National Banks : How Much do They Bank on Off Balance Sheet Items ? An Indian Outlook

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Abstract

The banking system forms the backbone of the financial sector in a bank - based economy such as India. Off - balance sheet activity plays a vital role in helping banks limit long - term financial resources in the balance sheet report and increase the banks' profitability worldwide. We explored the determinants of OBS items with banking & economic factors influencing off-balance items in the measurement of banks' output of selected national banks in India for the duration of 2008 - 2017. This study used a multiple regression model to describe the logical connection between the role of OBS and its various determinants like bank size, loan, CAR, NNPA, NIM, ROA, reserves, GDP, and inflation for the said period. This study found that bank size and NIM positively affected the OBS activities ; whereas, CAR and loan negatively affected the OBSA of the selected public sector banks.

Keywords : national banks, public sector banks, non - interest income, off balance sheet activities, commercial banks, bank specific regulatory factors, macroeconomic factors

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The word off balance sheet itself propagates the understanding that activities that are not shown on the balance sheet are generally called off balance sheet items (OBS). So, off balance sheet exposure involves the funding of assets in such a way that they do not appear on the balance sheet. It is an increasingly important area of consideration because firms are trying to increase their value for the benefit of shareholders.

Off - balance sheet activities (OBSA) generate a significant portion of non - interest income majorly for private and foreign banks in India. Nationalized banks have not given much significance to OBSA since liberalization of the Indian economy as they relied only on core banking products. The Indian banking sector has albeit changed, slowly and painfully.

The situation anyways changed significantly due to the following reforms :

✣ Deregulation,

✣ Branch licensing policy,

✣ Asset classification initiation,

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✤ Sources of income,

✤ Stringent CAR norms,

✤ Stiff competition in generation of non-traditional income.

OBSA are complex transactions where theory and reality collide. One of the important questions facing any corporate is how to raise working capital and there has been a lot of theory written about various aspects of the capital budgeting process. Corporations take this information and try to map out financing strategies that coincide with their own corporate goals. In search of profitability and in a quest to kill competition, firms are re-engineering their finance strategies.

Literature Review

Pushkala, Mahamayi, and Venkatesh (2017) explored the impact of OBSA on liquidity and solvency through a comparative analysis of public and private banks in India. The authors also looked into the irregularity of RBI's policies on liquidity like CRR, SLR, etc. Ratio analysis and linear comparison model were used for collected data from RBI for 2011-15. They found that the public sector and private sector banks in India were under strict surveillance of the RBI and their fund-requirements were also taken care of by RBI to the maximum extent feasible. This paper discussed the liquidity aspects of commercial banks from the microeconomic perspective without focusing on the macroeconomic aspects.

Swain and Panda (2017) investigated the OBS exposure and fee based income instrument of Indian private banks. This study used a multiple regression model to describe the logical connection between the role of OBS and its various determinants like CRAR, NIM, NNPA for the period from 2005 to 2015. This study found that CRAR and LT positively affected the OBS activities ; whereas, NNPA negatively affected the OBSA of private sector banks. The authors also found that net profit and off balance sheet activities were significantly and positively correlated.

Balakrishnan and Maiti (2017) explored the relationship between size, value with risk, and expected returns of firms' stocks in the Indian capital market. The authors used breakpoint method to evaluate the relationship among the said variables. They compared results from regression, Fama - MacBeth cross sectional test, GRS with CAPM, and FAMA - French for risk return. They found that former tests were more effective than latter ones, and size of firm had a very strong impact on risk return.

Middi (2016) studied off balance sheet exposure and its impact on the Indian banking system with the assessment changing pattern in off balance sheet exposure, asset, and income with impact on the return and risk of commercial banks. Data analysis were done using panel data regression method. The author found proportionate increment in the income with respect of OBSA usage.

Maji and Hazarika (2016) examined the impact of competition on financial health of listed banks in India. The authors used PRH - statistics to calculate the extent of completion level with ROA and market to book ratio as main variables. They found that public sector banks were facing more competition than private banks and using FE multiple regression, they also concluded that the financial health of banks was reciprocal of the competition.

Aktan, Chan, Žiković, and Evrim - Mandaci (2013) investigated the impact of OBSA on the efficiency of listed banking firms on the Istanbul Stock Exchange. The authors focused on four indicators of performance as bank's risk exposures, profitability, leverage, and liquidity. They found that bank-specific risk and forex rate risk were positively associated with OBSA. They also concluded that the positive affiliation might serve as a warning to a bank's speculative action using OBS transactions in the market. The results also specified that OBSA improved banks' stock returns but had a negative impact on ROE. Apart from this, they also found that OBSA did not have a statistically substantial influence on leverage or liquidity.

Khasawneh, Khrawish, and Khrisat (2012) examined the determinants of OBSA in the Jordan banking industry for the duration of 1999 to 2010 by using the panel data with Mansfield logistic diffusion model.The input for the model were regulatory and non - regulatory bank specific factors with macroeconomic factors. The results revealed that OBSA was a real financial innovation and the regulatory tax hypothesis was not in force to determine the OBS activities by Jordanian banks. The authors also concluded that the employment of OBSA followed the general business cycle, and they deemed it fit for large banks.

Elian (2012) investigated the relationship between OBS business and the determinants in the GCC banking sector. The fixed effects least squares dummy variable model was used to identify the determinants of 64 GCC banks for a period of 15 years. The authors found that bank - specific factors influenced OBSA more than the regulatory variable, capital items. The real GDP growth had not much impacted the off balance activities, but the growth generally followed the business cycle.

