

RISK MANAGEMENT IN BANKING SECTOR WITH REFERENCE TO SBI AND HDFC BANKS – A STUDY

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ABSTRACT:

The study aimed to know about a study on market risk management in banking sector with reference to SBI and HDFC bank. The study have considered secondary data for the period 2009-10 to 2019-20. The study have noticed that there is more risk in the HDFC bank through the statistics applied and there is Ordinary least squares applied and trend analysis to know the capital risk and interest rate risk. The study implies that E-views software has been applied to take the outcome of the statistics. Study have concluded that it has identified the risk more in the HDFC in the year 2019-2020 with 120.02. This study have the scope for the further research.

Keyword: Capital Risk, Interest Rate Risk, HDFC, Risk Management, SBI.

INTRODUCTION

The banking industry is critical to the development of any country's financial system. Banks, as the economic system's backbone, serve as one of the key drivers of economic development by undergoing maturity transformation and supporting critical payment systems. Banking has evolved into the bedrock of modern economic development (**Kapoor, 2004**). **Schumpeter (1993)** regarded the banking system as one of the most important agents in the process of economic development. According to **Pathak (2008)**, the strength of any economy is fundamentally dependent on the strength and efficiency of the financial system, which is dependent on a sound banking system. It is one of those out-of-the-ordinary industries that deals with a plethora of risks. They take various types of financial risks while providing financial services (**Santomero, 1997**). Bank specificity, financial market volatility, increased competition, and

diversification, on the other hand, expose banks to risks and challenges. As a result, commercial banks are in the risk business. Furthermore, banks are extremely interconnected, so a single point of failure can cause widespread disruption in the economy. As a result, in order to maintain a country's economic system's momentum of growth, the banking sector must be managed efficiently in order to respond to changing times. A very healthy and prudent banking sector can withstand financial system risk and shock and ensure overall financial stability (RBI, 2011). Since the last two decades, the terminology of Risk and Governance has gained traction in the financial world. The upheaval caused by the global financial crisis has sparked more interest in risk management than ever before.

In every aspect of life, risk management has always been a means of survival. Risk management, according to **Pyle (1997)**, is the process of identifying key risks, obtaining consistent, understandable, and operational risk measures, deciding which risks to reduce and which to increase and by what means, and establishing procedures to monitor the resulting risk position. In the case of any financial institution, managing risk is the first step toward sustaining profitability. Organizations in the financial arena around the world are required to adhere to stringent risk management frameworks in the current changed scenario. According to **Goyal (2010)**, rising global competition, increased deregulation, and the introduction of novel products and delivery channels have pushed risk management to the forefront of today's financial landscape. Success can be attained by properly assessing risks and taking appropriate action. The financial crisis in the United States, which resulted in a financial tsunami around the world, clearly demonstrated the importance of understanding the nuances of risks and their derivatives. As a result, risk management has emerged as one of the most important issues in any discussion encompassing financial strategies of any organisation in the financial arena.

Risk management is the systematic process of identifying, evaluating, and mitigating risks (**Porthin, 2004**). The performance of activities designed to minimise the negative impact (cost) of uncertainty (risk) regarding potential losses is referred to as risk management (**Schmidt and Roth, 1990**). Risk management is an orderly process for identifying and assessing an entity's pure loss exposure and adopting the most appropriate technique to address such exposure (**Redja 1990**).

REVIEW OF LITERATURE

Blum (1999) has conducted a study where the effect of capital adequacy rules on bank risk taking behavior of a single bank is analyzed under the regulated and unregulated environment. Employing a

dynamic model, the study finds that capital regulation is not adequate if the objective of the bank is to reduce insolvency risk. The immediate effect of tight capital regulation would result in less profitability which would ultimately affect bank's stability negatively. In other words, capital adequacy requirement increases the risk of banks. **Cebenoyan and Strahan (2004)** has conducted a study to examine the effect of credit risk management on bank's capital structure, lending behavior and profitability of all domestic commercial banks in the United States during 1987 to 1993. The findings reveal that there exists a strong correlation between capital, liquidity and credit risk management. The findings indicate that those banks which are active dealer in buying and selling loans tends to be more profitable than the others and can manage with less liquidity and less capital. Furthermore, these banks are found to be more flexible as well as aggressive players in the market.

