

IMPACT ANALYSIS OF BASEL III NORMS ON THE PROFITABILITY OF INDIAN PUBLIC SECTOR BANKS

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Abstract *The banking sector of an economy is a prominent sector as it assists the flow of financial resources to productive sectors. The financial crisis of 2008 impelled the Basel Committee on Banking Supervision (BCBS) to introduce Basel III norms in the year 2010 to make banks more resilient during any such financial crisis. Using two key financial indicators—Return on Assets (ROA) and Return on Equity (ROE), this study seeks to evaluate the profitability of Indian public sector banks subsequent to the enforcement of Basel III regulations. This study is based on 12 Indian public sector banks and uses data from the years 2009 to 2023. This study found that public sector banks in India saw a decline in profitability after being exposed to Basel III regulations, although there has been an improvement since 2022. The author recommended that there must be close monitoring of the adoption of Basel III by the financial regulators.*

Keywords: *Public Sector Banks (PSBs), Basel III, Profitability, Return on Assets (ROA), Return on Equity (ROE)*

INTRODUCTION

The progress and prosperity of a nation depend on its stable financial sector. A strong and stable financial system is denoted by the strong, liquid, and profitable banking sector. These factors enable the banking system to cope with any kind of financial crisis. The Indian banking system follows international capital regulations to ensure a strong and resilient banking system. When it comes to India's banking system, the public sector banks are kingmakers. The Reserve Bank of India is the regulatory body that regulates the whole Indian banking system. Numerous mergers and consolidations within India's public sector banks have been successfully completed in recent years. As a result, there are now 12 public sector banks in operation across the nation. Therefore, in this study, we focus on only these 12 public sector banks of India.

As a wing of the Bank for International Settlement (BIS), the Basel Committee for Banking Supervision (BCBS) is vested with the exclusive responsibility of managing global banking standards. In 1988, the Basel Committee established the Basel I standards for the international banking system. In 2004, they were followed by Basel II, and in 2010, Basel III.

The financial turmoil of 2008 was the main reason behind the introduction of the Basel III Accord to improve risk management and transparency in the banking system. The period for implementation of Basel III norms was from 2013 to 2018. In India, the deadline for Basel III implementation has been extended many times, and due to COVID-19, it is further extended till July 2022. The Basel III norms are an advanced form of Basel II norms. The main features of Basel III are:

- The Tier 1 capital went up from 4% to 6%.
- Common equity to risk-weighted assets increased from 2.5% to 4.5%.
- An additional capital conservation buffer is to be maintained at 2.5%.
- Reserve of 0% to 2.5% of total risk-weighted assets for counter-cyclical purposes.
- Two New Ratios: Net Stable Funding Ratio and Liquidity Coverage Ratio.
- A Leverage Ratio of at least 3% is required for all banks.

The purpose of the Basel III standards is to strengthen and fortify the banking system in anticipation of an unforeseen

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financial crisis. The Indian public sector banks are performing well in compliance with new Basel norms. The purpose of this research is to evaluate the effect of Basel III on the profitability of India's public sector banks.

REVIEW OF LITERATURE

This segment offers a thorough examination of several studies pertaining to the Basel III regulations and their influence on the performance of banks.

Roman and Danuletiu (2013) examined commercial banks in Romania to identify the profitability factors and the period of the study from 2003 to 2011. Commercial banks' profitability is found to be significantly impacted by bank-specific variables such as asset quality, liquidity, and management quality. Additionally, external factors such as the rate of economic expansion and the concentration of banks have an effect on the profitability of banks.

Adam (2014) analysed the financial performance of Iraq's Erbil Bank from 2009 to 2013 using a range of performance metrics. The research findings indicated that there is an improvement in profitability ratios, asset quality ratios, and liquidity ratios, which indicates the good financial health of Erbil Bank. It is suggested that banks should develop some banking operations to enhance their financial performance and profitability.

Islam (2014) examined the National Bank Limited of Bangladesh from 2008 to 2013 by using some financial ratios. It is concluded that an unstable economic environment has harmed the financial performance of NBL Bank in the last few years. But if we compare NBL's performance with other banks, it is quite good. It is also found that the bank has diversified its portfolio in the last few years.