Bapat and Raithatha (2012) investigated the level of disclosure of OBSA in big U.S. and Indian companies. The comparative study was done by authors on : derivatives, leases, and investments in joint ventures of these selected firms. They found that Indian firms were required to disclose these OBSAs more clearly as compared to U.S. companies. Further, the authors declared categorically that Indian pharma and IT firms had good levels of disclosures with respect to derivatives.

Kumar (2011) investigated the impact of OBSA on the profit efficiency of Indian banks. This empirical investigation used DEA modelling to measure the score of profit efficiency for all banks with and without usage of OBSA for the period of 1993 - 2008. The DEA model revealed that the profit efficiency score went down without the usage of OBSA. Ultimately, this research concluded that the exclusion of OBSA caused derogation in banks' profit efficiency and might mislead the efficiency evaluations.

Nachane and Ghosh (2007) modelled a logistic diffusion for the OBSA of Indian commercial banks and exhibited that the diffusion process of OBSA was significantly affected by macroeconomic, bank regulatory, and bank specific aspects. Major restriction on employing OBSA surfaced through bank size in PSBs and foreign banks. The results displayed significant dis-economies of scope between combined 13 OBSAs and loans in foreign banks and upcoming private banks.

Scope

Although the OBS concept is not very new to the Indian banking sector, but the banking sector has adopted this innovation very slowly. So, ample studies have not been done to find the significant contribution of the OBS items on the profits of banking firms in India. It is also seen that majority of the Indian studies are about the OBS items and the risks associated with the same. So, this creates a gap to understand the relationship between OBS determinants and profits of the banking firms. This motivated us to conduct this research in the OBS area and examine the impact on the profits of banks that would increase the knowledge of the investors and stakeholders. The investigation would provide an extra edge for managements, governments, investors, professionals, and academicians by giving helpful conclusions to take strategic business decisions.

Objectives of the Study

This examination intends to discover the contribution of OBSA in the income of the selected public sector banks. This study aims to capture empirical verification on the determinants of OBSA of selected banks in India. A quantitative research approach is used to measure the responsiveness of off balance sheet activities to different elements as Creswell (2009) used a similar research approach. Creswell collected numeric data of variables (both dependent and independent) from financial reports of 8 consecutive years. The objectives of the study are :

↬ To determine the OBS components for the selected public sector banks in India.

↬ To investigate the magnitude upto which the selected public sector banks in India are involved in off balance sheet activities.

↬ To investigate the impact of bank size, loan, CAR, NNPA, NIM, ROA, reserves, GDP, and inflation on the OBSA of selected public sector banks in India.

The time horizon for the study has been taken as the period from 2008 to 2017 by using the panel data analysis. In line with the above research questions and objectives, the following hypotheses are tested :

↬ **H1 :** Bank size (total assets) affects OBSA of selected banks.

↬ **H2 :** Loan affects OBSA of selected banks.

↬ **H3 :** CAR affects OBSA of selected banks.

↬ **H4 :** NNPA affects OBSA of selected banks.

↬ **H5 :** NIM affects OBSA of selected banks.

↬ **H6 :** ROA affects OBSA of selected banks.

↬ **H7 :** Reserve affects OBSA of selected banks.

↬ **H8 :** GDP affects OBSA of selected banks.

↬ **H9 :** Inflation rate affects OBSA of selected banks.

Identifying the Determinants of OBS Activities Through Comparative Analysis of Reviewed Literature

A comparative analysis of all reviewed papers has been done in the Table 1. In most literature, off balance sheet activities of banks were expressed as a major function of bank specific factors, bank specific regulatory factors, and macroeconomic determinants. As per the Table 1, the following are the major factors that have been identified through the review of literature:

↬ Dependent variables

↬ Independent variables

(i) Identification of Dependent Variables : In investigating the determinants of OBS activities of banks, off balance sheet activities are the dependent variable, which are not formally reflected on financial statements and are considered as non - interest based income activities. These activities are generating fee based income and majorly include : forward exchange contracts ; guarantees given on behalf of constituents ; acceptances, endorsements, other obligations ; guarantees/loan commitments.

Off balance sheet activities are measured in different ways by different papers. As per Table 1, Nachanne and Ghosh (2007) among others used the ratio of OBS activities to total assets (defined as total assets + OBS activities) as a proxy for OBS activities. Therefore, this study attempts to measure OBS activities as OBS activities to total assets because non - interest income may overestimate the amount of OBS, since fees and commissions are also drawn from on-balance sheet activities.