A study carried by **Ahmed et al., (2008)** to investigate the determinants of capital ratios at the time of Asian financial crisis using panel data regression model on 42 domestic financial institutions in Malaysia during 1995-2002. The results indicate that the level of risk has a positive influence on bank capital. Size is negatively associated with the capital ratio suggesting that large banks use less capital may be due to their better access to capital market as compared to small banks. Regulatory pressure has negative impact on capital ratio at the time of crisis. Further, the profitability does not have any significant association with the capital ratio. **Lee and Hsieh (2013)** analyzed the influence of capital on risk level and profitability of banks from 42 Asian countries during 1994- 2008 using two step GMM dynamic panel data model. The findings reveal that bank capital and risk are negatively associated supporting the moral hazard hypothesis. However, capital and profitability are found to be positively related. Further, the results indicate that banks in high income countries are more associated with sound financial and supervisory mechanism and also access to latest technology as compare to lower income countries. Another study has been carried out by **Parinduri and Riyato (2011)** to estimate the effect of capital requirements on banks' behavior in Indonesia during 2000-2005. The study has applied dynamic panel data technique of **Arellano and Bond's (1991)** first differenced GMM estimator and **Blundell and Bond's (1998)** system GMM estimator. The results reveal that bank's response towards capital requirements is same for both undercapitalized as well as for the adequately capitalized banks.

In Indian context, **Ghosh et al., (2003)** have investigated the association between capital and risk of Indian public sector banks using dynamic panel regression. The study fails to extricate any conclusive evidence on the issue and suggests that bank specific regulatory capital based on risk profile may be

more appropriate to enhance stability. **Ranjan and Dhal (2003)** have explored empirically the impact of terms of credit on nonperforming loans (NPLs) in case of Indian public sector banks and have observed significant influence of terms of credit on banks' NPLs after controlling the influence of bank size and other macroeconomic shocks. **Gupta and Meera (2011)** have observed negative correlation coefficient between CAR and non-performing assets for some select Indian banks. **Maji and Dey (2012)** have also indicated negative association of size and capitalization with insolvency risk of Indian banks

OBJECTIVES OF THE STUDY

1. To study the Capital and Interest rate Risk Management of SBI and HDFC bank
2. To analyse the impact of Capital Risk and Interest Rate Risk of Banks performance.

HYPOTHESES OF THE STUDY

H₀₁: There is no difference between the Capital risk of SBI and HDFC banks

H₀₂: There is no difference between the Capital risk of SBI and HDFC banks

H₀₃: Capital Risk Management and Interest Rate Risk has no impact on Banks performance.

RESEARCH METHODOLOGY

The present study will focus on SBI Bank (Public Sector Bank) and HDFC Bank (Private Sector Bank) by taking into consideration past 10 years data i.e., from 2009-10 to 2018-19. The study would consider Bankometer Model (Capital Risk Management) and GAP analysis (Interest Rate Risk Management) with respect to Risk management of banks. The study used the IMF has developed and suggested to consider the Bankometer to measure the financial condition of the banks.

$$S = 1.5 \text{ times } X1 + 1.2 \text{ times } X2 + 3.5 \text{ times } X3 + 0.6 \text{ times } X4 + 0.3 \text{ times } X5 + 0.4 \text{ times } X6$$

Whereas:

X1 = CA or Capital Asset Ratio

X2 = EA or Equity to Asset

X3 = CAR or Capital Adequacy Ratio

X4 = NPL or non-performing loans to Loans

X5 = CI or Cost to Income

X6 = LA or Loan to Asset

GAP Analysis

It is an interest rate risk management tool based on the balance sheet which focuses on the potential variability of net-interest income over specific time intervals. Interest sensitive gap (DGAP) reflects the differences between the volume of rate sensitive asset and the volume of rate sensitive liability and given by, $GAP = RSAs - RSLs$ The information on GAP gives the management an idea about the effects on net-income due to changes in the interest rate. Positive GAP indicates that an increase in future interest rate would increase the net interest income as the change in interest income is greater than the change in interest expenses and vice versa. (Cumming and Beverly, 2001)

In order to find out the appropriate regression model, the study has undertaken most widely used tests: Ordinary Least Method by using Eview software, Paired t-test is used to identify the difference between the two banks.

