

Analysis of Insolvency Risk of Indian Public Sector Banks

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ABSTRACT

Public sector banks are major part of India's financial sector. The study examined the insolvency risk of major public sector banks namely Punjab Nation Bank, Bank of Baroda, Canara Bank and industry as a whole under the study periods. The results obtained from an analysis are carried out on the secondary financial data form 2009-10 to 2017-18 of the three public sector banks selected on random sampling. The results indicate that the insolvency risk of all these banks increased over the periods of the study. So, it is necessary to counter of insolvency risk, public sector banks must comply with the capital requirement as stipulated by the RBI. This capital could only offset the insolvency risk in the short run while in the long run banks should improve their return on assets by properly scrutinizing the borrower credit worthiness, otherwise it is difficult for the these banks to get rid of the insolvency risk. Finally, too much government intervention distorts the automatic functioning of financial institutions.

Keyword: - CAR, CRAR, ROA and Insolvency Risk.

Introduction

The banking sector is the life line of any modern economy. It is one of the important financial pillars of the financial system, which plays a vital role in the success/ failure of an economy. Banks are one of the oldest financial intermediaries in the financial system. Research confirms that countries with a well developed banking system grow faster than those with a weaker one. Banking system reflects the economic health of the country. A central bank supervises and regulates the operations of the banking system. Hence, an autonomous central bank paves the way for the development of a sound financial system. It is generally accepted that grater financial system depth, stability and soundness contribute to economic growth. The banking system in India faces many problems at present. One of such problems is the deteriorating earning quality to ensure proper functioning of the banking system in the economy. The most of the studies pertain to insolvency risk observed that the public sector banks in India are less risky and remain or are likely to stay in a safe zone. But the enhancement in non – performing assets, decline in their return on assets and diminishes the capital assets ratio cast doubts. So, it also draws attention towards the insolvency risk of the financial institutions of the country. Hence, there is a need to look at the pattern of insolvency risk.

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Objectives of the Study

In the present study following objectives has been set:

- To measure the insolvency risk of the Indian public sector banks.
- To test whether insolvency risk is increasing or not in the Indian public sector banks.
- To study also tries to suggest the steps needed for reducing the insolvency risk of Indian public sector banks.

Hypothesis

The following hypothesis formulated to achieve these objectives:

H01 – Insolvency risk of PNB is not increasing during the study periods.

H02 – Insolvency risk of BOB is not increasing under the study periods.

H03 – Insolvency risk of CAN is not increasing over the periods of study.

H04 – Insolvency risk of public sector banking industry is not increasing from 2009-10 to 2017-18.

Methodology

In the study, secondary data is taken as input to achieve the objectives of the study. For the study a sample of three public sector banks is taken on the basis of random sampling and thus these represents Indian public sector banking industry. The secondary data have been procured from annual reports, www.in.finance.yahoo.com of the selected banks and journals. The return on assets (ROA), capital assets ratio (CAR), capital risk adequacy ratio (CRAR) and standard deviation of return on assets (SDROA) are used to measure the insolvency risk of Indian public sector banks. Moreover, CAR is the ratio of market value of equity to total assets, CRAR is the ratio of regulatory capital to total assets, ROA is the ratio of earnings after tax to total assets and SDROA is based on the five years retrospective window width. The collected data analyzed with the help of ratio analysis and chi –square test has been used for testing the hypothesis to arrive at the conclusions

Scope of the Study

Analysis of the study is confined to three major public sector banks namely Punjab National Bank (PNB), Bank of Baroda (BOB), Canara Bank (CAN) and Industry as whole and analysis periods is from 2009-10 to 2017-18. Keeping in view of the objectives of the study, it has been decided to choose the banks on random sampling.

Table No. 1
Analysis of Insolvency Risk in Punjab National Bank (PNB) of India

Year	(Z ₁) $\frac{ROA+CRAR}{SDROA}$	(Z ₂) $\frac{ROA+CAR}{SDROA}$	(Z ₁ - Z ₂) Insolvency Risk	E	(O-E)	(O-E) ²	(O-E) ² /E
2009-10	84.15	16.71	67.44	46.43	20.81	433.06	9.32
2010-11	89.41	18.74	70.67	46.43	24.24	587.58	12.66
2011-12	107.70	21.17	86.53	46.43	40.10	1608.01	34.63
2012-13	76.35	12.22	64.13	46.43	17.70	313.29	6.75
2013-14	38.43	4.54	33.89	46.43	-12.54	157.25	3.39
2014-15	36.62	4.82	31.80	46.43	-14.63	214.04	4.61
2015-16	37.35	0.51	36.84	46.43	-9.59	91.97	1.98
2016-17	19.44	1.49	17.95	46.43	-28.48	811.11	17.47
2017-18	8.11	-0.53	8.64	46.43	-37.79	1428.08	30.76
			$\sum O=417.89$				$\chi^2=121.57$