Table 1. Comparative Analysis of Reviewed Literature

Authors	Key Issues/ Objectives	Research Design	Data Collection		Data Analysis Models	Results
			Data Type	Data Source		
Pushkala et al. (2017)	The study examined RBI's policy impact wrt OBSA and liquidity - solvency.	Empirical	Secondary data	Indian banks	Ratio analysis and linear comparison model	Banks were under strict surveillance of the RBI and their fund-requirements were also taken care of by RBI to the maximum extent.
Swain & Panda (2017)	The study examined the OBS exposure of Indian private banks and explored the ability of these banks to generate fee based income.	Empirical	Secondary data	Indian banks	Multiple linear regression	Bank-specific variables had important roles in influencing off balance businesses.
Balakrishnan & Maiti (2017)	The study examined the relationship between size, value with risk, and expected returns of firms' stocks.	Empirical	Secondary data	Indian firms	Regression, FAMA	Size of firms had a very strong impact on risk return.
Maji & Hazarika (2016)	The study examined the impact of competition on financial health of banks.	Empirical	Secondary data	Listed Indian banks	Regression, PRH	The financial health of banks was reciprocal of the competition.
Middi (2016)	The study examined OBS exposure and its impact on the soundness of the Indian banking system.	Empirical	Secondary data	Indian banks	Multiple regression	OBSA increased 'other income' of the banking sector.
Aktan et al. (2013)	The study examined the effect of OBSA on performance of the banks listed on the Istanbul Stock Exchange (ISE).	Empirical	Secondary data	Istanbul Stock Exchange	Regression	Forex and bank-specific risk were positively associated with OBSA.
Khasawneh et al. (2012)	The study examined the determinants of OBS activities in Jordan banks.	Empirical	Secondary data	Jordan	Logistic diffusion	Bank-specific variables had an important role in influencing OBSA.
Bapat & Raithatha (2012)	The study examined levels of disclosures of OBSA in USA vs India.	Empirical	Secondary data	India and USA	Comparative model	U.S. firms had high level of transparency in disclosures.
Elian (2012)	The study examined the association between off balance sheet businesses and a number of determinants.	Empirical	Secondary data	Gulf	Least squares dummy	Bank-specific variables had important roles in influencing off balance businesses.
Kumar (2011)	The study examined the influence of off-balance sheet activities on the profit efficiency of Indian banks.	Empirical	Secondary data	Indian banks	DEA models	The barring of non-interest income from productivity understated the profit efficiency of Indian banks.
Nachane & Ghosh (2007)	To study attempted to find the effect of bank - specific, regulatory, and general macroeconomic factors on Indian banks.	Empirical	Secondary data	Indian banks	Logistic diffusion	They found significant impact of these indicators.

Table 2. Review Outcomes of ROL

S. No.	Variables	Measure	Expected Outcome as per ROL
1	*Bank size*	Ln (Total assets)	Positive
2	*Loan*	Loan to total assets	Positive
3	*CAR* (Capital to risk assets ratio)	Total capital to risk weighted assets	Positive
4	*NNPA* (Net non - performing assets)	Net non - performing assets to total asset	Positive
5	*NIM* (Net interest margin)	Net interest income/ total assets	Positive
6	*ROA* (Return on assets)	Return on assets	Positive
7	*Reserve*	Reserve ratio (Statutory liquidity ratio)	Positive
8	*GDP* (gross domestic product)	Real GDP growth rate	Positive
9	*Inflation*	Inflation rate	Negative

(ii) Identification of Independent Variables : The independent variables are variables that are used as a determinant of OBSA of the sampled commercial banks. The determinants of banks' OBS activities, the independent variables, are classified into bank - specific, bank specific regulatory, and macroeconomic variables as : (a) bank size, (b) loan, (c) CAR (capital adequacy ratio), (d) NNPA (net non - performing assets), (e) NIM (net interest margin), (f) ROA (return on assets), (g) reserves (statutory liquidity ratio), (h) GDP (gross domestic product), and (i) inflation.

(iii) Expected Outcome of Independent Variables as per the Review of Literature (ROL) : The Table 2 represents the expected outcomes of variables based on the reviewed literature. As per the Table 2, bank size, loan, CAR, NNPA (net non - performing assets), NIM (net interest margin), ROA (return on assets), reserves (statutory liquidity ratio), and GDP (gross domestic product) are positive in different time zones and samples with respect to OBSA.

Methodology

(1) Sources of Data Collection : The secondary data were collected from the population of Indian banking sector (SCBs) including the annual reports of these banks, the reports of Indian Banks' Association (IBA), and the reports

Table 3. Selected PSBs for the Study

1. Allahabad Bank	11. Indian Bank
2. Andhra Bank	12. Indian Overseas Bank
3. Bank of Baroda	13. Oriental Bank of Commerce
4. Bank of India	14. Punjab and Sind Bank
5. Bank of Maharashtra	15. Punjab National Bank
6. Canara Bank	16. Syndicate Bank
7. Central Bank of India	17. Uco Bank
8. Corporation Bank	18. Union Bank of India
9. Dena Bank	19. United Bank of India
10. IDBI Bank Limited	20. Vijaya Bank
	21. State Bank of India

of Reserve Bank of India (RBI). *Financial Analysis of Banks* brought by Indian Banks' Association ; *Statistical Tables Relating to Banks of India* ; *Reserve Bank of India Monthly Bulletin* ; *Report on Currency and Finance* and other publications of Reserve Bank of India and Reserve Bank of India's website ; various magazines dealing with the current banking scenario ; and research papers etc. were used for arriving at valid decisions in respect of the study objectives.

(2) Tools Used for Analysis : The empirical analysis of collected data has been done through multiple regression. The target banking firms are 21 PSBs and all these firms are listed on the NSE. This sample size covers around 70% of the market share of India and all banks have been regularly placed in the Bank Nifty Index since 2008. The PSBs have a very strong foothold in the banking industry since inception but due to competition, their market share is reducing as other private sector banks are gaining pace through their innovative products and services.

The Table 3 represents the top 21 banks considered for the study. The data were collected from secondary sources. The sampling technique used is purposive sampling. Purposive sampling was used because it allows focusing on particular characteristics of a population that are of interest, which will best enable us to answer the research questions.

