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INTEREST RATE DERIVATIVES IN INDIAN BANKS

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Abstract

The present research paper makes an attempt to provide a comprehensive profile of the global OTC derivatives market, with special reference to interest rate derivatives. It has analyzed various issues related to interest rate derivatives in Indian banks. The study would also examine if there is any significant impact of ownership structure on the use of interest rate derivatives in sample banks. To serve this particular objective the study is based on two major giants, the largest public sector and private sector bank in India namely SBI and ICICI Bank. Different variables such as Total Asset, Deposit, Advances, Tier I Capital, ROA, ROE, Interest Margin, Total loan Ratio, Total deposit Ratio, etc have been analyzed with the help of various statistical tools such as ratios, correlation and ANOVA to find out the extent to which these banks have managed the adverse movements in interest rate with the help of interest rate derivatives.

Keywords: Over-the Counter (OTC) derivative market, Interest Rate Derivatives (IRD).

1. INTRODUCTION

The Banking sector has played a commendable role in fuelling and sustaining growth in the economy. It helps in mobilizing the nations saving and in channelizing them into high investment priorities and better utilization of available resources. Modern banking is something different from lending and borrowing. They accept risk in order to earn profits. In doing so they recognize that there are different types of risk such as credit risk, operational risk, interest rate risk, liquidity risk, price risk, foreign exchange risk, etc. Out of these risks Interest rate risk is the most prevalent risk which refers to the exposure of a bank's financial condition to adverse movements in interest rate. It is the risk to earnings and capital that if market rates of interest changes unfavorably. This risk arises from differences in timing of changes in rates, the timing of cash flows (reprising risk), changes in the shape of the yield curve (yield

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curve risk) and option values embedded in the products (options risk). In essence, the market value of banks assets (i.e. loans and securities) will fall with increase in interest rates. In addition earnings from assets, fees and the cost of borrowed funds are affected by changes in interest rates.

Accepting this risk is a normal part of banking and can be an important source of profitability and shareholder's value. Changes in interest rate effect a bank's earning by changing its net interest income and the level of other interest sensitive income and operating expenses. Interest rate refers to volatility in net interest income (NII) or in variation in net interest margin (NIM) i.e. NII divided by earning assets due to changes in interest rate. In other words, interest rate risk arises from holding assets and liabilities with different principal and maturity dates or reprising dates. Accordingly, an effective risk management process that maintains interest rate risk within prudent levels is essential to the safety and soundness of banks. Banks can reduce their interest rate risk by hedging with derivatives securities and by using the asset/liability management techniques.

The emergence of the market for derivative product can be traced back to the willingness of risk–averse economic agents to guard themselves against uncertainties arising out of fluctuation in asset prices. By their very nature financial markets are marked by a very high volatility. Through the use of derivatives products, it is possible to partially or fully transfer price risk by locking in asset prices. These products initially emerged as hedging devices against fluctuation in commodity prices. Commodity linked derivatives remained the sole form of such products for almost three hundred year. Financial derivatives came into spotlight in the post 1970 period due to growing instability in the financial market. They are defined as financial instruments whose payoff is based on the price of an underlying asset, reference rate or an index. However since their emergence, these products have been very popular and by 1990's they accounted for about 2/3 of total transaction in derivatives products. In recent years the market for financial derivatives has grown tremendously in terms of, variety of instruments available, their complexity and also turnover. In generic terms, markets are meant for price determination and exchange of goods and services, indeed prices are the balancing wheels of the market mechanism. In that context, derivatives are considered facilitators of price discovery in financial market and also as risk allocators. They add to the completeness of financial market that is by their very nature marked by a very high degree of volatility. An interest rate derivative is a derivative where the underlying asset is the right to pay or receive a (usually notional) amount of money at a given Interest rate. In the wake of deregulation of interest rates as part of financial sector reforms, a need was felt to introduce hedging instruments to manage interest rate risk. The Reserve Bank had introduced interest rate swaps (IRS) and forward rate agreements (FRA) in March 1999 and interest rate futures (IRF) in 2003 and reintroduced IRF on 31st Aug 2009.

2. RESEARCH METHODOLOGY

The present research paper makes an attempt to examine the various aspects related to interest rate derivatives in Indian banks. This paper has also emphasized on the contribution of various segments in the

global OTC derivatives market. The present study makes an attempt to test the hypothesis that there is no relationship between ownership structure and the use of interest rate derivatives in the sample banks. To serve this particular objective the study is based on two major giants, the largest public sector and private sector bank in India namely State Bank of India (SBI) and Industrial Credit and Investment Corporation of India (ICICI) Bank (ICICI) Bank. The time duration for the study was from 2006 to 2009. Secondary data have been collected from the websites of Bank for International Settlement and Annual Reports of SBI and ICICI Bank. This paper makes an effort to study different variables such as Total Asset, Deposit, Advances, Tier I Capital, ROA, ROE, Interest Margin, Total loan Ratio, Total deposit Ratio, etc with an objective to study the role of interest rate derivatives in the sample banks.

2.1. The Global OTC Derivatives Market

Derivative contracts are entered into or traded, either OTC or on exchanges. In Over the counter market, trades are contracted and prices agreed bilateral, i.e. between a pair of one seller and one buyer, either directly or by the intermediation of brokers through electronic communication system. Table 1, show different segments in the global OTC derivatives market where interest rate derivatives contribute nearly 70 % in the global OTC derivatives market followed by foreign exchange contracts and credit default swaps by 8.4 % and 7.07 % respectively. Equity-linked contracts and Commodity contracts are far behind with 1.09 % and 0.74 % respectively (see Figure 1) till Dec 2008.

The total notional amounts outstanding grew at 13.23 % from June 2007 to Dec2007 whereas it grew at 14.85 % during Dec 2007 to June 2008. The amount decreased by 13.42 % in Dec 2008. This was due to the financial crisis in the second half of 2008 resulting in the first ever decline in the total notional amounts outstanding of over-the-counter (OTC). Gross market values, which measure the cost of replacing all existing contracts, represent a better measure of market risk than notional amounts. Despite the drop in amounts outstanding, significant price movements resulted in notably higher gross market values, which increased by 66.5 % to amount $ 33.9 trillion at the end of December 2008. In the second half of 2008 the market for OTC interest rate derivatives declined for the first time. Notional amounts of these instruments fell to $ 418.7 trillion at the end of December 2008, 8.6 % lower than six months before. Despite the decrease in notional amounts outstanding, declining interest rates resulted in a notable 98.9 % increase in the gross market value of interest rate derivatives to amount $ 18.4 trillion (Table 1).

