

## BANKING REFORMS AND COMPETITION LIABILITY STRUCTURE OF INDIAN BANKING SEGMENTS

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### **P**URPOSE

*THE present paper focuses on the very core function of banking segments under study. As a part of a larger study on applying Structure-Conduct-Performance approach to banking, this paper aims at understanding whether the new private banks have been able to mark their existence in terms of examining changes in conduct of Indian banking industry in terms of its liability structure, that is, ratio of demand deposits to total deposits, ratio of term deposits to total deposits and ratio of demand deposits to term deposits.*

**Design/Methodology/Approach:** *Fixed Effects Panel Regression Model has been used. For this purpose, balance panel has been constructed for the four banking segments under study for the period ranging 1995-96 to 2009-10.*

**Findings:** *The results show that incumbents are losing business to new private sector banks in terms of demand deposits as ratio of demand deposits to total deposits is significantly waning in case of existing banking segments while the same is slowly and constantly rising for new private banks.*

**Research Limitations/Implications:** *The limitation of the study is that time-period is limited upto 2009-10 as data was available till 2009-10 when study was carried out.*

**Practical Implications:** *These results indicate that competition has actually ushered in Indian banking as a result of banking reforms by allowing entry to new banks in the private sector. As on the one hand, existing banks are losing to new banks in terms of demand deposits still maintaining their stability in form of term deposits and giving competition to new banks. On the other hand, new private banks have marked their presence as regards to demand deposits but losing in form of term deposits. Another interesting implication of these results is that competition has emerged in the form of incumbents vs. new banks rather than public banks vs. private banks.*

**Originality/Value:** *It is original piece of work. It tests the impact of liberalization on competition in the banking segments of India in terms of their liability structure specially demand deposits and term deposits.*

**Key Words:** *Banking Reforms, Competition, Banking Segments, Liability Structure, Demand deposits, Term Deposits.*

### **Introduction**

Indian economy was liberalized in 1991 to free it from the shackles of a highly regulated and stringent policy framework, so that it becomes competitive and efficient for the purpose of national as well as

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international trade. Thus, a number of restrictions and regulations were uplifted and reforms were introduced in various important sectors of the economy amongst which banking sector was the major one. The recommendations of the Narasimham Committee Report-I governed the change in policy regime of Indian banking. As Indian banking industry was highly concentrated because of state ownership; the committee was of the view that the uncompetitive and inefficient banking sector of our economy would be better dealt by means of deregulation and opening up. Hence, it was for the first time after getting independence that the new private banks were allowed to enter the banking industry of India to unleash the competitive forces within existing banks. It is in this context that the work has been carried out to analyze competition ensued in Indian banking industry due to banking reforms in the light of rigorous and formal framework namely 'Structure-Conduct-Performance Paradigm' (Gupta, 2016).

After analyzing structural characteristics of the four banking segments (Murthy et al., 2016); and analyzing their conduct in terms of operating efficiency and spread (Murthy et al., 2015); investment policy and assets structure (Murthy et al., 2016); the present paper attempts to analyze the trend in four banking segments, i.e., SBI group, nationalized banks, old private banks and new private banks in terms of their conduct as regards to their liability structure specially demand deposits and term deposits using fixed effects panel regression model for the period ranging between 1995-96 to 2009-10 to judge the impact of liberalization policy on Indian banking sector.

In this background, the proposed paper is divided into eight Sections. Section II provides the major banking reforms. Section III presents the conceptual framework on the basis of which present paper has been framed and liability structure of a bank has been discussed in Section IV. Section V mentions variables selected and Section VI presents research design including Hypothesis and methodology. Empirical analysis has been given in Section VII. Finally, Section VIII produces the conclusion.

## **Banking Reforms in India**

In 1991-1992, the RBI launched major banking sector reforms aimed at creating a more profitable, efficient, and sound banking system, based on the recommendations of the Narasimham Committee on Financial Sector Reforms. The fundamental philosophy underlying the reforms was to make the banking system more responsive to changes in market conditions and to reduce the intervention of the RBI to that of an arm's length regulator. This was a significant change compared to pre-reform scenarios in which most of the major operational parameters of all banks were regulated and micromanaged by the RBI. The reforms sought to improve bank efficiency through entry deregulation, branch delicensing, deregulation of interest rates, and allowing public sector banks to raise up to 49% of their equity in the capital market.