Analysis and Results

The main objective of this section of the study is to determine the OBS components for the selected public banks in India and also examine the impact of various banking factors on the OBS items of these selected banks using an empirical model putting cross sectional data for the period of 2008 to 2017 in a multiple linear regression framework :

$$OBSA_{it} = \alpha + \beta_1 \, Bank \, Size_{it} + \beta_2 \, Loan_{it} + \beta_3 CAR_{it} + \beta_4 NNPA_{it} + \beta_5 NIM_{it} + \beta_6 ROA_{it} + \beta_7 \, Reserve_{it} + \beta_8 GDP_{it} + \beta_9 \, Inflation_{it} + \varepsilon_{it}$$

where,

$i = 1, 2, 3, …., N$ denotes the number of banks,

$t = 1, 2, 3, …, T$ denotes the number of time periods.

$OBSA_{it}$ is the dependent variable representing OBS activities in terms of total contingent liabilities to total assets of bank i at year t.

β_1 represents the coefficient of independent variable *bank siz*e of bank i at year t.

β_2 represents the coefficient of independent variable *loan ratio* of bank i at year t.

β_3 represents the coefficient of independent variable *CAR* of bank i at year t.

β_4 represents the coefficient of independent variable *NNPA* of bank i at year t.

β_5 represents the coefficient of independent variable *NIM* of bank i at year t.

β_6 represents the coefficient of independent variable *ROA* of bank i at year t.

β_7 represents the coefficient of independent variable *RESV* of bank i at year t.

β_8 represents the coefficient of independent variable *GDP* of bank i at year t.

β_9 represents the coefficient of independent variable *inflation* at year t.

Assumptions of the Model :

✤ The values of the independent variables must change.

✤ There is no exact multicollinearity between the independent variables.

✤ The number of observations must be greater than the number of parameters to be assessed.

✤ There is no specific bias.

The Table 4 displays the aggregation of the OBS component for the selected sample banks for the given time frame. The Table 4 also shows the trend of OBS components for 10 years of these top notch government banks in India.

Table 4. OBSA of Selected Banks in India from 2008 to 2017

Year	OBS Exposure	
2017	3,675,386.61	
2016	3,525,122.65	
2015	3,588,888.49	
2014	3,085,487.18	
2013	2,968,386.68	In Crs ₹ & as on 31 March each year.
2012	2,551,789.00	
2011	2,057,391.64	
2010	1,609,506.21	
2009	1,767,739.04	
2008	1,732,831.10	

Source : RBI Tables based on annual accounts from 2008-2017 and authors' calculations.

Table 5. Components of OBSA of Selected PSBs in India

Year	Liability on Account of Outstanding Forward Exchange Contracts *	Guarantees Given on Behalf of Constituents		Acceptances, Endorsements, and Other Obligations	in Crs.		
		In India	Outside India		Others @	Total OBS	Asset
2017	2,457,177.52	456,987.77	127,279.21	332,340.09	301,602.02	3,675,386.61	91,163,344
2016	2,341,986.03	447,812.29	142,273.52	345,248.00	247,802.81	3,525,122.65	85,620,477
2015	2,400,712.02	436,855.32	120,824.73	367,311.88	263,184.55	3,588,888.49	81,184,118
2014	1,914,312.38	398,051.55	133,291.24	390,788.17	249,043.84	3,085,487.18	74,414,438
2013	1,852,783.54	373,379.07	135,232.69	379,588.34	227,403.04	2,968,386.68	64,628,036
2012	1,518,523.47	339,538.15	133,249.87	366,289.21	194,188.31	2,551,789.00	56,038,589
2011	1,160,847.38	307,332.24	93,589.17	337,961.94	157,660.91	2,057,391.64	49,200,581
2010	845,801.30	254,465.38	58,852.82	273,558.98	176,827.74	1,609,506.21	40,819,875
2009	932,778.23	194,931.35	44,969.32	250,159.64	344,900.51	1,767,739.04	34,501,338
2008	889,450.77	138,195.59	25,105.72	187,626.56	492,452.73	1,732,831.38	2,732,491.36

Note. All percentages in the table are calculated on the basis of data taken from RBI Publications since 2008 to 2017.

The Table 5 shows the components of OBSA of the selected banks. The Table categorically defines that forward contract has the highest contribution in OBSA as year wise group and even at the individual level. Acceptances, endorsements, and other obligations have the lowest contribution in the OBSA of the bank group. The Table 5 also shows the OBSA with respect to the total assets of the banks for the concerned year.

The Figure 1 defines the trend of OBSA in the sampled banks for the period of 2008 to 2017. As per the Figure 1, OBSA increased for all banks ; whereas, the forward contract component has the highest contribution in the increment. There was also the impact of the financial crisis of the year 2008 on the sample banks in India in the year 2009 - 10.