The volume of outstanding CDS contracts fell by 27.0 % to $ 41.9 trillion in Dec 2008 against a background of severely strained credit markets and increased

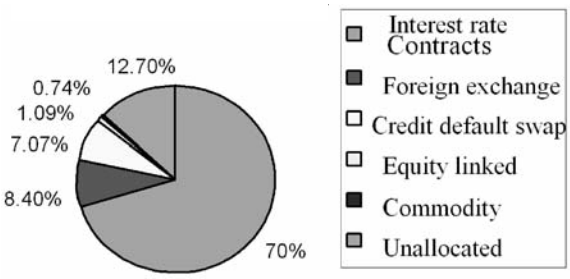

Figure 1. Global OTC Derivatives market segmentation

Table I. The Global OTC Derivatives Market (Amts. outstanding in billions of US dollars)

	Notional amounts outstanding				Gross market values			
	Jun2007	**Dec 07**	**Jun2008**	**Dec 2008**	**Jun07**	**Dec 07**	**Jun 08**	**Dec 08**
GRAND TOTAL	516,407	595,341 13.23%	683,726 14.85%	591,963 -13.42%	11,140	15,813 41.95%	20,353 28.71%	33,889 66.51%
A. Foreign exchange contracts	48,645	56,238 15.61%	62,983 11.99%	49,753 -21.01%	1,345	1,807 34.35%	2,262 25.18%	3,917 73.17%
Forwards and forex swaps	24,530	29,144	31,966	24,562	492	675	802	1,732
Currency swaps	12,312	14,347	16,307	14,725	619	817	1,071	1,588
Options	11,804	12,748	14,710	10,466	235	315	388	597
B. Interest rate contracts	347,312	393,138 13.19%	458,304 16.58%	418,678 -8.65 %	6,063	7,177 18.37%	9,263 29.07%	18,420 98.86%
FRAs	22,809	26,599	39,370	39,262	43	41	88	153
Swaps	272,216	309,588	356,772	328,114	5,321	6,183	8,056	16,573
Options	52,288	56,951	62,162	51,301	700	953	1,120	1,694
C. Equity contracts	8,590	8,469 -1.41%	10,177 20.17%	6,494 -36.19%	1,116	1,142 2.33%	1,146 0.35%	1,113 -2.88%
Forward swap	2,470	2,233	2,657	1,632	240	239	283	338
Options	6,119	6,236	7,520	4,862	876	903	863	775
D.Commodity contracts	7,567	8,455 11.74	13,229 56.46%	4,427 -66.59%	636	1,899 198.5%	2,209 16.32%	955 -56.77%
Gold	426	595	649	395	47	70	68	65
Other	7,141	7,861	12,580	4,032	589	1,829	2,142	890
Forwardswaps	3,447	5,085	7,561	2,471				
Options	3,694	2,776	5,019	1,561				
E.Credit default Swaps	42,581	57,894 35.96%	57,325 -0.98%	41,868 -26.96%	721	2,002 177.6%	3,172 58.44%	5,652 78.18%
Single-name instrument	24,239	32,246	33,334	25,730	406	1,143	1,889	3,695
Multiname instruments	18,341	25,648	25,648	16,138	315	859	1,283	1,957
F.Unallocated	61,713	71,146	81,708	70,742	1,259	1,788	2,301	3,831

Source: Bank for International Settlement, May 2009

multilateral netting of offsetting positions by market participants. This was a continuation of the developments seen in the first half of 2008. Single-name contracts declined by 22.8 % to $ 25.7 trillion while multi-name contracts, a category that includes CDS indices and CDS index trenches saw a more pronounced decrease of 32.7 %, to $ 16.1 trillion. Despite the lower outstanding volumes, the gross market value for CDS contracts increased by 78.2 % to $ 5.7 trillion as a result of the credit market turmoil. Gross market values grew 95.6 % to $ 3.7 trillion for single-name contracts and 52.5 % to $ 2.0 trillion for multi-name contracts. Greater use of multilateral netting during the second half of 2008 also resulted in a change in composition across contract types. Amounts outstanding of multi name contracts fell 32.7 % to $ 16.1 trillion, while the 22.8 % decline in single-name contracts to $ 25.7 trillion was somewhat smaller.

Notional amounts outstanding of foreign exchange derivatives decreased by 21.0 % to $ 49.8 trillion. Gross market values rose by 73.2% to $ 3.9 trillion. FX derivatives in terms of notional amounts, declined by 23.1 %, while options volumes fell 28.8 %. In contrast, outstanding volumes of currency swaps saw a more moderate contraction of 9.7 %. The US dollar and the euro remained the most important vehicle currencies, followed by the yen and sterling.

Amounts outstanding of OTC commodity derivatives fell by a solid 66.5 % in the second half of 2008 to $ 4.4 trillion. Contracts on gold contracted by 39.2%, to $ 0.4 trillion at the end of 2008, while other commodity derivatives slid by 68.0 % to $ 4.0 trillion. The continued decreases in commodity prices during the second half of 2008 also had a substantial impact on the gross market value of commodity contracts, which fell by 56.8 % to $ 1.0 trillion.

In the second half of 2008 positions in OTC equity derivatives decreased by 36.2 % to $ 6.5 trillion, well below the levels seen in recent years and a notable change of pace from the 20.1 % increase in the first half of 2008. The decline in outstanding amounts was of the same relative size across contract types. Reflecting lower outstanding positions and significantly decreased equity prices, the gross market values of outstanding equity derivatives declined a moderate 2.8 %. This change was driven mainly by the gross market value of options, which account for around three quarters of all notional amounts outstanding. The market value of options fell 10.1 % to $ 0.8 trillion, while the gross market value of forwards and swaps increased by 19.5 % to $ 0.3 trillion.