Results and Discussion

Objective 1: To study the Capital and Interest rate Risk Management of SBI and HDFC bank

TABLE 1 REPRESENT THE CAPITAL RISK OF SBI

	Capital Asset Ratio= Capital/Asset	Equity to Asset Ratio= Networth/Total Asset	Capital Adequacy Ratio	Cost to Income	Loan to Asset= Loans/deposits	Capital Risk
2010-11	0.04378	5.732919	13	41.82	77.87991	96.14314
2011-12	0.038534	5.065316	12	46.38	80.15543	94.11235
2012-13	0.03667	5.805058	14	40.55	82.25623	101.0886
2013-14	0.032067	5.861404	13	37.6	85.57243	98.09076
2014-15	0.031159	6.150737	13	40.08	85.82944	99.2834

2015-16	0.02765	5.977073	12	36.85	82.42784	93.2401
2016-17	0.026129	6.032464	13	39.14	82.98044	97.71233
2017-18	0.023144	5.271172	13	41.15	72.9625	93.39012
2018-19	0.024678	5.681675	13	47.52	72.00552	95.41323
2019-20	0.022951	6.030543	13	44.68	75.72939	96.46683

The above table and graph represent the capital risk with respect to state bank of india. The study considered the capital risk for the period of 2010-2011 to 2019-2020. Initially, the capital risk of sbi is 96.14, which decreases to 2 points in the year 2011-2012 and increases to 101.08 in the year 2012-2013. It was also discovered that from 2013-2014 to 2014-2015, the capital risk of SBI was high. It was also discovered that from 2015-2016 to 2014-2015, the capital risk of SBI was quite low. In 2016-2017, the capital risk increased, which was also decreased in 2017-2018. In 2018-2019, the capital risk was 95.41, and in 2019-2020, the capital risk was 96.46, so the study concluded that there is high capital risk.

TABLE 2 REPRESENT THE CAPITAL RISK OF HDFC

	Capital Asset Ratio= Capital/Asset	Equity to Asset Ratio= Networth/Total Asset	Capital Adequacy Ratio	Cost to Income	Loan to Asset= Loans/deposits	Capital Risk
2010-11	0.206093	9.733668	18	46.27	75.41208	119.0354
2011-12	0.167371	9.204842	16	45.13	77.21618	111.7223
2012-13	0.137614	8.858029	17	38.03	80.65136	114.0056
2013-14	0.116716	8.987161	17	38.02	83.50287	115.2668
2014-15	0.095272	8.769833	17	36.53	85.92639	115.4963
2015-16	0.082573	10.40264	16	36.84	85.1481	113.7183
2016-17	0.069241	10.175	17	36.69	89.26805	118.5281
2017-18	0.057434	10.28683	16	37.84	91.03558	116.1966
2018-19	0.047047	9.934781	15	39.62	88.79451	111.8961
2019-20	0.043764	11.98887	17	38.41	88.76231	120.9802

The above table and graph represent the capital risk with respect to HDFC bank. The study considered the capital risk for the period of 2010-2011 to 2019-2020. Initially, the capital risk of HDFC is 119.0, which decreases to 8 points in the year 2011-2012 and increases to 114.05 in the year 2012-2013. It was also discovered that from 2013-2014 to 2014-2015, the capital risk of SBI was 115 in both years. It was also discovered that from 2015-2016 is quite low than previous year that is 2014-2015, in 2016-2017 increases it points which is also decreased in 2017-2018, in 2018-2019 the capital risk was 111.89 and in 2019-2020 the capital risk is 120.89.

Paired t Test of Capital Risk

Null hypothesis: There is no significant difference between SBI and HDFC’s Capital Risk

Alternative hypothesis: There is a significant difference between SBI and HDFC’s Capital Risk

TABLE 3 REPRESENT THE PAIRED T TEST OF CAPITAL RISK

Paired Samples Test									
		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	SBI_Capital Risk - HDFC_Capital Risk	-19.19048	3.67456	1.16200	-21.81910	-16.56186	-16.515	9	.000

The above table represents the paired t test with respect to SBI and HDFC banks of capital risk. If the mean value is positive, we conclude that SBI capital risk is higher than HDFC capital risk. If the mean value is negative, we conclude that HDFC capital risk is higher than SBI capital risk. The mean value in the above table is -19.19, indicating that HDFC has a higher capital risk than SBI. It indicates that reject the null hypothesis and accept the alternative hypothesis.

