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Capital adequacy and systemic risk: Evidence from selected Indian private sector banks

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Abstract

This study investigates the relationship between systemic risk and capital adequacy in certain private-sector banks in India. Based on the CAMEL paradigm, this study examines five key financial ratios: CAR, DER, TATA, GSTR, and CDR. These ratios measure the extent to which funds have been advanced relative to total assets. Banks' risk profiles and financial health are assessed using these ratios in light of regulatory requirements and market stability. To examine the impact of these ratios on systemic risk indicators, we use the average data from 2018–19 to 2022–23.

Keywords: Capital adequacy test, Private sector banks.

Introduction

For economies to grow and remain financially stable, the banking sector must remain stable. Reducing systemic risk, ensuring market trust, and allowing banks to absorb unexpected losses all depend on capital adequacy. Since private sector banks are so important to India's economy, studying how they handle risk and their capital adequacy levels is crucial.

For a comprehensive framework to evaluate the performance and risk of banks, the CAMEL model provides a framework that stands for capital adequacy, asset quality, management quality, earnings, and liquidity. This study directly addresses the impact of capital adequacy on systemic risk.

Any business that takes deposits from the general public and makes loans or investments with those funds, whether

those funds are repayable upon demand or through other methods and may be withdrawn by cheque, draft, order, or any other method, is called a bank according to the Banking Regulation Act of 1949 in India. Banking operations in India are governed by two statutes: the Reserve Bank of India Act 1934 and the Banking Regulation Act 1949.

It was with 22 members that the Indian Banks' Association (IBA) was founded on September 26, 1946. There are 166 members of the IBA as of the end of 2011. Included in the group are

- Public Sector Banks
- Private Sector Banks
- Foreign Banks having offices in India and
- Urban Co-operative Banks.

Main Functions and Activities of Private Sector Banks in India

Due to the fact that they operate in an atmosphere that is more confrontational and competitive, private banks in India are extraordinary service providers. Compared to nationalized banks, they provide a greater variety of goods and services. They make certain that the client's needs for privacy and safety are met.

Their main functions & activities include:

- They also provide a variety of additional services, one of which is the possibility of opening bank accounts that offer high interest rates on savings accounts.
- These banks provide their customers with advice and help them choose from a variety of investment

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programs so that they may accomplish their objectives. To put it another way, they also offer services for investors who are preparing their investments.

- They provide recommendations and assistance on the many options available for financing real estate.
- They make available credit and loans at rates that are reasonable.
- Numerous financial institutions in India provide their customers support with tax compliance and the preparation for future tax changes.
- Banks assist their customers in dealing with future uncertainties and dangers, such as market conditions, swings in interest rates, liquidity concerns, and other such matters, in a way that is analogous to tax trends.
- They provide cash flow management services to a variety of customers by providing services that involve keeping track of invoices and receipts.

Biggest challenges of banking industry in India

Asset quality

India's banks are facing the greatest risk as a result of the rise in the number of bad loans. During the most recent economic downturn, there has been an increase in the number of nonperforming assets (NPAs), often known as bad loans. In this case, the borrower is not responsible for repaying the amount. So, they constitute a loss for the financial institution. Net NPAs account for only 2.36% of all loans within the banking sector. It is possible that you do not find this number to be worrying. It does not include restructured assets, which are assets that are modified by a bank in order to extend the payback duration of a loan in the event that the borrower is unable to repay the loan because of financial difficulties. Restructured assets may put pressure on the bottom line of a financial institution. Total loans that fall within the parameters mentioned. A total of about 10.9% of all systemic loans are comprised of these stressed assets when taken together. All of these loans have been categorized as high-risk assets, and they are all included in this category. According to a study conducted by the International Monetary Fund (IMF), 36.9% of India's total debt is in peril. Despite this, banks are only allowed to sustain a loss of 7.9%. Therefore, this will result in huge losses for banks in the event that these obligations also default.

Capital adequacy

One "provision" that a bank may make is to set aside funds in case it takes on loans that turn out to be bad investments. This money cannot be utilized for any other purpose, including lending. Perhaps this will cause banks to spend less money on their different operations. One measure of a bank's financial strength is its capital adequacy ratio. If this happens, the bank will have no choice except to borrow more money from its depositors or take on more debt.

When compared to this money, the bank's capital is neither costly nor risky.

An example would be the ability for a depositor to access their funds at any time. Consequently, a continuing decline in the capital to risk assets ratio (CAR) should raise red flags. There has been a consistent decline in the CRAR for Indian banks over the past few years, especially for those affiliated with the central government. Furthermore, financial institutions, especially public sector banks with a disproportionately high amount of troubled loans, have a hard time raising capital. Some Indian banks may fail to satisfy the Reserve Bank of India's (RBI) minimum capital requirements unless they swiftly increase their capital. Under those conditions, they will most certainly encounter formidable obstacles.

Currency exposure without hedges

In his speech, Mundra observed that "the wild gyrations in the forex market have the potential to inflict significant stress in the books of Indian companies that have heavily borrowed abroad." There is a possibility that this stress will affect their ability to repay loans to Indian banks. Therefore, the RBI wants banks to ensure that the companies they support do not take on unnecessary debt in dollars.