2.2. The Global OTC Interest Rate Derivatives market

Interest rate derivatives are extensively used by different market players world over, such as Corporations, banks, insurance companies, fund managers, governments, individuals and the financial services industry. They use interest rate derivative as a tool to solve their financial risk management problems. The notional amount outstanding has increased from 347,312 to 393,138 and 458,304 (billion US Dollar) in Jun 07, Dec 07 and Jun 08 respectively but has declined by nearly 40,000 billion US Dollar in Dec 2008. On the other hand the gross market value has been just doubled which depicts that most of the existing contracts has been settled during that period (Table 2).

Table 2: The Global OTC Interest Rate Derivatives (Amts in billions of US dollars)

	Notional amounts outstanding				Gross market values			
	Jun 07	**Dec 07**	**Jun 08**	**Dec 08**	**Jun07**	**Dec07**	**Jun08**	**Dec08**
Total contracts	347,312	393,138	458,304	418,678	6,063	7,177	9,263	18,420
Reporting dealers	148,555	157,245 5.8%	188,982 20.18%	162,970 -13.76%	2,375	2,774 16.8%	3,554 28.11%	6,629 86.52%
Other financial institutions	153,370	193,107 25.90%	223,023 15.49%	214,107 -3.99%	2,946	3,786 28.51%	4,965 31.14%	10,731 116.13%
Nonfinancial customers	45,387	42,786 -5.73%	46,299 8.21%	41,601 -10.14%	742	617 - 16.84%	745 20.74%	1,061 42.41%
Upto1 yr	132,402	127,601	153,181	137,278				
1 - 5 yrs	125,700	134,713	150,096	138,263				

Source: Bank for International Settlement, May 2009

The global Interest rate derivatives market has been divided into different market participants namely reporting dealers, financial institutions and non financial institutions. Bank for International Settlement has identified these groups namely reporting dealers the institutions, whose head office is located in G10 countries and which participate in the semiannual OTC derivatives market statistics, financial institutions such as commercial, investment banks, security houses and lastly non financial institutions. The notional amount outstanding used by reporting dealers grew by four times in Jun 2008 but decreased by 13.76 % in Dec 2008. Financial institutions show a decreasing trend from 26 % in Dec 2007 to 15.49 % in June 2008 and again 4 % in Dec2008. The non financial institutions exhibit an uneven trend, i.e. decrease by 5.73 % in Dec 07, an increase by 8.21 % in Jun 2008 and again a decrease by 10 % in Dec 2008. On the other hand gross market value of reporting dealers shows an accelerated growth from 28.11 % to 86.52 % in Dec 2008 which signifies that the cost of replacing all existing contracts has increased drastically. The same trend was reported by other two users. The financial institution recorded an increase of 31 % to 116 % June-Dec 2008 while non financial institutions have registered an increase from 20.74 % in June 2008 to 42 % in Dec 2008.

The use of interest rate derivatives by different market participants are almost the same with negligible fluctuations over the years. The use of interest rate derivatives in financial institutions range in between 40% to 50 % during the study period, whereas it was recorded between 38 % to 42 % and 10 % to 15 % by reporting dealers and by non financial customers respectively during the same time horizon (see Figure 2). The trend on the basis of maturity remains almost the same, over the years. Contracts up to 1 year maturity remains high than the contract with maturity up to 5 years which means shorter period contracts are more popular than contracts with maturity period up to 5 years (Figure 3).

2.3. Implication of Interest Rate Derivatives in Indian Banks

Bank participation in derivative markets has risen sharply in recent years. A major concern facing policymakers and bank regulators today is the possibility that the rising use of derivatives has increased the riskiness and profitability of individual