Titko et al. (2015) examined the various factors of bank profitability in Latvia and Lithuania for the years 2008 to 2014. This study uses financial and non-financial factors for analysis. The author concluded that the profitability of the Latvian and Lithuanian Banking sectors is positively affected by bank size, e-banking services, and developed infrastructure while it is negatively affected by the operational efficiency of banks.

Menicucci and Paolucci (2016) examined 28 European banks from 2006 to 2015 to find out how internal factors affected their profitability. The findings of this study indicate that European banks' profitability is impacted positively by CAR and the size of the bank. It is also observed that the Return on Equity is positive for those banks that attain higher deposit ratios. However, the assets quality ratio harms profitability.

Islam and Rana (2017) analyse the variables that influence the profitability of Bangladesh's private commercial banks. This investigation is conducted on fifteen banks from 2005 to 2015. The research findings indicate that operating expenses and non-performing loans are the primary determinants of a bank's profitability. Moreover, these variables significantly impact the profitability of Bangladeshi banks.

Kumar and Kavita (2017) assessed the financial health of selected public and private banks in India for the period 2009-2016. The study concluded that all selected banks are financially sound and healthy. Although, there is little variation in the financial performance of both sector banks. The author suggested that banks should follow a regular monitoring system to assess their financial position.

Maiti and Jana (2017) analysed the factors affecting the profitability of five Indian bank groups: foreign banks, the State Bank of India and its associates, nationalised banks, and old and new private banks. The findings show that NPA, non-interest income, NIM, and profit per employee affect the profitability of all groups. It is also concluded that banks should focus on reducing the NPA with the help of a strict credit policy and a strong debt collection policy.

Mehta and Bhavani (2017) evaluated how various factors, both internal and external, affected the profitability of the UAE banking sector. The study analyses the data from 19 UAE banks from 2006-2013. The study's results indicate that banks' profitability is greatly impacted by the higher capital adequacy ratio, cost efficiency, and improved asset quality. It is hereby suggested that banks should use a profitability-enhancing model to improve their financial performance.

Nuhiu et al. (2017) discovered how the financial performance of banks in Kosovo was affected by profitability determinants during 2010-2015. This study uses financial parameters such as Net Interest Margin, Return on Assets, and Return on Equity. According to the results, the financial performance of banks is highly impacted by management efficiency and asset quality. However, it is negatively impacted by capital adequacy and liquidity but GDP and inflation have an insignificant impact on it.

Zaky and Soliman (2017) examined the effects of Basel III on commercial banks in Egypt between 2013 and 2016. According to the results, small banks are highly impacted by Basel III as compared to large banks, and banks with higher capital adequacy, a higher leverage ratio, and higher profitability are less impacted by these norms as compared to lower capital adequacy, lower leverage, and less profitable banks.

Almaqtari et al. (2018) studied the factors that led to the profitability of commercial banks in India between 2008

and 2017 by looking at their ROA and ROE. Several ratios were found to have a positive effect on Return on Equity, including liquidity, bank size, assets management, and asset quality. The results indicate that a higher Return on Equity is associated with larger banks, better asset management, higher asset quality, and higher liquidity ratios. It is found that several factors affect Return on Assets, including interest rate, demonetisation, currency rate, and inflation.

Kumar and Kavita (2018) examined financial data from 2007-2017 to ascertain the impact of Basel III standards on the performance of public sector banks in India. It has been found that the financial health of Indian PSBs has worsened after the adoption of Basel III which is shown by a decline in both Return on Assets and Return on Equity. Additionally, this results in a reduction in the profitability of banks operating in the public sector.

Rekik and Kalai (2018) examined the determinants of efficiency and profitability of 110 conventional banks in 14 countries from 1999-2012. The findings reveal that banks should improve their asset quality, management quality, and bank size to boost their profitability. The author suggested that there will be more focus on profit efficiency rather than cost efficiency.