The Table 6 shows the descriptive statistics of the dependent variable OBSA and the nine independent variables. The Table 6 presents the results of the statistics on the most important variables in the regression model. The total observation for each dependent variable and explanation is 210. In addition, the table also shows the mean, standard, minimum, median, and maximum deviation for dependent and independent variables.
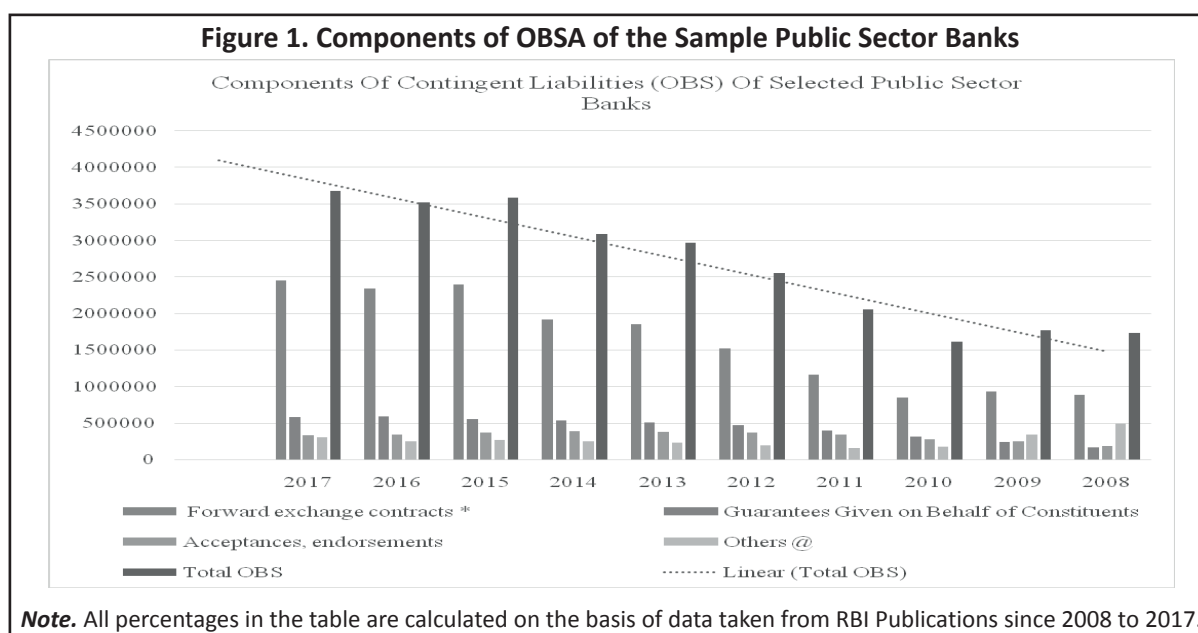

Figure 1. Components of OBSA of the Sample Public Sector Banks

Note. All percentages in the table are calculated on the basis of data taken from RBI Publications since 2008 to 2017.

Table 6. Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
OBSA	210	4.98	52.91	25.1154	9.71756
Bank Size	210	5.54	7.57	6.4286	.37744
Loan	210	27.20	58.12	45.8257	5.98049
CAR	209	9.39	15.38	12.2100	1.20744
NNPA	210	.07	6.26	1.2564	1.21798
NIM	210	.58	3.62	2.3281	.47699
ROA	210	-1.37	1.67	.5850	.58778
Reserve	210	20.00	25.00	22.7250	1.53847
GDP	210	5.48	9.32	7.4470	1.15019
Inflation	210	2.49	12.11	8.0060	2.88209

According to Table 6, all the variables included 210 observations and OBSA, which is measured as a balancing activity for total assets, shows that the selected national banks spent an average of 25.11% less balance sheet assets than a percentage of total assets in the last 10 years. For the entire sample, the mean value of the dependent OBSA variable is 25.11% with a minimum of 4.98% and a maximum of 52.91%. That is, in the sample banks, there is one bank that spent more on OBS activity than the other banks with a value of 52.91%, and there is one bank that spent less on OBS activity at 4.88%. The standard deviation statistics for OBSA (total off-balance-sheet activity) is 9.71, indicating a relatively high variance in off-balance-sheet activity relative to the total assets among the selected banks. The results imply that there is a difference in the use and output of the off-balance sheet activity among the sample banks.

For the explanatory variables of the model, a number of statistical data should be noted. The Table 6 confirms that the average value of bank size, measured by the natural logarithm of total assets for the banks is 6.42, with a maximum of 7.57 and a minimum of 5.54. The standard deviation of the size of the banks is 0.37. The standard deviation indicates that the size of the nationalized banks is different from the average of 6.42 to 0.37.

As shown in the Table 6, the average return on investment for commercial banks is 0.58%, with a maximum and minimum of 1.25% and 1.37%, respectively. ROA shows that the nationalized banks selected have negative average and negative pre-tax profits over the past decade. That is, the most profitable bank among the sampled banks received 1.25% pre-tax profit for each INR invested in the company's assets. On the other hand, the less profitable bank of the sampled banks lost 1.37% pre-tax profit for each INR invested in the company's assets. The standard deviation of ROA is 0.58, indicating that the variance in profitability among the selected banks is very low.

In terms of loans, the relatively higher range between the minimum and maximum value presents that the most productive bank has a significant cost advantage compared to the least productive bank. It can also be said that the average credit risk measured in the provision for loans to total assets is 45.82, that is, the credit risk in the selected commercial banks is low. The proportion of credit risk among the selected commercial banks shows a 5.98% standard deviation, which is more or less high as evidenced by maximum and minimum value of 58.12% and 27.20%.

On the other hand, the outputs of the descriptive statistics indicate that the ratio of reserve requirement is 22.72% on an average, with a minimum of 20% and a maximum of 25%. This means that on an average, each selected bank should maintain a reserve requirement of 22.72% of their total deposits. The Table 6 also shows that the mean real GDP of India for the last 10 years was 7.44%, with a maximum of 9.32% and a minimum of 5.48%.

