity ratio is calculated by using the following formula and the results are discussed in the following table.

Net Interest Income Ratio = Interest Earned – Interest Expenditure

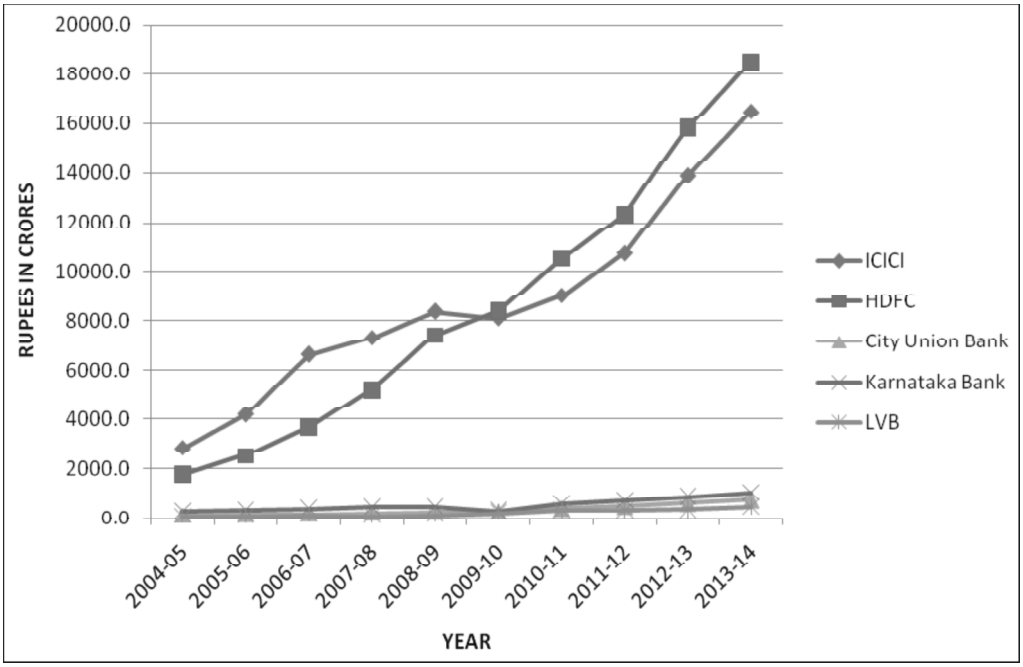
The mean value of Net Interest Income ratio of ICICI is Rs. 8754.0 crores, HDFC is Rs. 8620.26 crores, City Union Bank is Rs. 344.70 crores, Karnataka Bank is Rs. 569.73 crores and LVB is Rs. 248.32 crores. During the study period, all the selected banks accounted fluctuating trend. The co-efficient of variation of Net Interest Income endowed by 47.06 per cent in ICICI followed by 65.51 per cent in HDFC, 64.30 per cent in City Union Bank, 44.65 per cent in Karnataka Bank and 57.70 per cent in LVB. It clears that the Net Interest Income of LVB shows less volatility and it is inconsistent in HDFC. All other banks' Net Interest Income is moderate during the study period. The pictorial representation of the net interest income ratio is given below.

Table 4
Net Interest Income Ratio (in Crores)

Year	*ICICI*	*HDFC*	*City Union Bank*	*Karnataka Bank*	*LVB*
2004-05	2839.00	1777.93	110.82	316.89	106.66
2005-06	4187.05	2545.84	139.78	365.97	105.50
2006-07	6635.79	3709.57	167.49	419.86	130.00
2007-08	7304.10	5227.88	204.97	469.10	124.13
2008-09	8366.62	7421.16	242.57	473.57	153.54
2009-10	8114.36	8386.60	278.14	335.63	249.13
2010-11	9016.90	10543.13	420.03	612.49	365.00
2011-12	10734.15	12296.77	499.75	744.01	371.23
2012-13	13866.42	15811.12	624.01	903.73	392.00
2013-14	16475.56	18482.63	759.39	1056.07	486.01
Mean	8754.00	8620.26	344.70	569.73	248.32
SD	4119.63	5647.23	221.65	254.38	143.27
CV (%)	47.06	65.51	64.30	44.65	57.70