Abbas et al. (2019) compared the American and Asian banking sectors from 2011 to 2017 to find out how capital, liquidity, and credit risk affected the profitability of commercial banks. As per the results, bank capital has a similar impact on the profitability of American and Asian banks. Credit risk has a greater effect on the profits of American commercial banks than their Asian counterparts. While commercial banks in Asian economies benefit from a high liquidity level, their American counterparts see a decline in profitability.

Ali and Dhiman (2019) explored the relationship between profitability and credit risk management of Indian commercial banks during the time frame from 2010 to 2017. The results indicate that the return on assets of commercial banks is positively associated with capital adequacy, earnings, and management quality. However, liquidity and asset quality had a negative effect on the profitability of commercial banks in India.

Bunea and Dinu (2019) examined 27 banks from Romania to ascertain how Basel III will affect the financial stability and solvency of Romanian banks and the period covered in this study is 2014-2018. It is concluded that the Romanian banking sector is maintaining its solvency ratio above the prescribed limit. The author concluded that the final impact of Basel III can be assessed after the full implementation of these norms.

Rajput and Sankaran (2019) studied 21 public sector banks in India from 2007-2018 to examine Basel III's impact on these banks. In order to measure profitability, this study utilised Return on Assets and Return on Equity. The research showed that public sector banks in India are seeing a decline in profitability as a result of Basel III.

Ramesh (2019) investigated the factors affecting the return on assets and return on equity of 39 commercial banks in India for the period 2009-2017. According to the study, the capital adequacy ratio affects Indian commercial banks' return on assets but does not affect the return on equity. Non-interest revenue and net interest margin boost Indian commercial banks, while NPAs and intermediation costs to total assets hurt them. The author suggested that commercial banks should adopt a stringent credit system to reduce the heavy burden on NPAs.

Biswas and Bhattacharya (2020) undertook an analysis of the performance of 10 Indian private banks that are considered to be of the new generation during the period of time spanning from 2015 to 2019. It has been noted that the performance of each of the selected banks varies greatly from one another. Among all of the selected banks, the Bandhan Bank is at the top, followed by the HDFC Bank.

Le et al. (2020) conducted an analysis to determine how effective the capital requirements of Basel III were for the profitability of banks in the United Kingdom and Australia between the years 2000 and 2019. It is concluded that the strict capital norms under Basel III are unable to enhance the bank's profitability and efficiency. A higher capital ratio weakens the bank's performance. The study also revealed that the performance of UK Banks is better than Australian Banks.

Agarwal et al. (2021) examined the impact of non-performing assets on the profitability of scheduled commercial banks in India for the period 2008-2018. According to the findings, investors' confidence in banks is eroded as a result of non-performing assets' detrimental impact on the profitability of scheduled banks. The author suggests that banking regulators should focus on the reduction of bad loans. Another finding is that commercial bank's capital adequacy and net interest margin are positively associated.

Lileikiene et al. (2021) analysed the performance of European and US banks after the introduction of Basel III. The findings revealed that strict capital and liquidity norms under Basel III reduced the profitability of banks. It is evident that adherence to these norms brings stability to the financial system but banks have to face an additional burden of cost which negatively impacts their profitability.

Obadire et al. (2022) identified the effect of Basel III on the bank's efficiency from six African nations. For this purpose, data for the period between 2010-2019 from 45 banks in six African countries have been used. The study concluded that the capital ratio and liquidity ratio under Basel III positively impact the efficiency of African banks. It is observed that African banks are efficient enough to handle any kind of crisis.

Pervez et al. (2023) examined the effect of risk and capital adequacy standards on the efficiency of commercial banks in India. The study includes 65 banks from the public, private, and foreign sectors, and the period was 2005 to 2018. According to the results, Indian commercial banks are negatively impacted by the CAR and NNPA. Additionally, compared to private and international banks, public sector banks are hit much harder.

OBJECTIVE OF THE STUDY

This study's overarching goal is to determine how the Basel III standards have affected the profitability of public sector banks in India. The Return on Assets (ROA) and Return on Equity (ROE) of PSBs were analysed to conduct this impact assessment.