Where, O= Observed Frequencies

E= Expected Frequencies

Sources: Author's Calculation

Table No. 1 describes the analysis of insolvency risk in Punjab National Bank of India. The Z score has tendency to decline over time and (Z₁-Z₂) score confirms the positive figure, which proves that insolvency risk of the PNB increases. The tabulate value of chi-square (χ^2) test at 1% and 5% level of significance is 20.09 and 15.51 respectively. The value of (χ^2) test is more than the tabulated value. The null hypothesis (H₀₁) is rejected. It may be concluded that insolvency risk of the PNB has substantially enhanced. So, it needs to be checked forth with.

Table No. 2
Analysis of Insolvency Risk in Bank of Baroda (BOB) of India

Year	(Z ₁) $\frac{ROA+CRAR}{SDROA}$	(Z ₂) $\frac{ROA+CAR}{SDROA}$	(Z ₁ - Z ₂) Insolvency Risk	E	(O-E)	(O-E) ²	(O-E) ² /E
2009-10	82.79	13.08	69.71	45.39	24.32	591.46	13.03
2010-11	72.10	14.31	57.79	45.39	12.40	153.76	3.39
2011-12	94.19	16.16	78.03	45.39	32.64	1065.37	23.47
2012-13	86.05	12.40	73.65	45.39	28.26	798.63	17.59
2013-14	52.53	6.20	46.33	45.39	0.94	0.88	0.02
2014-15	37.70	4.70	33.00	45.39	-12.39	153.51	3.38
2015-16	15.97	0.42	15.55	45.39	-29.84	890.43	19.62
2016-17	18.68	1.88	16.80	45.39	-28.59	817.39	18.00
2017-18	18.96	1.35	17.61	45.39	-27.78	771.73	17.00
			$\sum O=408.47$				$\chi^2=115.50$

Source: Author's Calculation

Table No. 2 explains the analysis of insolvency risk of BOB over the periods of the study. The Z score of the bank have tendency to downward over time and $(Z_1 - Z_2)$ score obtained the positive figures, it means that insolvency risk increases. As shown in table that tabulated value of chi –square test (χ^2) at 1% and 5% level of significance is 20.09 and 15.51 respectively. The value of (χ^2) test (i.e. 115.5) is more than tabulated value. It proves that null hypothesis (H02) is rejected. It may be inferred that insolvency risk of BOB is increasing over the periods of the study. Therefore, bank should see for them that the ratio should not go beyond a definite level so as to save the risk of financial distress.

Table No.3
Analysis of Insolvency Risk in Canara Bank (CAN) of India

Year	(Z ₁) ROA+CRAR SDROA	(Z ₂) ROA+CAR SDROA	(Z ₁ - Z ₂) Insolvency Risk	E	(O-E)	(O-E) ²	(O-E) ² /E
2009-10	99.95	41.55	58.40	28.56	29.84	890.43	31.18
2010-11	78.26	39.78	38.48	28.56	9.92	98.41	3.45
2011-12	66.73	32.19	34.54	28.56	5.98	35.76	1.25
2012-13	50.19	19.97	30.22	28.56	1.66	2.76	0.09
2013-14	30.59	8.55	22.04	28.56	-6.52	42.51	1.49
2014-15	30.60	10.55	20.05	28.56	-8.51	72.42	2.54
2015-16	18.45	3.55	14.90	28.56	-13.66	186.59	6.53
2016-17	25.82	5.63	20.19	28.56	-8.37	70.06	2.45
2017-18	27.87	9.61	18.26	28.56	-10.3	106.09	3.71
			$\Sigma 0=257.08$				$\chi^2=52.69$

Source: Authors Calculation

Table No. 3 illustrates the analysis of insolvency risk in Canara Bank from 2009-10 to 2017-18. The z score with the passage of time have decline inclination and $(Z_1 - Z_2)$ seems to positive figures. It witnesses that insolvency risk of the bank enhances. The chi –square (χ^2) test table value at 1% and 5% level of significance is 20.09 and 15.51 respectively. The calculated value (χ^2) test is 52.69. It means that test value is more than table value. Hence, null hypothesis (H03) is rejected. It reveals that insolvency risk of the bank is enhancing over the periods of the study. It can be said that declining trend of Z score in banking business reflects a really alarming situation. The study points out to be taken care of in coming years also.