Source : Annual Report of the respected banks

Chart no. 4
Net Interest Income Ratio



6.5 Net Interest Margin Ratio

Net interest margin (NIM) is a measure of the difference between the interest income generated by banks or other financial institutions and the amount of interest paid out to their lenders (for example, deposits), relative to the amount of their (interest-earning)

assets. It is similar to the gross margin (or gross profit margin) of non-financial companies. It is usually expressed as a percentage of what the financial institution earns on loans in a time period and other assets minus the interest paid on borrowed funds divided by the average amount of the assets on which it earned income in that time period (the average earning assets). The net interest margin ratio is calculated by using the following formula and the results are discussed in the following table.

Net Interest Margin Ratio = Interest Income – Earning Assets

Table 5
Net Interest Margin Ratio (in Times)

Year	*ICICI*	*HDFC*	*City Union Bank*	*Karnataka Bank*	*LVB*
2004-05	2.599	0.045	0.033	0.027	0.028
2005-06	2.341	0.042	0.036	0.026	0.023
2006-07	2.618	0.049	0.033	0.027	0.024
2007-08	2.654	0.047	0.029	0.025	0.020
2008-09	3.354	0.047	0.027	0.021	0.019
2009-10	3.563	0.046	0.025	0.013	0.025
2010-11	3.584	0.046	0.030	0.021	0.030
2011-12	3.714	0.045	0.028	0.021	0.024
2012-13	4.168	0.048	0.028	0.023	0.023
2013-14	4.381	0.045	0.031	0.024	0.024
Mean	3.30	0.05	0.03	0.02	0.02
SD	0.71	0.00	0.00	0.00	0.00
CV (%)	21.54	4.15	11.43	18.47	13.52

Source : Annual Report of the respected banks

The mean value of net interest margin ratio of ICICI is 3.30 times, HDFC is 0.05 times, City Union Bank is 0.03 times, Karnataka Bank is 0.02 times and LVB is 0.02 times. During the study period, all the selected banks accounted fluctuating trend. The co-efficient of variation of net interest margin ratio accounted by 21.54 per cent in ICICI followed by 4.15 per cent in HDFC, 11.43 per cent in City Union Bank, 18.47 per cent in Karnataka Bank and 13.52 per cent in LVB. The co-efficient of variation of HDFC indicates that the Net Interest Margin ratio has less consistent during the study period. I is observed that ICICI has high volatile during the study period. All other banks' net interest margin ratio is moderate during the study period. The pictorial representation of the net interest margin ratio is given below.

6.6 Gap Analysis

Gap analysis is a method that conveys the difference between rate sensitive assets and rate sensitive liabilities over a period of time.

The following table shows the gap analysis of the selected banks during the study period 2004-05 to 2013-14.