In light of the study's objective, the subsequent hypotheses are developed.

H₀₁: There is no significant difference in the ROA of PSBs during the pre-Basel III era and the post-Basel III era.

H₀₂: There is no significant difference in the ROE of PSBs during the pre-Basel III era and the post-Basel III era.

METHODOLOGY

The current study makes use of secondary data acquired from the annual reports of banks. In this study, descriptive and analytical approaches have been utilised to assess the effect of Basel III regulations on bank profitability. The analysis is carried out using MS Excel and SPSS. In order to assess the profitability of banks, data spanning the period from 2009 to 2023 was gathered from 12 public sector banks. The profitability of public sector banks is assessed through the Return on Assets (ROA) and Return on Equity (ROE).

Return on Assets (ROA) shows the net income generated on total assets. The efficiency of management and the overall performance of an organisation can be judged with the help of this ratio. The higher ROA indicates a good profitability position and efficient use of assets. A lower ROA states

that the bank needs more funds to continue its operations further as the investment is high. ROA of more than 5 % is considered good. ROA is computed as:

$$\text{Return on Assets (ROA)} = \left[\frac{\text{Profit after tax}}{\text{Total assets}} \right] * 100$$

Return on Equity (ROE) indicates the return on investment. This is the proportion of equity to net profit. The higher ROE indicates the efficiency of management in generating income and growth. ROE of more than 10 to 20 % is generally considered profitable. ROE is computed as:

$$\text{Return on Equity (ROE)} = \frac{\text{Profit after tax}}{\text{Total equity}}$$

RESULTS AND DISCUSSION

The results of this study shed light on the change that has occurred in the Return on Assets and Return on Equity of public sector banks in India over the course of the past 15 years. To gauge how the Basel III standards have affected Indian public sector banks, it examines their financial performance using the profitability indicators ROA and ROE. The current status of ROA and ROE of Indian PSBs is also highlighted in this study. The result and discussion have been done in the following parts:

- Impact of Basel III on the Profitability of Indian Public Sector Banks.
- Status of ROA and ROE of Indian PSBs during 2023.
- Impact of Basel III on the Profitability of Indian Public Sector Banks.

As per RBI guidelines, India adopted Basel III norms on April 1, 2013. The implementation process of these norms requires a longer time; therefore, RBI gave time up to March 2018, which was later extended many times by RBI till the time, and the last extension was up to July 2022. These norms will affect the profitability of banks, so it becomes necessary to examine the effect of the Basel III accord on the profitability position of PSBs. The period from 2009 to 2023 has been taken under this study. The years 2009 to 2013 have been taken as the pre-Basel III era and the year from 2014 to 2023 are considered the post-Basel III era. This study examined the financial health of all public sector banks using two pivotal metrics of profitability: Return on Assets and Return on Equity.

The ROA and ROE of the last 15 years are under two sections by dividing the overall period into pre-Basel III era (2009-2013) and post-Basel III era (2014-2023).

- ROA of PSBs during Pre-Basel III and Post-Basel III

Table 1: ROA (%) of PSBs during Pre-Basel III (2009-2013)

Public Sector Banks	2009	2010	2011	2012	2013
Bank of Baroda	0.98	1.1	1.18	1.12	0.82
Bank of India	1.33	0.7	0.82	0.72	0.65
Bank of Maharashtra	0.72	0.7	0.47	0.55	0.74
Canara Bank	0.94	1.3	1.42	0.95	0.77
Central Bank of India	0.45	0.66	0.7	0.26	0.44
Indian Bank	1.62	1.67	1.53	1.31	1.02
Indian Overseas Bank	1.09	0.53	0.59	0.47	0.23
Punjab National Bank	1.39	1.44	1.34	1.19	1
Punjab & Sind Bank	1.26	1.05	0.9	0.65	0.44
State Bank of India	1.04	0.88	0.71	0.88	0.97
UCO Bank	0.59	0.87	0.66	0.69	0.33
Union Bank of India	1.27	1.25	1.05	0.68	0.69

Source: Annual Report of Banks.