TABLE 4 REPRESENT THE INTEREST RATE RISK OF SBI

	Advance s	Investment s	Sensitive Liabilitie s	Deposit s	Borrowing s	Sensitive liabilitie s	GAP= Assets - Liabilitie s	Interest Sensitivit y Ratio
2010-11	869501.6	402754.1	1272256	1116465	122074.6	1238539	33716.64	1.027223
2011-12	1006402	419066.5	1425468	1255562	142470.8	1398033	27434.75	1.019624
2012-13	1163670	460949.1	1624619	1414689	157991.4	1572681	51938.59	1.033026
2013-14	1392608	519393.2	1912001	1627403	203723.2	1831126	80875.41	1.044167
2014-15	1578277	578793.1	2157070	1838852	223759.7	2062612	94457.71	1.045795
2015-16	1692211	695691.8	2387903	2052961	244663.4	2297624	90278.89	1.039292
2016-17	1870261	705189.1	2575450	2253858	258214.4	2512072	63378.02	1.025229
2017-18	1896887	1027281	2924168	2599811	336365.7	2936176	-12008.6	0.99591
2018-19	1960119	1183794	3143913	2722178	369079.3	3091258	52655.16	1.017034
2019-20	2226854	1119248	3346101	2940541	413747.7	3354289	-8187.28	0.997559

The above table and graph represent SBI's interest risk rate from 2010-2011 to 2019-2020. Initially, the interest sensitivity ratio is 1.06 and it has been reduced to 0.01 units. It has been increased in the year

0.02 percent in 2012-2013, while in the year 2013-2014, the interest sensitive ratio is 1.04 and it has been increasing until 2014-2015.

TABLE 5 REPRESENTS THE INTEREST RATE RISK OF HDFC

	Advances	Investments	Sensitive Assets	Deposits	Borrowings	Sensitive Liabilities	GAP = Assets - Liabilities	Interest sensitive Ratio
2010-11	126162.7	58508.28	184671	167297.8	13171.8	180469.6	4201.43	1.023281
2011-12	160831.4	70276.67	231108.1	208287.2	14650.44	222937.7	8170.44	1.036649
2012-13	198837.5	96795.11	295632.6	246539.6	26334.15	272873.7	22758.91	1.083405
2013-14	247245.1	110960.4	358205.5	296091.8	39496.61	335588.4	22617.15	1.067396
2014-15	315418.9	119571.1	434989.9	367080.3	49596.72	416677.1	18312.87	1.04395
2015-16	383408	164272.6	547680.6	450283.7	59478.25	509761.9	37918.68	1.074385
2016-17	487290.4	161683.3	648973.8	545873.3	71763.45	617636.7	31337.02	1.050737
2017-18	585481	210777.1	796258.1	643134.3	98415.64	741549.9	54708.21	1.073775
2018-19	700033.8	238460.9	938494.8	788375.1	156442.1	944817.2	-6322.46	0.993308
2019-20	819401.2	290587.9	1109989	923140.9	117085.1	1040226	69763.04	1.067065

The above table and graph represent the HDFC interest risk rate from 2010-2011 to 2019-2020. Initially, the interest sensitivity ratio is 1.02 and it has been raised to 0.01 units in the year 2011-2012 and 0.05 percent in the year 2012-2013, while in the year 2013-2014, the interest sensitive ratio is 1.06 and it has been increasing until 2014-2015. The interest rate ratio has decreased to 0.99 in 2018-2019 and increased in 2019-2020, indicating that interest rates are ranging between 0.99 and 1.08, indicating that HDFC is not in the red zone.

PAIRED T TEST of Interest Rate Risk

Null hypothesis: There is no significant difference between SBI and HDFC’s Interest Rate Risk

Alternative hypothesis: There is a significant difference between SBI and HDFC’s Interest Rate Risk

TABLE 6 REPRESENT THE PAIRED T TEST OF INTEREST RATE RISK

Paired Samples Test									
		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	SBI_Interest Rate of Risk - HDFC_Interest Rate of Risk	-.02218	.03055	.01018	-.04566	.00131	-2.177	8	.061

The above table represents the paired t test with respect to SBI and HDFC banks of interest risk. If the mean value is positive, we conclude that SBI interest risk is higher than HDFC interest risk rate. If the mean value is negative, we conclude that SBI interest risk is higher than HDFC interest risk rate. The mean value in the above table is 0.010, indicating that SBI has a high interest rate.

Objective 2: To analyses the impact of Capital Risk and Interest Rate Risk of Banks performance.