Gap Analysis = Rate Sensitivity Assets – Rate Sensitivity Liabilities

Chart 5
Net Interest Margin Ratio

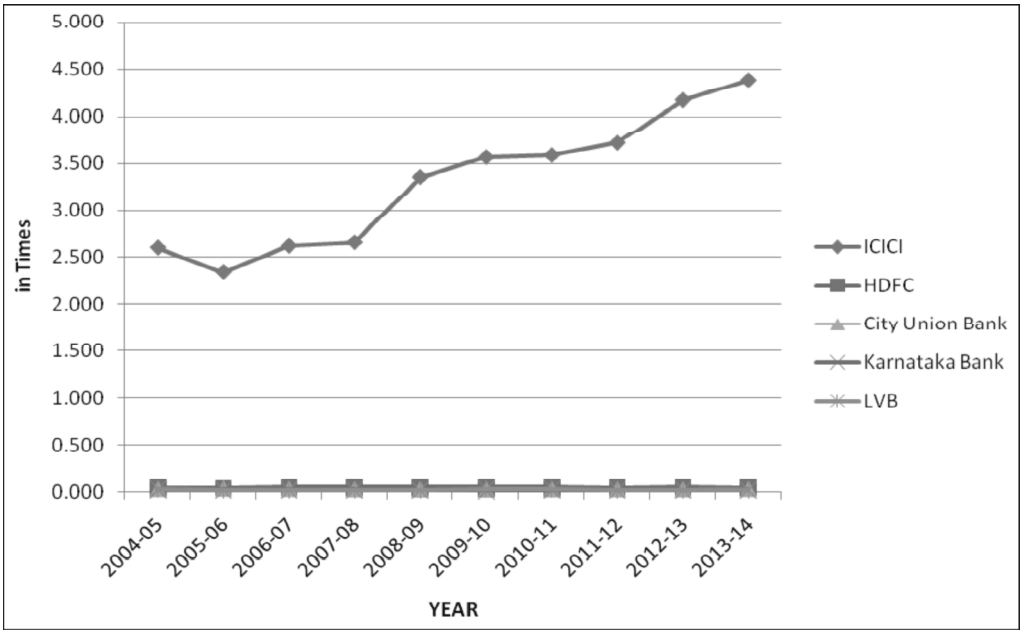


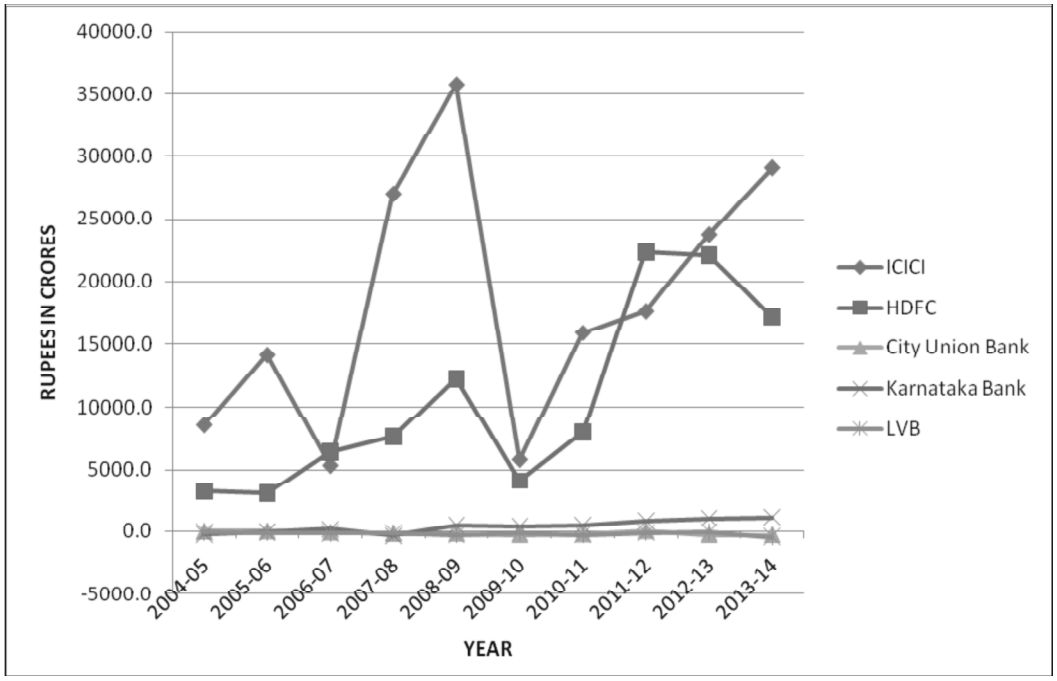
Table 6
Gap Analysis (in Crores)