Table 1 shows the ROA of Indian PSBs before the adoption of Basel III norms. An analysis of all public sector banks reveals that their Return on Assets (ROA) was positive

during these five years. Hence, it can be concluded that the profitability of public sector banks was good before implementing Basel III norms.

Table 2: ROA (%) of PSBs during Post-Basel III (2014-2023)

Public Sector Banks	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Bank of Baroda	0.69	0.48	-0.8	0.2	-0.34	0.06	0.05	0.07	0.57	0.97
Bank of India	0.51	0.27	-0.94	-0.24	-0.91	-0.84	-0.43	0.28	0.43	0.49
Bank of Maharashtra	0.3	0.33	0.07	-0.86	-0.73	-3.01	0.23	0.3	0.55	1.1
Canara Bank	0.54	0.55	-0.52	0.2	-0.75	0.06	-0.32	0.23	0.48	0.81
Central Bank of India	-0.47	0.21	-0.48	-0.8	-1.61	-1.7	-0.35	-0.26	0.3	0.44
Indian Bank	0.67	0.54	0.36	0.67	0.53	0.12	0.26	0.47	0.63	0.77
Indian Overseas Bank	0.21	-0.15	-1.05	-1.38	-2.54	-1.49	-3.27	0.3	0.59	0.76
Punjab National Bank	0.64	0.53	-0.61	0.19	-1.6	-1.25	0.04	0.15	0.26	0.18
Punjab & Sind Bank	0.35	0.13	0.34	0.2	-0.69	-0.47	-0.91	-2.55	0.85	0.98
State Bank of India	0.65	0.68	0.46	0.41	-0.19	0.02	0.38	0.48	0.67	0.96
UCO Bank	0.7	0.48	-1.25	-0.75	-1.88	-1.84	-0.96	0.06	0.34	0.62
Union Bank of India	0.48	0.47	0.33	0.12	-1.08	-0.6	-0.53	0.27	0.5	0.69

Source: Annual Report of Banks.

The Table 2, provides insights into the ROA of PSBs after implementing Basel III norms. It is observed that public sector banks witnessed a decline in ROA after 2013. Many PSBs recorded negative ROA from 2014 to 2021. The years

2022 and 2023 show improvement in the ROA of all public sector banks.

- ROE of PSBs during Pre-Basel III and Post-Basel III

Table 3: ROE (%) of PSBs during Pre-Basel III (2009-2013)

Public Sector Banks	2009	2010	2011	2012	2013
Bank of Baroda	19.48	22.19	21.48	19.11	14.59
Bank of India	25.51	14.76	8.9	15.63	13.62
Bank of Maharashtra	21.93	21.43	15.85	11.45	16.19
Canara Bank	20.64	24.09	22.43	18.75	14.03
Central Bank of India	16.38	24.25	23.62	5.96	8.58
Indian Bank	22.72	23.39	21.62	18.91	15.14
Indian Overseas Bank	22.31	11.13	13.13	-1.02	-0.55
Punjab National Bank	23.52	24.59	22.13	18.52	15.19
Punjab & Sind Bank	30.65	21.06	14.6	11.14	7.7
State Bank of India	15.07	14.04	12.84	14.36	15.94
UCO Bank	19.95	28.02	18.06	17.93	8.6
Union Bank of India	24.79	23.55	18.79	13.67	13.68

Source: Annual Report of Banks.

From Table 3, it can be seen that the Return on Equity for the majority of banks was positive before Basel III, except for Indian Overseas Banks, which showed negative ROE during 2012 (-1.02%) and 2013 (0.55%). Based on this table, we

can deduce that; Indian public sector banks were in a good state in terms of profitability before the adoption of Basel III norms.