Table No. 4
Analysis of Insolvency Risk in Industry of Public Sector Banks

Year	(Z ₁) ROA+CRAR SDROA	(Z ₂) ROA+CAR SDROA	(Z ₁ -Z ₂) Insolvency Risk	E	(O-E)	(O-E) ²	(O-E) ² /E
2009-10	88.96	23.78	65.18	40.12	25.06	628.00	15.65
2010-11	79.92	24.28	55.64	40.12	15.52	240.87	6.00
2011-12	89.54	23.17	66.37	40.12	26.25	689.06	17.17
2012-13	70.86	14.86	56.00	40.12	15.88	252.17	6.29
2013-14	40.52	6.43	34.09	40.12	-6.03	36.36	0.91
2014-15	34.97	6.69	28.28	40.12	-11.84	140.19	3.49
2015-16	23.92	1.49	22.43	40.12	-17.69	312.94	7.80
2016-17	21.31	3.00	18.31	40.12	-21.81	475.68	11.86
2017-18	18.31	3.48	14.83	40.12	-25.29	639.58	15.94
			Σ0=361.13				χ ² =85.11

Source: Authors Calculation

Table No. 4 highlights the analysis of insolvency risk in Indian banking industry of public sector. The Z score has the tendency to diminish over the time and (Z₁-Z₂) shows the positive figure. It means that insolvency risk of the industry enhances. The tabulated value of (χ²) test at 1% and 5% is 20.09 and 15.51 respectively. The calculated value of (χ²) test (85.11) is more than the tabulated value. Hence, the null hypothesis is rejected. It proves that insolvency risk of the Indian banking industry of public sector is enhancing form 2009-10 to 2017-18. It may be inferred that return on assets is one of the prime factors on which the value of Z score depends, decline in the value of return on assets and become negative in the terminal year of analysis and also results in decline of the value of Z score.

Table No. 5
Summary of the Results

Hypothesis	Tabulated Value		Degree of Freedom n-1 (9-1=8)	Expected value	Results
	.01	.05			
H01	20.09	15.51	8	121.57	Reject
H02	20.09	15.51	8	115.50	Reject
H03	20.09	15.51	8	52.69	Reject
H04	20.09	15.51	8	85.11	Reject

After applying the chi square test (χ²), table no. 5 portrays that

- The hypothesis H01 is rejected. It results that insolvency risk of PNB is increasing during the study periods.
- The hypothesis H02 is rejected. It proves that insolvency risk of BOB is increasing over the periods of the study.

- The hypothesis H03 is rejected. It witnesses that insolvency risk of CAN is increasing under the study periods.

- The hypothesis H04 is rejected. It confirms that insolvency risk in Indian banking industry of public sector is increasing from 2009-10 to 2017-18. It can be inferred that the time has come, the Reserve Bank of India should setup a cell to regularly monitor the functioning of fund and non- fund activities of every public sector bank. So that any intentional or unintentional irregularities taking place in the domain of public sector banks could be timely scrutinized and rectified for the healthy growth of the banking system.

Findings and Suggestions

Findings of the analysis is that the value of Z score decline with the passage of the time of all the three public sector banks and industry as whole, which indicates substantial enhancement in their insolvency risk. Return on assets is one of the prime factors on which the value of Z score depends, declines the value of return on assets and became negative in the terminal year of analysis that is resulted in decline the value of Z score. So, it is necessary to counter the potential threat of insolvency risk of public sector banks must comply with the capital requirement as stipulated by the RBI. This capital could only offset the insolvency risk in the short run. So that banks must improve their return on assets in the long run by properly scrutinizing the borrower's credit worthiness. Otherwise it is difficult for these banks to get rid of the insolvency risk.

Limitations of the study

The study is limited to the selected banks only. The size of sample could have been larger for drawing better results. Aggregate of banks are representing the industry of sample units.

Scope for further Research

In the study, included selected banks only, therefore. It reflects little ideas about the financial conditions of the banks. It would be good for further research to include other banks also. For further research, primary data may be used to give a clear picture of the banks.

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