Null Hypothesis: There is no impact of Capital and Interest Rate Risk on SBI’s Banks performance

Alternative hypothesis: There is no impact of Capital and Interest Rate Risk on SBI’s Banks performance

Table 7: The Regression Weight of SBI Risk Management

Dependent Variable: ROA				
Method: Least Squares				
Sample (adjusted): 2 10				
Included observations: 9 after adjustments				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
DCR	0.026907	0.028059	0.958912	0.3695
IR	5.627806	0.109423	51.43176	0.0000
R-squared	0.271974	Mean dependent var		5.763944
Adjusted R-squared	0.167970	S.D. dependent var		0.368620
S.E. of regression	0.336239	Akaike info criterion		0.851143
Sum squared resid	0.791398	Schwarz criterion		0.894970
Log likelihood	-1.830142	Hannan-Quinn criter.		0.756563
Durbin-Watson stat	0.857727			

The above table depicts ordinary least squares with respect to State Bank of India from 2010-2011 to 2019-2020, where risk management ratios serve as independent variables and proxy variables return on assets serve as dependent variables. The coefficient value of capital risk is 0.026, while the coefficient value of interest rate risk is 5.627, implying that capital risk and interest rate risk are positively impacting SBI's financial performance. It is also discovered that capital risk has an insignificant impact on ROA. The probability value of capital risk is greater than 0.05, while the probability value of interest rate risk is less than 0.05, indicating that interest risk has a significant impact on SBI's return on asset. Furthermore, the R squared model was found to be strongly fit, implying that the null hypothesis should be rejected and the alternative hypothesis, that there is a significant impact of capital risk management on SBI's financial performance, accepted.

Null Hypothesis: There is no impact of Capital and Interest rate Risk on HDFC's Banks performance

Alternative hypothesis: There is no impact of Capital and Interest Rate Risk on HDFC's Banks performance

TABLE 8 The Regression Weight Of HDFC Risk Management

Dependent Variable: DROA				
Method: Least Squares				
Sample (adjusted): 2 10				
Included observations: 9 after adjustments				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
HCR	0.032345	0.056434	0.573142	0.5845
HIR	-3.505145	6.171111	-0.567993	0.5878
R-squared	0.044578	Mean dependent var	0.033067	
Adjusted R-squared	-0.091910	S.D. dependent var	0.496610	
S.E. of regression	0.518930	Akaike info criterion	1.719036	
Sum squared resid	1.885021	Schwarz criterion	1.762864	
Log likelihood	-5.735662	Hannan-Quinn criter.	1.624456	
Durbin-Watson stat	2.368922			

The above table depicts ordinary least squares with respect to HDFC from 2010-2011 to 2019-2020, where risk management ratios are independent variables and proxy variables return on assets are dependent variables. The coefficient value of capital risk is 0.032, while the coefficient value of interest risk rate is -5.505, implying that interest rate risk is negatively impacting HDFC's financial performance, and capital risk has an insignificant impact on ROA. When the probability value of capital risk is greater than 0.584 and the probability value of interest rate risk is less than 0.587, it indicates that interest risk has a significant impact on HDFC's return on asset. Furthermore, the R squared model was found to be strongly fit, leading us to reject the null hypothesis and accept the alternative hypothesis, which is that capital risk management has a significant impact on HDFC's financial performance.

FINDINGS

1. This study found that there is a capital risk found to be more in the HDFC bank than the SBI bank, Capital risk means if an organization is not having the enough capital will be borrowed, here there is a chance of having the capital risk. Here in this study HDFC with -19.48, having the more risk than SBI.
2. The findings also states that it has the constant risk slight upwards and downwards in SBI, 2012-13 there is a risk of 101.86 and in HDFC bank it has the 120.98 there is a huge risk observed in 2019-20.
3. The study implied that there is an interest rate risk, defined that it has the potential that will change in all interest rates that will reduce the value of a fixed rate investment. The risk evolved is obtained as then high risk in the HDFC bank with the value as -.02218.
4. The study implies that there is an impact of financial ratios i.e. return on assets on the Market Risk management of SBI and HDFC banks. Here, the study have found that there is huge capital risk as well as interest rate risk. The impact by the Return on assets with respect to the capital risk -3.505, interest rate as 0.032345 that means it has more impact on the HDFC as it has more risk.

CONCLUSION:

The study implies a study on Market Risk Management in Banking Sector with Reference to SBI And HDFC Bank. This study found that there is a capital risk found to be more in the HDFC bank than the SBI bank, Capital risk means if an organization is not having the enough capital will be borrowed, here there is a chance of having the capital risk. The study also includes that interest rate risk is obtained to be having more in the HDFC bank with the -0.2218 as the coefficient value. The study results in the capital risk -3.505 and interest risk as 0.0323, that it has the impact of the financial ratios return on assets upon the market risk management. Hence, the capital risk and interest risk is obtained to be having the more risk in the HDFC bank.

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