Table 7. Correlations

		OBSA	BANKSIZE	LOAN	CAR	NNPA	NIM	ROA	RESV	GDP	INFLTN
Pearson	**OBSA**	1									
Correlation	Bank Size	0.64	1								
	Loan	-0.876	-0.535	1							
	CAR	0.041	-0.088	0.022	1						
	NNPA	-0.186	0.288	0.116	-0.547	1					
	NIM	0.041	-0.006	0.169	0.336	-0.359	1				
	ROA	0.163	-0.217	-0.048	0.613	-0.846	0.525	1			
	Reserve	0.05	-0.407	-0.014	0.5	-0.804	0.252	0.72	1		
	GDP	0.013	-0.256	0.077	0.473	-0.651	0.233	0.607	0.762	1	
	Inflation	0.03	-0.222	-0.153	0.13	-0.265	-0.004	0.197	0.21	-0.118	1

Table 8. Variables Entered/Removed[b]

Model	Variables Entered	Variables Removed	Method
1	GDP,NIM, BANKSIZE, CAR, INFLTN, LOAN, NNPA, ROA, RESV[a]	.	Enter

Note. [a.] All requested variables entered.

Note. [b.] Dependent Variable: OBSA

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin - Watson
1	.927[a]	.859	.852	3.71279	2.218

Note. [a.] Predictors: (Constant), GDP,NIM, BANKSIZE, CAR, INFLTN, LOAN, NNPA, ROA, RESV[a]

Note. [b.] Dependent Variable: OBSA

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	16676.161	9	1852.907	134.416	.001[a]
	Residual	2743.183	199	13.785		
	Total	19419.344	208			

Note. [a.] Predictors: (Constant), GDP, NIM, BANKSIZE, CAR, INFLTN, LOAN, NNPA, ROA, RESV

Note. [b.] Dependent Variable: OBSA

The table also presents for real GDP a standard deviation of 1.15, which implies that economic growth in India during the period of 2008 to 2017 was stable. The other macroeconomic variable employed in this study is interest spread, which has a standard deviation of 0.47% and inflation has a standard deviation of 2.88%.

Before applying multiple regression to calculate the values of the coefficient of the model, we apply normality test and multicollinearity test. To find the possibility of multicollinearity among the variables, the Table 7 represents their percentage correlation.

As per the Table 7, correlation exists between the two variables when their collinearity score is more than 80%. As per the Table 7, there are proper low data correlations among the independent variables except a correlation of 84.6% between ROA and NNPA. Low correlation coefficients indicate non - multicollinearity for this study. The Table 8 shows the model summary received through inputting the data in SPSS for regression analysis. The Table 8 shows that the adjusted R - square is .852, which shows that the regression model is deemed fit to 85.2 %. The Durbin - Watson score also nullifies our doubt about the autocorrelation as the score is 2.218.

Regression Model for Selected Nationalized Banks

As per the Table 9, a detailed relationship can be established as this result is obtained after running regression. The following regression model is optimized :

$$OBSA = 79.90 + 10.26\,BANK\,SIZE\, - 1.182\,LOAN - 0.536\,\,CAR + 3.79\,NNPA + 3.44$$
$$NIM + 2.34\,ROA + 1.267\,RESV + 0.28\,GDP - 1.93\,INFLTN$$

The Table 10 shows the results as per the generated hypotheses. As per the Table 10, the results are compiled through the regression model and we test the hypothesis based on Table 2. The hypotheses H4, H6, H7, H8, and H9 are not accepted as per the Indian context at 95% confidence interval of the difference.

Table 9. Coefficients.

Model		Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
		B	Std. Error	Beta	t	Sig.	Tolerance	VIF
1	(Constant)	79.902	4.613		17.321	.001		
	Bank Size	10.263	1.393	.298	7.369	.001	.433	2.310
	Loan	-1.182	.062	-.724	-18.953	.001	.486	2.057
	CAR	-.536	.279	-.067	-1.920	.056	.583	1.714
	NNPA	3.790	2.174	.111	1.744	.083	.175	5.703
	NIM	3.448	1.170	.101	2.947	.004	.604	1.656
	ROA	2.347	2.011	.069	1.167	.245	.205	4.881
	Reserve	1.267	2.231	.034	.568	.571	.198	5.054
	GDP	.280	1.700	.008	.164	.870	.314	3.183
	Inflation	-1.932	1.155	-.054	-1.673	.096	.680	1.471

Note. [a] Dependent Variable : OBSA

Table 10. Hypotheses Testing Results

Hypothesis	Test results
H1: Bank size (total assets) affects OBSA of selected banks.	Accepted, positive, and significant
H2: Loan affects OBSA of selected banks.	Accepted but negative and significant
H3: CAR affects OBSA of selected banks.	Accepted but negative and significant
H4: NNPA affects OBSA of selected banks.	Not Accepted, positive, and insignificant
H5: NIM affects OBSA of selected banks.	Accepted, positive, and significant
H6: ROA affects OBSA of selected banks.	Not Accepted, positive, and insignificant
H7: Reserve affects OBSA of selected banks.	Not Accepted, positive, and insignificant
H8: GDP affects OBSA of selected banks.	Not Accepted but positive and insignificant
H9: Inflation rate affects OBSA of selected banks.	Not Accepted but negative and insignificant