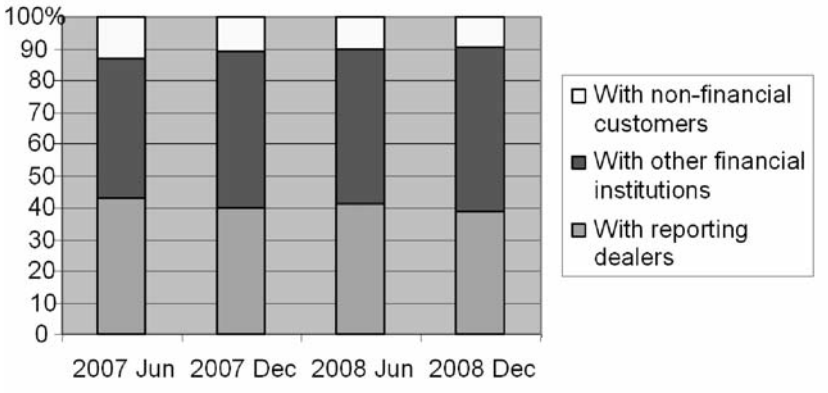

Figure 2. Global IRD used by different Participants

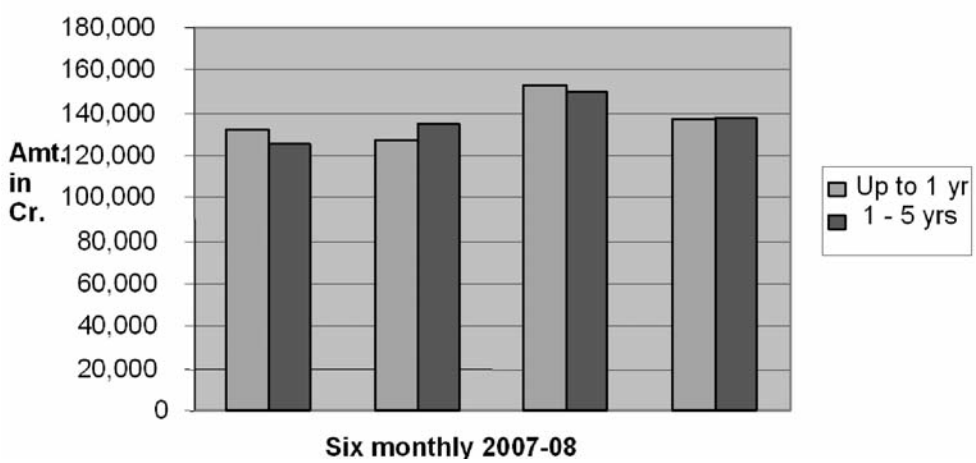

Figure 3. Global IRD on the basis of Maturity

banks and of the banking system as a whole. Scheduled commercial banks reduced their off-balance sheet exposure by 26.4 percent during 2008-09, partly due to strengthening of prudential norms by RBI. Figure 4, shows a decrease in 2009 in both the banks. Interest rate derivatives used in ICICI was maximum in March 2008 amounting Rs.563, 103.00 cr. which has decreased to Rs.195, 652.76 cr. in March 2009. SBI has used interest rate derivatives conservatively with a slight increase from 2006 to 2007 but has shown a decreasing trend from Rs.186, 610.16 cr. in 2007 to Rs.155, 928.42 cr. in 2008 and Rs.97, 690.50 cr. in 2009. Significant decrease was recorded in the use of interest rate derivatives in SBI as well as in ICICI Bank during March 2008 to March 2009 due to global slow down. ICICI Bank, the country's second largest bank, has the exposure of 195,652.76 Cr. in Interest Rate Derivatives in March 2009. SBI, the country's largest bank, has an estimated exposure of Rs.97, 690.50 cr. in Interest Rate Derivatives during the same period.

The primary objective of any investor is to maximize returns and minimize risks (uncertainty of outcome). It can cause both

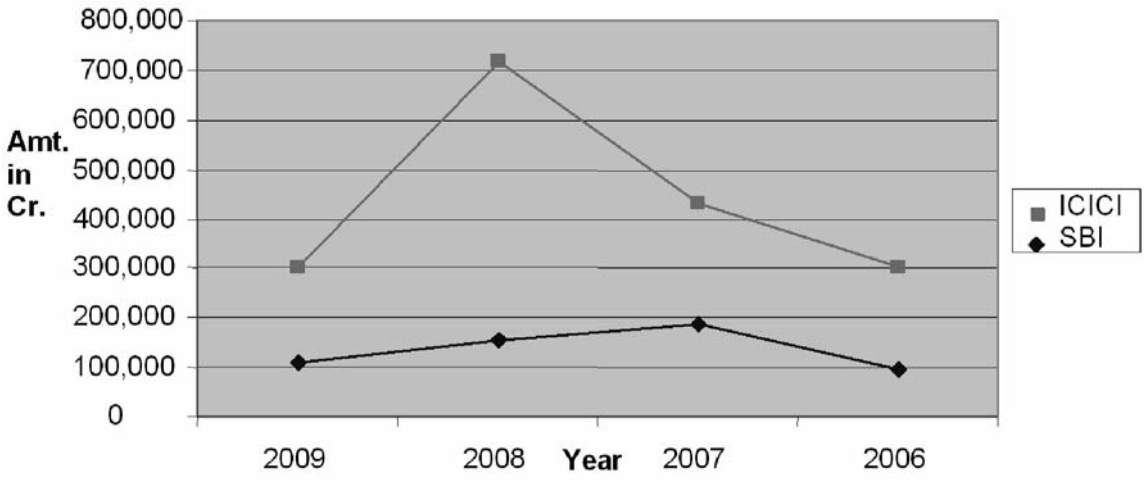

Figure 4. IRD in SBI and ICICI Bank

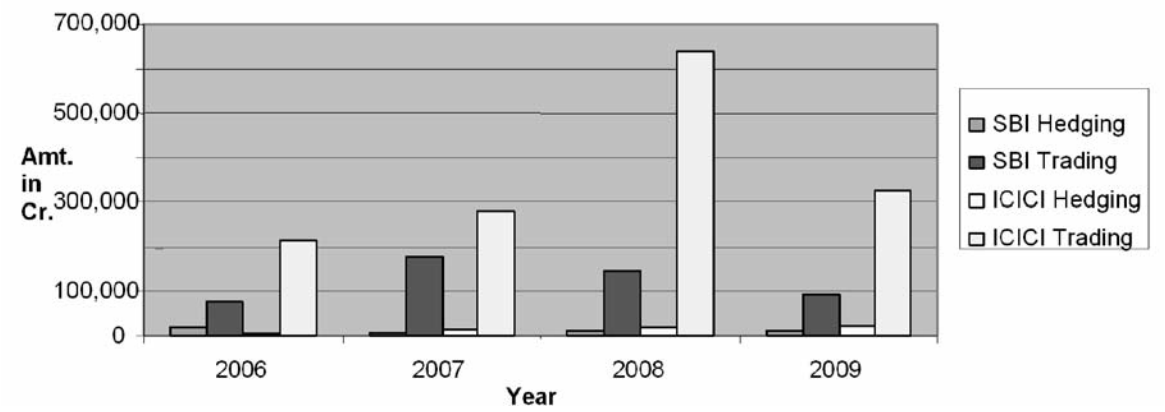

Figure 5. Hedging and Trading activity in IRD by SBI & ICICI Bank

unforeseen losses and unexpected gains. There are two different attitudes towards risk: Risk aversion or hedging and risk seeking or trading. Hedging aims at devising a plan to manage the risk and convert it into desired form by replacing the uncertainty by certainty or by paying a certain price for obtaining the potential gain opportunity while avoiding the risk of adverse outcomes. It aims at isolating profit from the damaging effects of interest rate fluctuations – concentrating on interest sensitive assets and liabilities – loans, investment, interest-bearing deposits, borrowings etc, thereby, protecting the NIM ratio. Trading aims at willingness to take risk with one's money in hope of reaping risk profit from investment in risky assets out of their frequent price changes. Investment of banks in interest rate derivatives has been considerably asymmetric with respect to trading and hedging activities. Compared with the value of derivatives used for trading, the value of derivatives held by banks for hedging is much smaller (see Figure 5). The growth in the value of hedging derivatives is much lower. The trading activities in both the banks have decreased in 2009 as compared to 2008. ICICI Bank has extensively used trading in interest rate derivatives as compared to SBI over the years.

The following paragraph intend to examine the implication of IRD towards the performance of banks in question by establishing the relationship between IRD and different variables such as size, loan, deposit demand deposit, return on asset, return on equity, interest margin, Tier I capital etc.