As the Narasimham Committee was set up in order to study the problems of the Indian financial system and to suggest some recommendations for improvement in the efficiency and productivity of the financial institutions; other than the most important one for allowing entry of banks in the private sector to improve operating efficiency of Indian banks especially PSBs and make them competitive, the committee has given the following major recommendations (Akrani, 2010):

- **Reduction in the SLR and CRR:** The committee recommended for the reduction of the higher proportion of the Statutory Liquidity Ratio 'SLR' and the Cash Reserve Ratio 'CRR'. As this high amount of SLR and CRR was locking the bank resources for government uses, it was creating hindrance in the productivity of the banks. Thus, the committee recommended the gradual reduction of SLR from 38.5% to 25% and CRR from 15% to 3 to 5%.
- 1. **Phasing out Directed Credit Programme:** DCP compelled banks to earmark the financial resources for the needy and poor sectors at concessional rates of interest. It was reducing the profitability of banks and thus the committee recommended for the phasing out of this programme.

2. **Interest Rate Determination:** The interest rates in India were highly regulated and controlled by the authorities. The committee was of the view that the determination of the interest rate should be on the grounds of market forces such as the demand for and the supply of fund. Hence the committee suggested to eliminate government controls on interest rate and phasing out the concessional interest rates for the priority sector.
3. **Structural Reorganization of the Banking Sector:** The committee embarked on the reorganization of structure of Indian banking sector. Accordingly, number of public sector banks need to be reduced. Three to four big banks including SBI should be developed as international banks. Eight to Ten Banks having nationwide presence should concentrate on the national and universal banking services. Local banks should concentrate on region specific banking. With regard to the RRBs (Regional Rural Banks), it is recommended that RRBs should focus on agriculture and rural financing as usual.
4. **Establishment of the ARF Tribunal:** As the proportion of bad debts and non-performing assets (NPAs) of the public sector banks and development financial institutions was very alarming; establishment of an Asset Reconstruction Fund (ARF) was suggested by the committee. This fund was supposed to take over the proportion of the bad and doubtful debts from the banks and financial institutions to help them to get rid of their bad debts and NPAs.
5. **Removal of Dual Control:** Banks were under the dual control of the Reserve Bank of India (RBI) and the banking division of the Ministry of Finance (Government of India). Therefore, stepping of this system was recommended and suggestion was made that the RBI should be the only main agency to regulate banking in India.
6. **Banking Autonomy:** Committee was of the opinion that the public sector banks should be free and autonomous in order to pursue competitiveness and efficiency. It was expected to reform the work culture and banking technology upgradation will thus be easy.
7. **Additional Suggestions:** Committee also suggested that the determination of interest rate should be on grounds of market forces. It further suggested for the minimization of the slabs of interest.

Some of the recommendations were later accepted and implemented by Government of India and became banking reforms. In 1994-1995, six private banks which were promoted mostly by government-owned financial institutions, and three foreign banks entered the banking industry. The reforms also sought to improve bank profitability through the gradual reduction of the cash reserve ratio and the statutory liquidity ratio and to strengthen the banking system through the institution of the Bank of International Settlements (BIS) norm of an 8% capital adequacy ratio, in addition to stringent income recognition and provisioning norms.

The reforms also aimed to create a more level playing field between the domestic banks and the foreign banks. While regulations related to reserve requirement, interest rate policy, and prudential norms have always been applied uniformly by the RBI across all the bank groups, prior to the reforms, foreign banks were exempt from earmarking any portion of their credit disbursement to the priority sectors under the directed credit programs of the RBI. By contrast, 40% of total credit of both public and domestic private banks was directed in this fashion. Since 1993, however, foreign banks were required to allocate 32% of their total credit to priority sectors. All public sector banks until 1991-1992 were fully owned by the Government of India (GOI). After the reforms these banks were allowed to access the capital market to raise up to 49% of their equity, and as of 1994-1995, two banks have done so.

Thus, till year end 1998 and even at present, Indian banking system consists of the banks belonging to different ownership groups which can be broadly classified into public sector banks, old private sector banks, new private sector banks, and foreign banks. Amongst these PSBs can be further categorized into State Bank of India and its associates and nationalized banks. However, according to Narasimham

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committee (1991), an evolution of banking structure should take place to assume a broad pattern consisting of

- a) three or four large banks, which could become international in character
- b) eight to ten national banks with a network of branches throughout the country
- c) local banks whose operations would be generally confined to a specific region.

Thus, all the recommendations made by the first report of Narasimham Committee which was set up under the chairmanship of Mr. M. Narasimham who was the 13<sup>th</sup> Governor of RBI were not considered to be implemented to become part of banking reforms. Because of this fact, a second committee was again set up under the chairmanship of Mr. M. Narasimham by the government of India to review the progress of banking reforms as suggested by the Narasimham Committee Report I and to design a programme to further strengthen the financial system of India. The committee focused on various areas such as capital adequacy, bank mergers, bank legislation, etc. Finally, it submitted its report to the Government in April 1998 with the following recommendations (Akrani, 2010):