Employee and technology

Currently, there is a growing trend of employees retiring from their positions in public sector banks. As a result, the staff members who are older and have more experience are being replaced with younger individuals. When this does take place, however, it is at the junior levels. At the intermediate and senior levels, it would create a hole that is almost impossible to fill. "The absence of middle management could lead to adverse impact on banks' decision-making process as this segment of officers played a critical role in translating the top management's strategy into workable action plans," the deputy governor made the following statement. To add insult to injury, in order to deliver superior products, financial institutions, particularly those that are under the jurisdiction of the government, need to embrace technology. In addition, this will improve the efficiency of financial institutions.

Balance sheet management

In recent years, a number of financial institutions have made efforts to delay the process of making provisions (for prospective bad loans). The short-term nature of bank CEOs, who are under pressure to please investors with increased net profits, is one of the reasons why this is the case. "While chief executive officers and chief medical directors come and go, institutions remain in existence for all of time. As far as Mundra is concerned, the only thing that can keep them in business is a more robust and improved financial statement. After a while, delaying the provisioning process

is damaging. This makes the bank less resistant to the effects of economic difficulties. In view of the fact that Indian banks do not have sufficient capital, this is an even more worrying situation. Investors would be more satisfied if management addressed and remedied difficulties rather than claiming big net profits that are not sustainable over time. In reality, this would make investors and shareholders happy.

Literature Review

Markose *et al.* (2010) utilize the credit default swap (CDS) data from the top 25 US banks to apply agent-based modeling to a financial network. An operational indicator of systemic risk is subsequently created using the simulation findings. The price of insurance against a financial system collapse is the basis for the systemic risk indicator created by Huang, Zhou, and Zhu (2010). CDS prices form the basis of this indicator.

Adrian & Brunnermeier (2011) The results of this study indicate that leverage, size, and maturity mismatch are effective predictors of systemic risk contribution, as evaluated by the recommended metric ΔCoVaR . This methodology is utilized by Borri *et al.* (2014) in order to compute the systemic risk contribution of Italian-listed banks for the time spanning from 2000 to 2011. The size of a bank is the most important factor in determining whether or not it will contribute to systemic risk, as indicated by the findings. In the years that followed the Lehman Brothers bankruptcy, however, leverage has emerged as a prominent signal of systemic risk.

Schreck *et al.* (2013) The link between bank stock returns and systemic risk and diversification actions for the 200 largest BHCs in the United States is broken down using weekly returns. This process is carried out for the 200 businesses. According to the findings, decomposition makes it possible for us to quantify the marginal advantages of variety, which decline rapidly as banks grow in size. Furthermore, Laeven *et al.* (2014) estimate SRISK for the period covering July 2007 to December 2008, and they include significant banking institutions from both the United States and Europe in their analysis. Based on the data, it can be concluded that large banks tend to produce larger levels of individual and systemic risk in comparison to smaller banks. When large banks do not have adequate capital, when their funding is unpredictable, when they participate more in operations that are dependent on the market, or when they have sophisticated organizational structures, they are riskier than smaller banks.

Research Objective

The purpose of this study is to use a one-way analysis of variance to investigate the connection between adequate capital and systemic risk in Indian private-sector banks. The capital adequacy ratio, the debt equity ratio, the total advance to total asset ratio, the government security to total investment ratio, and the credit deposit ratio are the

five main financial ratios that will be analyzed in this study. The purpose of this study is to establish the influence that these ratios have on systemic risk throughout the fiscal year 2018-23.

Research Design

This study employs quantitative research, and the sample consists of the top ten private sector banks in India based on branch count as per the Reserve Bank of India's 2022 listing. Secondary data spanning five years from 2018-19 to 2022-23 will be collected from the Reserve Bank of India, annual reports, industry publications, and relevant websites. Data analysis will involve ratio analysis and F-test one-way ANOVA.

Capital Adequacy Test and Systemic Risk

An evaluation of a bank's resilience against the possibility of incurring losses is referred to as a capital adequacy test during a financial review. This research makes use of a number of important financial ratios, including:

Capital adequacy ratio (CAR)

The ratio of a bank's capital to its risk-weighted assets is what this metric measures.

Debt equity ratio (DER)

A comparison of the total debt of a bank to the equity of its shareholders.

Total advance to total asset ratio (TATA)

Defines the percentage of a bank's total assets that are comprised of loans only.

Government security to total investment ratio (GSTR)

This metric determines the percentage of a bank's total investments that are held in government issues.

Credit deposit ratio (CDR)

It is a measurement of the percentage of a bank's deposits that are used to provide loans.

CAR

There is a generally positive capital position for the banks, as indicated by the average CAR, which is 16.55%. The difference between the greatest and lowest readings, on the other hand, is quite close to 8%.

DER

There is a moderate amount of leverage, as shown by the average DER of 11.39%. A greater range may be seen in DER in comparison to CAR, which indicates that different banks have different debt arrangements.