2.3.1. IRD and Asset

In the year 2006 the ratio of interest rate derivatives to asset in SBI was 19.83 % which has increased up to 32.94 % in 2007, but has shown a decreasing trend by 21.06 % in 2008 and 11.17 % in 2009 respectively. This shows that the dependence on interest rate derivatives in SBI is relatively low as compared to ICICI Bank which shows a different picture. The total asset and IRD Ratio in 2009 was 51.58 %, whereas it was 141 %, and 70 % and 80 % in 2008, 2007 and 2006 respectively. The percentage explains that ICICI bank has aggressively used IRD in 2008 but which has declined to 51.58 % in 2009. Over all it has used this instrument extensively as compared to SBI but similar trend have been noticed in both the banks i.e. rise from 2006 to 2008 but fall in 2009 (Figure 6)

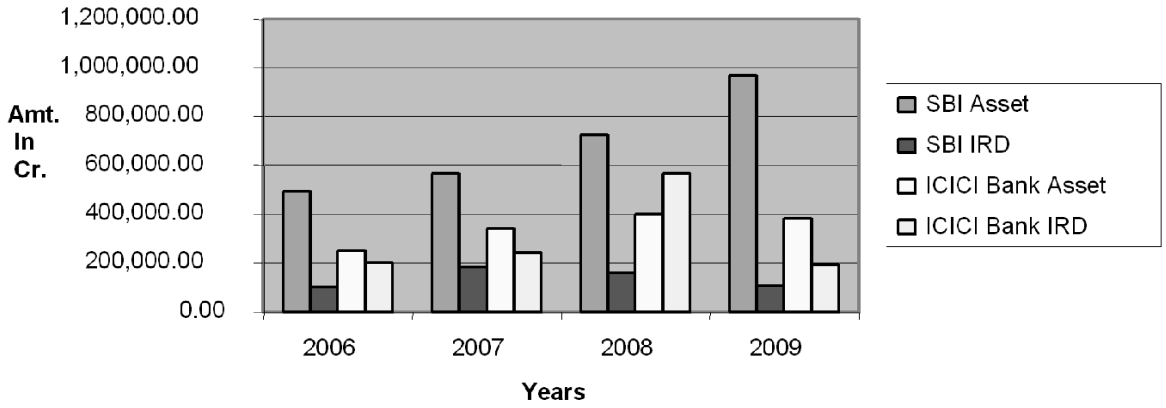

Figure 6. Asset and IRD in SBI and ICICI Bank

2.3.2. IRD and Loan ratio

Bank loans as an asset are risky investments by banks in various areas, ranging from commercial and industrial loans to loans to individual customers. These loans typically have longer maturity and higher interest rate sensitivities than liabilities. Interest rate risk arises when there is maturity mismatches between banks asset and liabilities. One way to manage this risk is to increase or decrease the holding of asset that give rise to the interest rate risk. Such operation would involve the acquisition of new assets, i.e. making new loans, or premature sale of existing assets, which may interrupt the lending policy and may damage the relationship with corporate clients as well as. As a risk management instrument, derivatives provide additional opportunity to mange the risk exposures in banks. Duffee and Zhou (2001) have concluded that, banks decision on hedging with derivatives may be related to their loan making activities. Brewer, Minton and Moser (2000) find a positive relation between banks use of interest rate derivatives for hedging and the making of loans (Figure 7).

While calculating the ratio between advances and IRD we found that the ratio of advances to IRD was 2.67 in 2006, 1.80 in