Table 4: ROE (%) of PSBs during Post-Basel III (2014-2023)

Public Sector Banks	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Bank of Baroda	13	9.21	-17.64	4.53	-7.64	1.18	1.23	1.5	11.82	18.34
Bank of India	11.82	6.7	-25.39	-7.78	-31.07	-24.57	-12.41	8.81	10.55	10.31
Bank of Maharashtra	6.75	6.73	1.34	-22.23	-11.52	-109.56	4.09	5.02	11.45	20.38
Canara Bank	10.59	11.06	-10.69	4.15	-16.74	1.4	-8.05	6.71	12.82	19.49
Central Bank of India	-10.24	3.87	-9.85	-14.12	-28.38	-29.79	-5.23	-4.08	3.79	6.21
Indian Bank	10.04	8	5.27	9.72	8.31	2	3.94	11.88	10.52	14.73
Indian Overseas Bank	4.19	-3.26	-21.85	-29.5	-47.45	-22.84	-52.78	4.9	7.43	17.39
Punjab National Bank	9.69	8.12	-11.2	3.47	-32.85	-24.2	0.58	2.41	5.96	3.94
Punjab & Sind Bank	6.24	2.16	5.62	3.27	-12.03	-9.53	-17.7	-32.67	7.41	22.18
State Bank of India	10.49	11.17	7.74	7.25	-3.78	0.48	7.74	9.94	13.92	19.43
UCO Bank	14.36	9.52	-30.35	-19.94	-59.36	-37.75	-14.45	0.96	4.45	17.14
Union Bank of India	9.99	9.73	6.84	2.86	-27.99	-15.57	-12.52	6.68	7.94	13.26

Source: Annual Report of Banks.

Table 4, the ROA of PSBs during the last years has been presented. The ROE of public sector banks shows a decline along with a negative ROE for some Indian PSBs from 2014 to 2021. There was an improvement in the ROE of Indian

PSBs from 2022 onward. Therefore, it can be concluded that the ROE of public sector banks is negatively impacted by Basel III norms.

Table 5: Average Return on Assets of PSBs during Pre-Basel III and Post-Basel III

Public Sector Bank	Mean ROA during the Pre-Basel III Era (2009-2013)	Mean ROA during the Post-Basel III Era (2014-2023)
Bank of Baroda	1.04	0.20
Bank of India	0.84	-0.14
Bank of Maharashtra	0.64	-0.17

Public Sector Bank	Mean ROA during the Pre-Basel III Era (2009-2013)	Mean ROA during the Post-Basel III Era (2014-2023)
Canara Bank	1.08	0.13
Central Bank of India	0.50	-0.47
Indian Bank	1.43	0.50
Indian Overseas Bank	0.58	-0.80
Punjab National Bank	1.27	-0.15
Punjab & Sind Bank	0.86	-0.18
State Bank of India	0.90	0.45
UCO Bank	0.63	-0.45
Union Bank of India	0.99	0.07

Source: Author's compilation.

According to Table 5, all public sector banks had a positive average ROA prior to Basel III. Four PSBs, namely Canara Bank, Indian Bank, Bank of Baroda, and Punjab National Bank had a mean ROA of more than 1%, and other PSBs also maintained a mean ROA of more than 0.5%. But during the post-Basel III era, many banks like the Indian Overseas Bank, PNB, Punjab & Sind Bank, UCO Bank,

Bank of Maharashtra, Central Bank of India, and Bank of India have negative mean ROA. The ROA of other PSBs also deteriorates after Basel III adoption. Hence, it is concluded that the Return on Assets has gone down after the adoption of Basel III, which indicates that Basel III norms negatively impacted the profitability of Indian public sector banks.

Table 6: Summary Statistics of ROA of PSBs during the Pre- and Post-Basel III Era

Groups	Count	Sum	Average	Variance
Pre-Basel III period (2009-2013)	12	10.76	0.896	0.080
Post-Basel III period (2014-2023)	12	-1.04	-0.08	0.145

Sources: Author's calculation.

Table 6 describes the summary statistics of ROA of PSBs during the pre-Basel III era and the post-Basel III era. A t-test is employed to determine whether there is a statistically significant difference between the Return on Assets of public banks during pre- and post-Basel III.

Since the p-value is less than 0.001, as shown in Table 7, which is less than 0.050, we can reject H₀₁. Therefore, it can be inferred that the average ROA of public sector banks during the two time periods [pre-Basel III and post-Basel III] differs significantly.