Year	*ICICI*	*HDFC*	*City Union Bank*	*Karnataka Bank*	*LVB*
2004-05	8529.2	3271.9	–2.230	–237.560	–66.300
2005-06	14105.4	3097.9	14.090	–85.700	–108.990
2006-07	5357.2	6396.3	–82.990	142.660	–177.620
2007-08	26990.9	7573.0	–172.580	–352.710	–118.810
2008-09	35697.7	12203.2	–164.060	434.280	–284.610
2009-10	5818.2	4118.1	–280.730	355.440	–148.590
2010-11	15895.5	7931.6	–228.750	431.630	–261.350
2011-12	17622.8	22350.0	34.190	806.540	–110.340
2012-13	23687.9	22080.7	–268.640	1004.180	–71.630
2013-14	29051.8	17174.9	–271.470	1074.250	–453.110
Mean	18275.7	10619.73	–142.32	357.30	–180.14
SD	10357.2	7465.59	124.46	499.56	120.85
CV (%)	56.7	70.30	–87.45	139.81	–67.09

It could be found from the above table that among the five selected private sector banks ICICI and HDFC Banks are having positive GAP. The Karnataka bank, from the period of 2004-05 to 2007-08 recorded negative GAP and remaining years with positive GAP. In City Union Bank, the years 2005-06 and 2011-12 are with positive GAP and rest of the years with negative GAP. In LVB, all the years are recorded with negative GAP.

In analyzing with mean values, ICICI, HDFC and Karnataka banks are having positive GAP and City Union Bank and LVB are having negative GAP. While considering the co-efficient of variation, ICICI bank has less volatile and Karnataka bank has more volatile for its GAP during the study period. The pictorial representation of the gap analysis is given below.

Chart 6
Gap Analysis



7. FINDINGS

- The Rate Sensitivity assets mean value of all the banks are fluctuating during the study period. The rate sensitivity assets are 32.97 per cent in ICICI and 66.46 per cent in HDFC.
- It is noticed from the rate sensitivity liabilities that the mean value of all the selected banks are also fluctuating during the study period. The rate sensitivity liabilities are 33.16 per cent in ICICI and 66.97 per cent in HDFC.
- It is observed from the interest sensitivity ratio that the mean value recorded as high in ICICI and HDFC bank and it is lowest in Lakshmi Vilas Bank. The co-efficient of variation indicates that the interest sensitivity ratio has less consistent in Lakshmi Vilas Bank and high volatile in ICICI Bank.
- It could be noticed from the net interest income ratio that the mean value recorded as high in ICICI Bank and it is lowest in Lakshmi Vilas Bank. The co-

efficient of variation indicates that the net interest income ratio has less consistent in Karnataka bank and HDFC Bank with high volatility.

- It is divulged from the analysis of Net Interest Margin that the mean value recorded as high in ICICI Bank and it is lowest in Karnataka Bank and Lakshmi Vilas Bank. The co-efficient of variation indicates that the Net Interest Margin ratio has less consistent in HDFC Bank and high volatile in ICICI bank.
- It is found from the GAP analysis that the mean values of the ICICI, HDFC and Karnataka banks are having positive GAP and City Union Bank and LVB are having negative GAP. While considering the co-efficient of variation, ICICI bank has less volatile and Karnataka bank has more volatile for its GAP during the study period.

8. POLICY IMPLICATIONS

- The banks should try to integrate Liquidity management as a part of banks asset liability management. The bank's asset and liability management policy should clearly define the role of liquid assets along with setting clear targets and limits. .
- The banks should reduce the ALM gap by increasing the deposits from the public.
- It is suggested that the banks may increase the current account holders from the public. These funds can be utilized by the bank to increase their income without any payment of interest to the current account holders.
- The bank should function independent of the Treasury department to track the magnitude of various risks on real time basis. It is also recommended to the selected banks to increase the performance of the asset liability management by strictly adhering to the guidelines of RBI.
- It is suggested to the banks to encourage their customers to start cash in Certificate of Deposits (CDs) and other time deposit products with longest maturity period by providing high interest rate.
- All the selected banks should focus more on reducing the mismatches because it creates risks for the banks and it should be addressed immediately.

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