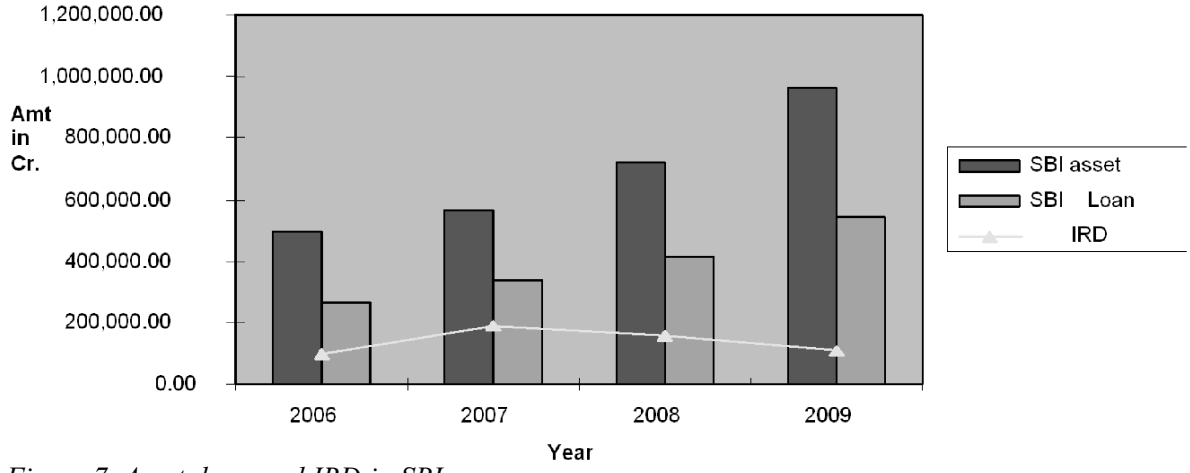

Figure 7. Asset, loan and IRD in SBI

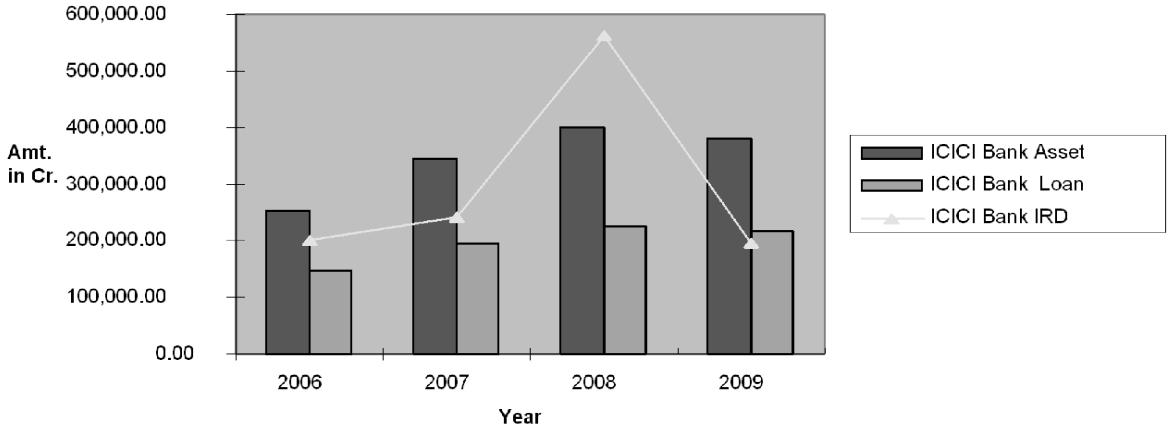

Figure 8. Asset, loan and IRD in ICICI Bank

2007, again 2.67 in 2008 and 5.037 in 2009. While in the case of ICICI Bank the ratio between the two is much lower which means that the dependency between advance and IRD is much higher as compared to SBI. In 2006 it was .722, in 2007 it was .810, in 2008 it was .400 and in 2009 it reached to 1.11 (Figure 8).

2.3.3. IRD and Bank profitability

The literature generally shows a negative relation between profitability and the hedging behavior for financial entities (Purnanandam2006). More profitable banks appear to have stronger financial strength against adverse shocks and are remote from financial distress which reduces the likelihood for hedging. Return to total asset (ROA) is useful in the study of the over all efficiency of a bank in using its asset. Return to equity (ROE) is particularly important to shareholders and is related to the charter value of a bank. The ratio of net interest income to total asset (interest margin), focuses on the interest –income generating ability of banks. The return on asset has increasing from 0.89 to 1.04 during 2006 to 2009 SBI but in case of ICICI Bank it has marginally decreased from 1.3 to 1 during the same period (Figure 9). The return on equity was 15.47 in 2006 which decreased to 14.24 in 2007, but reached to its highest level i.e. 17.82 in 2008. It has further decreased to

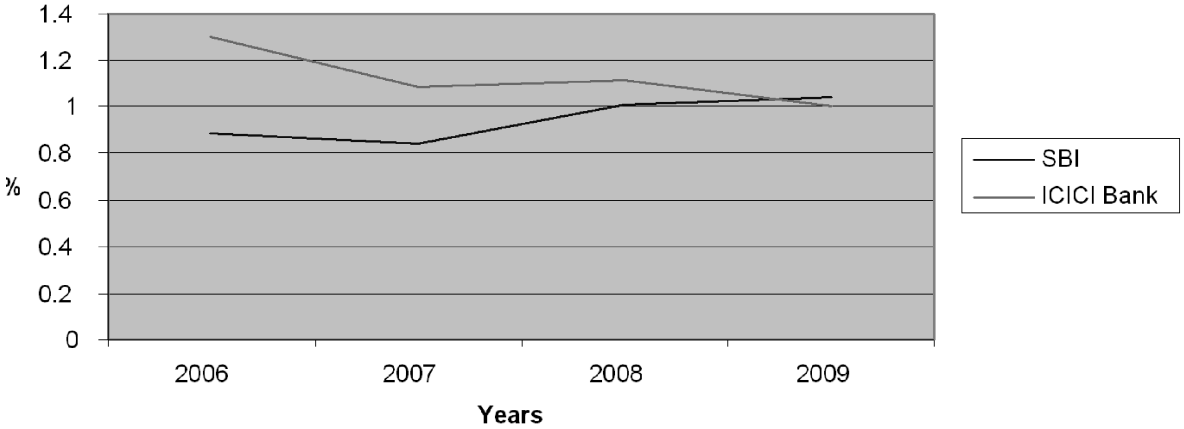

Figure 9. ROA in SBI and ICICI Bank

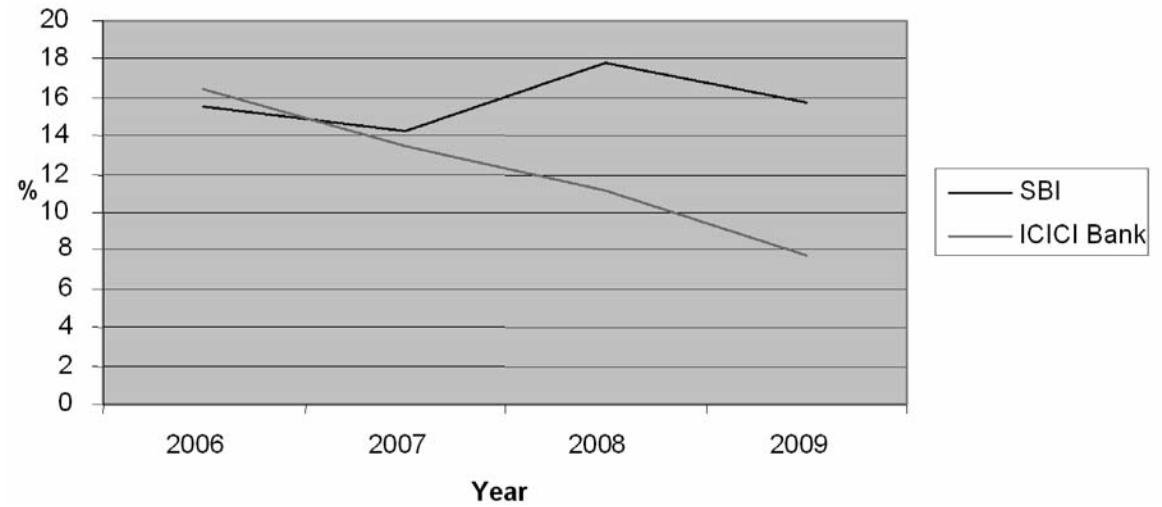

Figure 10. ROE in SBI and ICICI Bank

15.73 in 2009. In case of ICICI Bank it has shown a negative trend from 16.4 to 13.4 in 2006 and 2007 and again 11.1 to 7.7 in 2008 and 2009(Figure 10). Interest margin was minimum in the case of SBI which ranged in between 0.02 to 0.07 during 2006 to 2009 whereas in ICICI Bank it has ranged between 2.2 to 2.4. High interest margin is the indicator of high risk in terms of interest rates which in turn is a positive indicator for the use of interest rate derivatives. This may be a reason why ICICI Bank has extensively used interest rate derivatives than SBI (Figure 11).