Discussion

(1) Experimentation Results Obtained for Selected Nationalized Banks : In order to examine the determinant of OBSA of selected national banks, multiple panel linear regression models are estimated. In this section, one dependent variable against nine independent variables is investigated. The dependent variable is the off balance sheet activities, while the independent variables are : bank size, loan, CAR, NNPA, NIM, ROA, reserves, real GDP, and inflation. The relationship between OBSA and the explanatory variables are examined by the fixed effects model in this study. From Table 8, the R - squared statistics and the adjusted R - square statistics of the model are 0.859 and 0.852, respectively which shows that the changes in the independent variables explain 85.9% of the changes in the dependent variable, that is, bank size, loan, CAR, NNPA, NIM, ROA, reserves, real GDP, and inflation collectively explain 85.9% of the changes in OBSA. The remaining 14 % changes are explained by other factors which are not included in the model. The Table 9 indicates that bank size is statistically significant (p - value = 0.001) at the 5% level and has a positive relation with off balance sheet activities to total asset ratio.

Similarly, ROA has a positive relation with off balance sheet activities. Based on the results shown in the Table 10, all bank-specific independent variables have a statistically significant impact on off balance sheet activities (OBSA).

(2) Discussions of the Results of Independent Variables

(i) Bank Size : The size of the bank, measured by the natural record of total assets, has a positive influence on the off-balance sheet assets of the nationalized banks. It is determined that the size of the bank is a statistically significant determinant of off-balance sheet assets as postulated. The Table 9 shows that the slope coefficient of this variable is positive and statistically significant at the significance level of 5%. This result supports the hypothesis (H1), for which the size of the bank and the OBS activities must have a positive association (according to ROL). Furthermore, the positive relationship between banks' size and OBS assets clearly indicates that an increase in the size of banks offers the opportunity to exploit economies of scale in transactions. It also indicates that the increase in the size of banks provides banks with the opportunity to provide extended banking services to a large number of customers. As large banks have highly qualified and more efficient risk management to provide higher quality services, customers who are more likely to participate in OBS activities may not consider small banks as a transaction vehicle, since they believe that the big banks are too big to fail. From this, it can be concluded that the major banks in the country recorded more significant increases in OBS assets through economies of scale. This implies that a more solvent and safer bank would be more likely to use OBS assets.

(ii) Loan : The results of the regression of the study show in the Table 9 that there is a negative but significant relationship between lending activity and off-balance sheet activity, with a regression coefficient of -1.182 and a p - value of 0.00. According to H2, the total loan assets are positively correlated with off-balance sheet assets. Although the statistical results reveal a significant relationship between the variables, it can be concluded that the loan still explains negatively the activities of the budget of the selected nationalized banks. Some previous studies documented a positive effect of the loan function on the total asset ratio and found that the loan increase improved the use of more OBS assets by banks (Nachane & Ghosh, 2007). This indicates that banks would be more involved in OBS activities to reduce the risk of borrowing. However, this study also finds a significant but negative association between the percentage of the loan share and the banks' OBS activities. Therefore, the ratio of loans to total assets of the sample banks during the period examined shows a negative but significant impact on the activities of the OBS.

(iii) Capital Adequacy Requirement (CAR) : According to the ROL, H3 should establish that CAR positively influences the OBSA of the selected banks, but the capital adequacy ratio measured by the risk weighted asset as a proxy for the settlement is negative and statistically significant. However, there is a positive relationship between capital adequacy and off-balance sheet assets. The result is inconsistent with the expectation. The negative coefficient for capital adequacy is not favorable to the hypothesis of regulatory tax. Furthermore, the CAR coefficient shows that an increase in regulation would not result in an increase in OBSA.

(iv) NNPA : Compared to the NNPA, the NNPA coefficient is negative (H4) (as per Table 9), but is statistically significant, therefore, the effect of NNPA in the nationalized banks out of balance activity is positive and significant at the 5% level. Thus, p = .083 and the positive coefficient indicates that as the NNPA increases, the OBSA also increase in the selected public sector banks. It means that nationalized banks bet when there is an increase in NNPA. The problem of the NPA in the banking system in India is one of the biggest and most formidable problems that have had an impact on the whole banking system. A higher NPA ratio shakes the

confidence of investors, depositors, lenders, etc. It also causes poor money laundering, which in turn has a detrimental effect on credit development. The non-recovery of loans does not only concern the availability of credit, but also the financial soundness of the banks.

(v) Net Interest Margin (NIM) : The net interest margin is considered to be one of the main macroeconomic factors that might affect banks' off-balance sheet assets. The banking literature indicates that the interest rate could have a negative or positive impact on the off-balance sheet assets of banks. This study finds that the rate is measured by the net interest margin, which is positive and statistically significant at the p - value of 0.04 (as per Table 9), which makes us accept the H5. Here too, banks try to block their spread using OBS activities.

(vi) Return on Assets (ROA) : The H6 predicts that the banks' ROA should have a positive influence on the banks outside their budgetary activities. The results of the regression model in Table 9 indicates that ROA has a positive relationship with off-balance-sheet activities but is statistically insignificant. The positive ratio means that when you increase the profits of the banks, the solvency of the banks, from the perspective of investors, increases and the demand for OBS assets increase in solvent banks. High profits could increase cash flows, which can be held back to absorb future losses in order to reflect the possibility of improving creditworthiness. Banks with higher solvency would attract or use more companies than OBS.