Hypothesis Testing

H_{01} : There is no significant difference in the ROA of PSBs during the pre-Basel III era and the post-Basel III era.

Table 7: T-Test

	ROA during the Pre-Basel III Era	ROA during the Post-Basel III Era
Mean	0.89	-0.08
S.D.	0.28	0.38
Observations	12	12
Df	11	
T Stat	13.37	
P value (two-tailed)	<0.001	

Sources: Author's calculation.

Table 8: Average Return on Equity of PSBs during pre-Basel III and Post-Basel III

Public Sector Bank	ROE [Pre-Basel III Era (2009-2013)]	ROE [Post-Basel III Era (2014-2023)]
Bank of Baroda	19.37	3.55
Bank of India	15.68	-5.30
Bank of Maharashtra	17.37	-8.76
Canara Bank	19.99	3.07
Central Bank of India	15.76	-8.78
Indian Bank	20.36	8.44
Indian Overseas Bank	9.00	-14.38
Punjab National Bank	20.79	-3.41
Punjab & Sind Bank	17.03	-2.51
State Bank of India	14.45	8.44
UCO Bank	18.51	-11.54
Union Bank of India	18.90	0.12

Source: Author's compilation.

From Table 8, it is observed that the ROE of all PSBs was good during the pre-Basel III era, but there was a decline in ROE during the post-Basel III era. There is a negative

change in the Return on Equity of all public sector banks which stipulates that Basel III norms adversely affect the financial health of PSBs.

Table 9: Summary Statistics of ROA of PSBs during Pre and Post-Basel III Era

Groups	Count	Sum	Average	Variance
Pre-Basel III period (2009-2013)	12	207.21	17.26	10.83
Post-Basel III period (2014-2023)	12	-31.04	-2.58	56.72

Sources: Author's calculation.

In Table 9, we can see the overall statistics of the Return on Equity (ROE) of PSBs before and after Basel III. With the use of a t-test, we are trying to determine if the return on equity (ROE) of PSBs was significantly different during pre- and post-Basel III.

Hypothesis Testing

H_{02} : There is no significant difference in the ROE PSBs during the Basel III era and the post-Basel III era.

Table 10: T-Test

	ROE during the Pre-Basel III Era	ROE during the Post-Basel III Era
Mean	17.26	-2.58
S.D	3.29	7.53
Observations	12	12
Df	11	
T Stat	10.42	
P value (two-tailed)	<0.001	

Sources: Author's calculation.

According to Table 10, we can reject H_{02} because the p-value (<0.001) is smaller than 0.050. Consequently, a notable disparity exists in the average Return on Equity (ROE) value among public banks during the two time periods pre- and post-Basel III.

Status of ROA and ROE of Indian PSBs during 2023

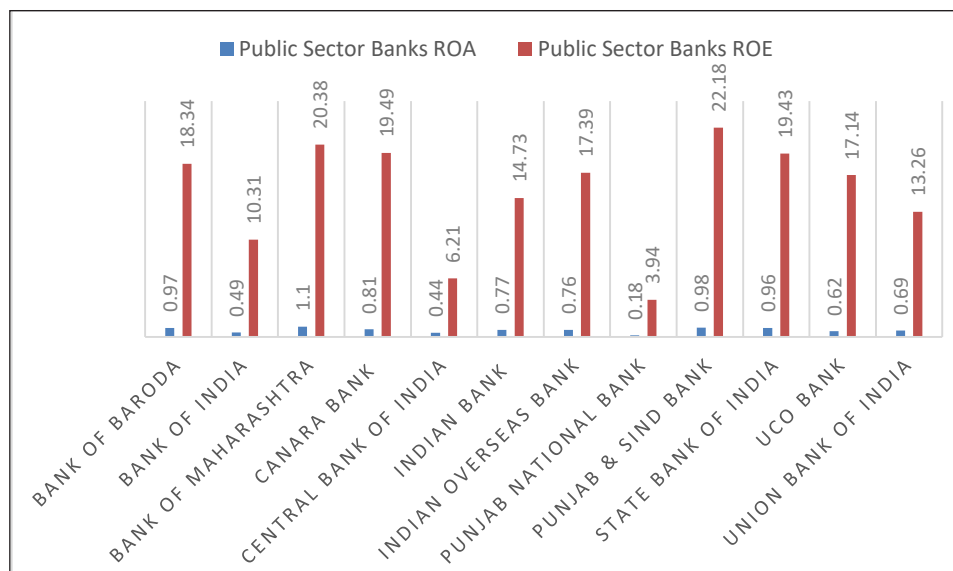
Table 11: Return on Assets (ROA) and Return on Equity (ROE) of PSBs in 2023