2.3.4. IRD and Deposits

The flow of deposit provides a natural hedging for banks to cover their liquidity needs a potential substitution for derivatives. High level of withdrawal risk reduces the liquidity of the deposit from the bank's

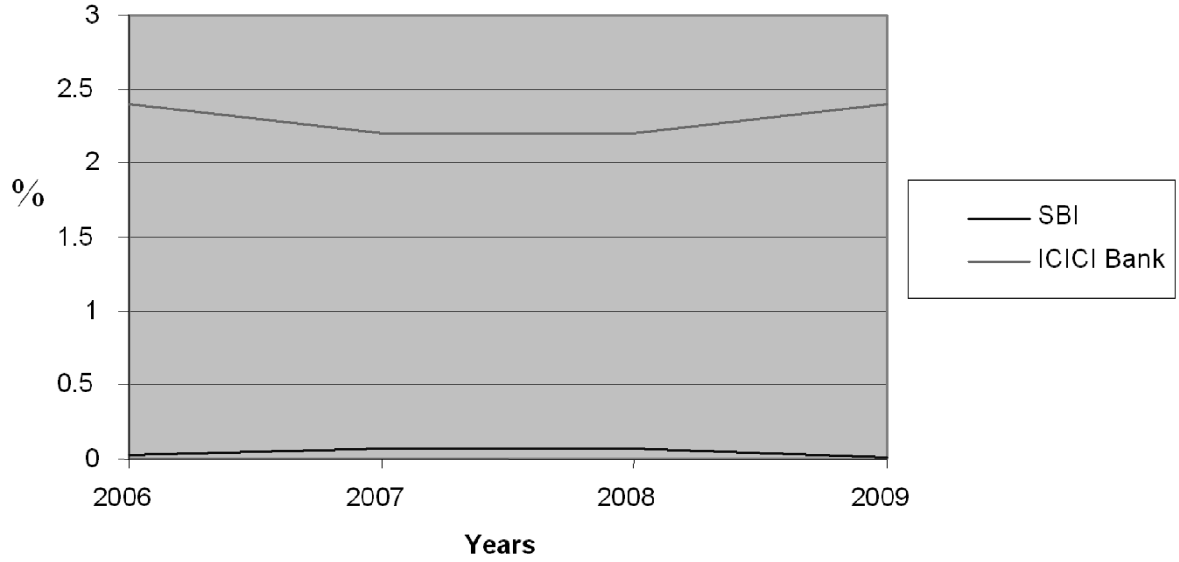

Figure 11. Interest margin is SBI and ICICI Bank

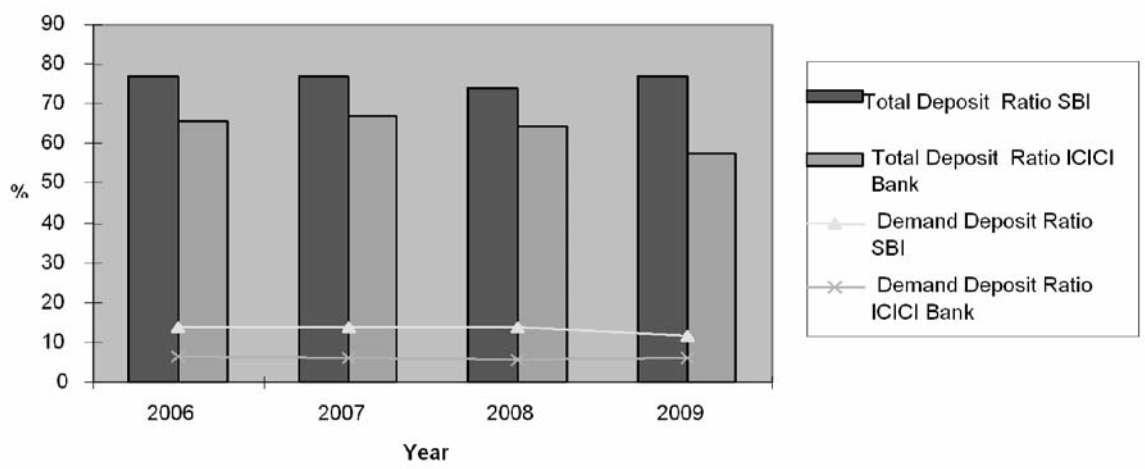

Figure 12. Total deposit and Demand Deposit Ratio in SBI and ICICI Bank

perspective and in turn reduces the potential ability to substitute other hedging instruments such as derivatives. An increasing trend could be seen in the deposit ratio in the case of SBI i.e. 76.93 in 2006, 77 in 2007, 74 in 2008 and again 77 in 2009 except a decrease in 2008(74).On the contrary, in ICICI Bank it was recorded as 65.67, 66.88, 64.44 and 57.57 in 2006, 2007, 2008 and 2009 respectively showing a mixed trend. The demand deposit ratio was 13.76 in 2006, 14 in 2007 and 2008, and 11.48 in 2009 in SBI while in the case of ICICI Bank it was 6.59, 6.2, 5.7 and 6.18. This implies that demand deposit is more in ICICI as compared to SBI during the same period under study (Fig.12).

2.3.5. IRD and Tier I capital

The risk adjusted capital requirement such as the tier I capital in the Basel II framework is intended to serve as safety cushion against various contingencies. Banks with stronger capital position are arguably more capable of servings interest rate. In this sense the capital reserve of banks and other risk management policies such as derivatives may be substitute for each other. Controlling for the risk profile of bank loans, there ought to be a negative association between bank capital and the use of other risk management institution such as derivatives. In the case of SBI Tier I capital has been fluctuating from year to year. It was 9.36 in 2006, but decreased to 8.01 in 2007. It has again registered an increase up to 9.14 in 2008 but again decreased to 8.53 in 2009. In the case of ICICI Bank Tier I Capital has been increased from 9.2 to 11.84 in between 2006 to 2009 with an exception in 2007(7.42) (Fig.13).