(vii) Reserve Requirement : The other regulatory variable specific to the study sample is the reserve requirement. According to banking theories, regulatory fees on assets and liabilities in the balance sheet in the form of reserve requirements encourage banks to replace off-balance sheet assets for assets in equilibrium. Therefore, a positive relationship is foreseen between the reserve obligation and the off-balance sheet assets (H7). This study finds a positive, but insignificant impact of the reserve requirement on national banks outside of budgetary activities.

(viii) GDP : With regard to economic growth measured by the growth rate of real GDP (H8), the Table 9 shows a positive and insignificant impact on off-balance sheet assets. As discussed in the methodological part, there is a clear expectation of having a positive relationship between the current economic growth stimulated by India and the banks outside the activities of the budget. Most of the literature has suggested that real GDP captures the effects caused by fluctuations in general economic activity. As a result, the demand for OBS products reacted positively to the business cycle due to the reason for the transactions. This means that higher economic growth could lead to an increased demand for OBS business. This study finds a positive and insignificant impact of real GDP on banks outside of budgetary activities. The significant impact of real GDP growth on the use of OBS could indicate that higher real GDP growth causes an increase in the use of OBS. The positive impact of real GDP growth on the use of OBS indicates that OBS companies follow economic growth and general economic cycles. Increased economic growth creates greater use of OBS, which indicates the dual role of OBS companies as income generation and risk management techniques.

(ix) Inflation : With regard to inflation, the inflation coefficient is negative as expected (H9) and is not statistically significant ; so, the effect of inflation on nationalized banks outside the balance sheet assets is not significant. This could be due to the fact that high inflation makes financial savings less attractive than savings in real assets that force banks to perform off-balance sheet activities to generate commissions. The results also suggest that inflation is not a determining factor of the banks' OBS assets in India, and the parameter of this variable is insignificant, as illustrated in Table 9, by the large p - value of 0.870.

Research Implications

OBSA plays a significant role in other developed economies, but as these are financial innovations for a young Indian economy, a lot of study is required to understand the implications of such financial engineering. In the Indian context, limited basic studies of OBSA with respect to correlation with risk and efficiency have been conducted. This exploration is entirely based upon to what extent national banks are exposed to these non- interest products and as these non-interest products are poles apart from the traditional income products, and may give in - depth insights about milking more profits without involving more risk. This study may endorse to improve the technical analysis for investment in these national banks, which may not be limited to only stakeholders, shareholders, but the public or the government. Based on the authenticated data from legitimate government bodies, this research will expand the horizons in Indian research about the significance of OBSA and further, it can be extended to the task environment of the Indian banking sector.

Conclusion and Recommendations

In the past few years, intensified competition, occurrence of deregulatory laws, new financial market innovations, decreasing margins from collecting deposits, purchasing funds to be subsequently intermediated into loans and other assets, and rapid growth and diffusion of new technologies induced the national banks to move into new areas of off-balance sheet exposure. The objectives and hypothesis examination pertained to determining the OBS items and to what extent various banking factors impact these determinants collectively. For this, we determine the components of OBS items that are used by PSBs very frequently to either mitigate the risk or increase profits of the selected 21 PSBs of India during the period of 2008 - 2017. After the collection of relevant data from various sources, a multiple regression model has been created to determine the components of OBS items for all different segments. This study joins the set of recent studies by accepting that the selected banks' OBS activities have been increasing over time, and it has been considered as a financial innovation in the Indian banking industry. While banks' regulatory factors are not the major determinants to the OBS, banks' non - regulatory factors and macroeconomics factors are at work to determine the OBS usage. The results also suggest that the OBS items follow the business cycle notion, and the usage decision might be considered like the traditional bank activities. OBSA are profit driven activities, and they increase with bank profit. Bank size affects the OBS positively, which is consistent with the market discipline hypothesis and the usage of OBS increases with bank risk. Finally, a lack of credibility in the form of non - performing loans would decrease the usage of the OBS in general.

The usage of off balance sheet activities by PSBs found in India is not yet as developed as it is in the developed countries. Empirical studies and literature in the banking area suggested that regulations as well as institutional and technological factors could encourage the banking system for adopting different financial innovations and engage in OBS activities. The governments should institute regulatory reforms, financial sector restructuring, and create a credible institutional environment.

For OBS activities to succeed, the competition among private and public banks should be fair. Competition in the banking sector needs to be further enhanced and supported by policies that encourage and foster competition in the financial sector. These should be complemented with measures to promote the growth and image of private banks in a bid to enhance their ability to penetrate the market so as to break the market dominance by a few banks. The variables used in the statistical analysis did not include all factors that can affect Indian banks' OBSA. Given the key role that the sector plays in the economy of the country, future research should focus on more OBSA and include more banks that would provide better insights for both bank managements and regulatory bodies.

Limitations of the Study and Scope for Further Research

This research is limited to the assessment of factors affecting off balance sheet financing practices in the selected national banks for the time period from 2008 - 2017. The determinants of OBS activities that are used in this study are those frequently described in conventional banking studies and literature. In addition, the study used banking sector data and countrywide macroeconomic data taken from Reserve Bank of India in order to define the macroeconomic variables. This study has been confined to a particular time zone with specific banking community in India only.

This investigation has been carried out for the time frame of 2008 to 2017 only and does not include the Indian banking life span, and the present examination is conducted with the chosen 21 public banks which further may be extended to the entire banking community and a wider time frame can be considered for better understanding the role of OBSA in this arena.

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