Public Sector Bank	ROA	ROE
Bank of Baroda	0.97	18.34
Bank of India	0.49	10.31
Bank of Maharashtra	1.1	20.38
Canara Bank	0.81	19.49
Central Bank of India	0.44	6.21
Indian Bank	0.77	14.73
Indian Overseas Bank	0.76	17.39

Public Sector Bank	ROA	ROE
Punjab National Bank	0.18	3.94
Punjab & Sind Bank	0.98	22.18
State Bank of India	0.96	19.43
UCO Bank	0.62	17.14
Union Bank of India	0.69	13.26

Source: Annual Report of Banks.

Table 11 shows the Return on Assets (ROA) and Return on Equity (ROE) of PSBs for the year 2023. It is observed that all public sector banks recorded positive ROA in the current year. The highest ROA is maintained by Bank of Maharashtra (1.1%), followed by Punjab & Sind Bank (0.98%) and Bank of Baroda (0.97%). In 2023, public sector banks will also have a positive Return on Equity. Punjab & Sind Bank (22.18%) recorded the highest ROA among all PSBs, followed by Bank of Maharashtra (20.38%) and Canara Bank (19.49%). Two public sector banks, namely Punjab National Bank (0.18% and 3.94%) and Central Bank of India (0.44% and 6.21%), have the lowest ROA and ROE.



Source: Author's Compilation.

Fig. 1: ROA and ROE of PSBs in 2023

From Fig. 1, we can observe that in 2023 all public sector banks will have positive ROA and ROE. This chart shows that the highest ROA is recorded for the Bank of Maharashtra and the lowest is for Punjab National Bank. Punjab & Sind Bank topped in attaining the highest ROE, while Punjab National Bank has the lowest ROE in 2023.

CONCLUSION

In this study, profitability analysis of public sector banks of India has been done, and how Basel III norms impacted these banks is also examined. In this study, it is observed that the present level of both Return on Assets (ROA), as well as Return on Equity (ROE) of all public banks, is quite good as compared to the last few years. The years 2022 and 2023 show positive increments in the ROA and ROE of PSBs. It is observed that the profitability of PSBs was satisfactory over the period 2009-2013. However, Indian public sector banks are facing a decline in Return on Assets and Return on Equity during the post-Basel III era, which indicates the poor financial health of banks. After implementing Basel III, return on assets (ROA) and return on equity (ROE) both fall, suggesting that the standards have a negative impact on banks' profitability. The Basel III norms impose high capital requirements and additional funding costs for public sector banks, and due to these strict norms, public sector banks are facing deterioration in their profitability. Therefore, it is concluded that the Basel III Accord has an adverse effect on the profitability of public sector banks in India.

LIMITATIONS OF THE STUDY

This study is limited to only Indian public sector banks. There are just two measures of profitability, Return on Assets and Return on Equity. There are some other indicators also which can be used. This study covers only profitability analysis while ignoring other factors that affect a bank's profitability.

POLICY IMPLICATIONS

The findings of this study will assist banking stakeholders and policymakers in getting insight into the extent to which the profitability of public sector banks is impacted by Basel III. As the ROA and ROE of PSBs have improved since 2022, the author suggests that banks should focus on maintaining this trend in the future. It is also recommended that banking regulators should make sure that all parameters of Basel III are fulfilled by banks, before implementing further reforms.

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