3. OWNERSHIP STRUCTURE AND USE OF INTEREST RATE DERIVATIVES

The present study has used correlation as well as ANOVA test in order to establish the relationship between the ownership structure and the use of interest rate derivatives. While calculating the correlation between the asset and IRD, it is evident from the Table: 3 that there is a negative correlation between the two (-0.07) which means that as asset increases the investment in interest rate derivatives decreases in SBI. In the case of ICICI Bank approximately zero correlation

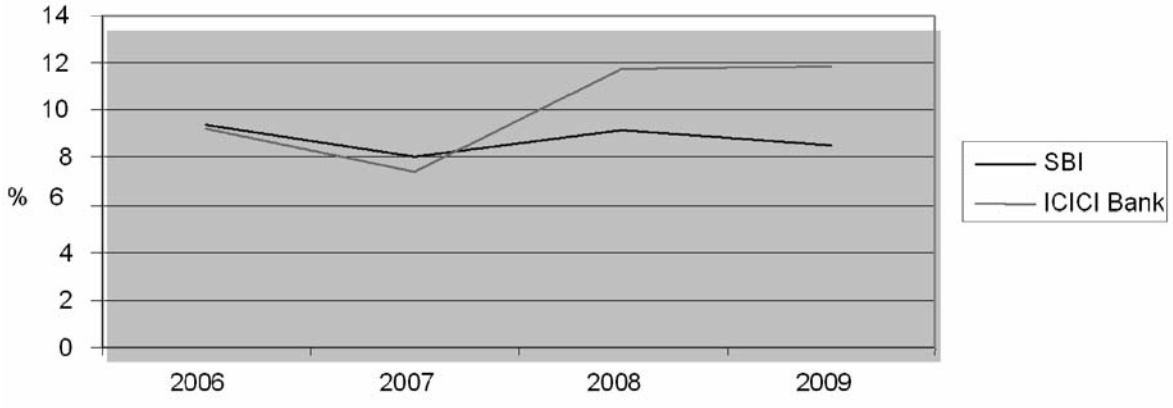

Figure 13. Tier I Capital

was found (0.0006) which means that there was no relation or the two variables are independent to each other and no predictive pattern could be identified between the two. Negative correlation was found in between the loan and IRD (-0.014 %) in SBI signifying that as the loan increases the investment in interest rate derivatives decreases while positive correlation was found in ICICI Bank (0.36). Similarly, negative correlation was found in SBI in deposit and demand deposit ratio -0.02 and -0.59 respectively. In the case of ICICI Bank positive correlation was found in deposit ratio 0.25 and negatives correlation in demand deposit -0.90. In the case of SBI negative correlation exists in ROA, ROE and interest margin which depicts that as the three increases interest rate derivatives decreases and vice-versa. In the case of ICICI Bank positive correlation was seen, which means that as ROA and ROE increases the use of IRD also increases. Interest margin and IRD show a negative correlation. While calculating the correlation between IRD and Tier I Capital it was found a negative correlation with a value of -0.10, which means that as Tier I capital increases IRD decreases and vice-versa. In ICICI Bank we can see positive correlation (0.43) which means that as tier I capital increases use of IRD in ICICI Bank also increase.

While applying the Analysis of Variance Test it was found that the calculated value of F is smaller than the table value, hence the hypothesis is accepted i.e. sample means in both banks are equal with respect to IRD, Net NPA and Tier I Capital. The hypothesis is rejected in the case of advances proving that sample means of the banks in question are different (Table 4).

4. CONCLUSION

Public sector banks are operated by government bodies with a share of more than 51 % and have deep commitment to social

Table 3. Correlation table (between variables and IRD)

Bank	Asset	Deposit	Deposit ratio	Demand deposit ratio	Loan	NPA%	Tier I Capital	ROA	ROE	Interest margin
SBI	-0.07	-0.25	-0.02	-0.59	-0.014	-0.19	-0.10	-0.12	-0.25	-0.14
ICICI	0.0006	0.02	0.25	-0.90	0.36	0.23	0.43	-0.04	0.72	-0.67

Table 4. ANOVA Test

	IRD	Advances	Net NPA	Tier I Capital
Accepted	A(3.11)		A(2.13)	A(1.3462)
Rejected		R(10.26)		

obligations. The government owns 59.41 percent stake in SBI. Private sector banks are the banks which are controlled by the private lenders with the approval from the RBI; they are basically committed to earn profit. As the public and private sector banks are different in their policy making, it was also proved in the present study that SBI and ICICI Bank differ in their approach towards the use of interest rate derivatives. The study of different variable reveals that a negative correlation have been found in SBI which mean that as the volume of asset, loan, deposit, demand deposit, ROA, ROE, Interest margin, NPA, Tier I capital increases the investment in IRD decreases. On the other hand ICICI Bank shows almost positive correlation in all the variables except demand deposit and ROA, which means as the variables, increases the use of IRD, also increases. The difference in the pattern of investment in IRD may be attributed to the change in ownership structure and policies adopted by these two banks. As banks grow larger and make more loans, the systematic risk can be captured by the size of the banks as in the case of SBI, the largest bank in India which seems to be conservative in using interest rate derivatives. On the other hand ICICI Bank has used this instrument extensively. Almost similar pattern of fluctuations could be seen among the variables, over the years but the predictability remains uncertain due to limited data available, which is a major draw back in this research paper, although few suggestions could be useful. The interest rate risk is managed by the large pool of asset in the case of SBI while ICICI Bank has emphasized on innovative risk management tool and has invested in IRD.

ИЗВОДИ КАМАТНИХ СТОПА У ИНДИЈСКИМ БАНКАМА

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Извод

Овај рад представља покушај приказа свеобухватног профила глобалног тржишта ОТЦ-а, са посебном пажњом на изводе каматних стопа. Анализирани су различити аспекти везани за промену каматних стопа у банкама у Индији. Студија такође истражује и потенцијални утицај власничке структуре према променама каматних стопа у банкама. У том смислу, студија се бави компаративном анализом највеће државне (СБИ) и највеће приватне банке у Индији (ИЦИЦ). Анализирани су бројни показатељи, као што су: укупно власништво, депозити, аванси, РОИ, РОЕ, гранична каматна стопа, проценат кредита, итд. У сврху анализе коришћене су статистичке методе типа корелације и АНОВА теста.

Кључне речи: Банкарско тржиште, изводи каматних стопа, компаративна анализа

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