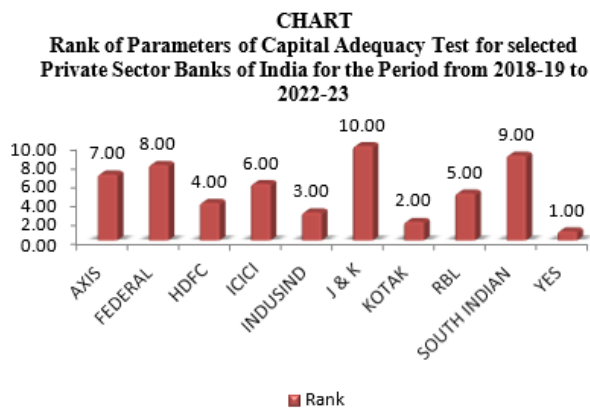
TAAR

TAAR is calculated to be 62.62% on average, which indicates that there is a modest degree of risk-weighted assets in relation to total assets. In comparison, the range is not that wide.

Table 1: Rank of parameters of capital adequacy test for selected private sector banks of India for the period from 2018-19 to 2022-23

Name of Bank	Norms of CAT					Average	Rank
	CAR	DER	TATA	GSTR	CDR		
Axis Bank	17.73	10.44	62.17	80.37	88.58	51.86	7.00
Federal Bank	14.74	8.97	66.57	87.50	79.97	51.55	8.00
HDFC Bank	18.52	13.07	65.23	82.92	86.60	53.27	4.00
ICICI Bank	17.92	13.28	60.68	84.90	83.85	52.13	6.00
INDUSIND Bank	16.57	12.73	61.77	88.56	89.71	53.87	3.00
Jammu & Kashmir Bank	12.94	6.62	59.85	86.54	66.09	46.41	10.00
Kotak Mahindra Bank	20.42	18.49	63.08	82.01	85.93	53.98	2.00
RBL Bank	16.23	13.00	61.63	84.15	86.44	52.29	5.00
South Indian Bank	14.91	6.30	64.16	91.33	73.84	50.11	9.00
YES Bank	15.56	11.02	61.02	82.97	111.30	56.38	1.00
Average	16.55	11.39	62.62	85.13	85.23	52.18	

Source: RBI Annual Report 2018-19 to 2022-23

**Figure 1:** Graphical Analysis**GSTR**

The gross stage three ratio (GSTR) is 85.13% on average, which indicates that a sizeable share of the advancements are in the gross stage three categories. This raises possible questions about the quality of the asset.

CDR

With a CDR of 85.23% on average, it is clear that there is a significant amount of credit extension in comparison to deposits. This may indicate that aggressive lending methods are being used.

Within the group of banks that were examined, YES Bank achieved the highest rating (1), which indicates that it has the most robust capital adequacy position. Strong capital adequacy measures are demonstrated by KOTAK and IndusInd Bank, which are ranked second and third, respectively, in close proximity to one another. In terms of capital adequacy, J&K Bank is ranked tenth, which indicates that there may be possible areas of concern associated with the bank. There is a substantial disparity between the banks that finished in first place (YES) and the banks that finished in last place (J&K), which indicates that the banks that were examined have various degrees of adequate capital.

Statistical Analysis

The study of the capital adequacy test inside the CAMEL model for the banking sector, which is based on the one-way

Table 2: F-test one way ANOVA for rank of parameters of capital adequacy test for selected private sector banks of India for the period from 2018-19 to 2022-23

H_0 : There is No Significant Difference in the Rank of Parameters of the Capital Adequacy Test of Selected Private sector Banks of India for the period from 2018-19 to 2022-23					
H_1 : There is a Significant Difference in the Rank of Parameters of the Capital Adequacy Test of Selected Private sector Banks of India for the period from 2018-19 to 2022-23					
Source of Variation	Sum of Square	Degree of Freedom	Mean Sum of Square	F_c	F_t
B.S.S.	315.14	9	35.015		
W.S.S.	53422.38	40	1335.559	0.026218	2.124029
T.S.S.	53737.52	49			

analysis of variance (ANOVA) with the “F” test, suggests that there are significant disparities in the ranks among the banks that were chosen. It has been determined that the F value (Fc) that was computed is lower than the F value (Ft) that was tabulated, which was discovered to be 2.124029. The fact that this is the case indicates that the null hypothesis, which states that the ranks of the capital adequacy test are comparable across all of the selected institutions, is accepted. As a consequence of this, the alternative hypothesis, which proposes that the banks are ranked differently from one another, is rejected. This highlights how important it is to take into account these variances when analyzing the overall performance of banks within the sector as well as their capital sufficiency.

Conclusion

The degree of capital adequacy in the banking sector varies from institution to institution. The average CAR indicates that the position is sound; nevertheless, high DER, GSTR, and CDR indicate that there may be possible hazards. The ANOVA did not uncover any significant rank differences, which calls for further investigation. It is essential to conduct stress testing and extra metrics in order to conduct a full analysis of the industry. Controlling risks and maintaining continuous monitoring are both necessary.

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