1. **Strengthening Banks in India:** The committee envisaged a stronger banking system in India in context of the Current Account Convertibility “CAC” as it was of the view that Indian banks must be capable to handle problems as regards to liquidity and exchange rate management in light of CAC. Thereby, it recommended for the mergers of strong banks which will have ‘multiplier effect’ on the industry.
2. **Narrow Banking:** As most of the public sector banks were facing the problem of non-performing assets (NPAs). Some of them had NPAs were as high as 20 percent of their assets. Thus for successful rehabilitation of these banks, it recommended ‘Narrow Banking Concept’ where weak banks will be allowed to place their funds only in short term and risk free assets.
3. **Capital Adequacy Ratio:** In order to improve the inherent strength of the Indian banking system, the committee recommended that the Government should raise the prescribed capital adequacy norms. As this was supposed to further improve their absorption capacity also. Currently the capital adequacy ratio for Indian banks is 9 percent.
4. **Bank Ownership:** As committee had earlier mentioned the freedom for banks in its working and bank autonomy, it felt that the government control over the banks in the form of management and ownership and bank autonomy does not go hand in hand and thus it recommended a review of functions of boards and enabled them to adopt professional corporate strategy.
5. **Review of Banking Laws:** The committee considered that there was an urgent need for reviewing and amending main laws governing Indian Banking Industry like RBI Act, Banking Regulation Act, State Bank of India Act, Bank Nationalization Act, etc. This up-gradation will bring them in line with the present needs of the banking sector in India.

Apart from these major recommendations, the committee had further suggested faster computerization, technology up-gradation, training of staff, depoliticizing of banks, professionalism of banking, reviewing bank recruitment, etc. Thus, a wide spread financial sector reforms process is under way since 1991 as a consequent to recommendations of Narasimham Committee Report I, 1991 and Narasimham Committee Report II, 1998. However, deregulating entry of banks in the private sector has remained the most important one which is still in process. As in January, 1993, for the first time, the guidelines for the entry of banks in the private sector were announced and 10 new private sector banks were established. On the bases of review experience, revised guidelines were issued in January, 2001 and two new banks entered the Indian banking industry.<sup>1</sup> Recently, RBI has further released guidelines on its website on 22 February, 2013 for entry of banks in the private sector.

<sup>1</sup> Kotak Mahindra Bank and Yes Bank entered in 2003 and 2004 respectively.

## **Conceptual Framework**

Present paper is based on industrial organization approach that lays down the foundation of the competitive industry. Hence, this work uses the Structure-Conduct-Performance approach, developed by Mason (1939). According to this approach, there are some basic conditions which are given. These basic conditions determine the structure of a market or industry; market structure influences conduct and finally, conduct impacts performance.

Although, this study is based on modified S-C-P developed by Murthy & Deb (2008) which is a better concept to understand firm dynamics and industry dynamics in comparison of traditional S-C-P. As per modified S-C-P, basic conditions influence conduct by passing structure and there is a new concept of entry facilitators as opposed to entry barriers. This approach incorporates strategic groups in conduct as against structure as suggested by traditional S-C-P. Moreover, modified S-C-P states that competition is the overall state that influences structure, conduct, and performance. These are some of the most important contributions of modified S-C-P on the basis of which the present work has been carried out.

To measure and evaluate the impact of banking reforms in infusing competition in Indian banking the theoretical framework adopted for the purpose of the present analysis includes modified S-C-P paradigm. Therefore, three conduct variables have been selected and interpreted in this paper to examine behavioral change in four banking segments in banking industry in India namely SBI group, nationalized banks, old private banks, and new private banks. These three variables include ratio of demand deposits to total deposits, ratio of term deposits to total deposits, and ratio of demand deposits to term deposits in order to highlight the conduct of banking segments under study in form of liability structure.

### **Strategic Groups**

Strategic group includes similar firms within an industry which are alike in terms of formulating and adopting a strategy and thereby experience similar differential consequences (Ferguson & Ferguson, 1994). Whether a strategic group is an aspect of structure or conduct is a controversial issue in the context of the S-C-P paradigm. According to Newman (1978), "If corporate strategies can differ persistently among direct market rivals, we can speak of strategic groups—each group consisting of firms highly symmetrical in their corporate strategies—as a stable element of market structure. Strategic groups are elements of market structure because strategic choice affects the preference system employed by the firm's decision makers in selecting short term operating policies."

On the contrary, according to Murthy & Deb (2008), "The reasons cited by Newman to justify the treatment of strategic groups as an element of market structure are related to difference in 'corporate strategies', on the one hand, and 'strategic choice' influencing 'decision making mechanism' of firms, on the other hand. Corporate strategies and strategic choice clearly fall in the realm of conduct and not structure. Basic conditions may allow for creation of strategic groups, but the distinction between the strategic groups may be understood only in terms of differential behavior."

### **Strategic Groups in Indian Banking Industry**

Amel & Rhoades (1988) had not presupposed either the existence of strategic group or their number within the industry. They had used cluster analysis to categorize banks into groups and several other procedures to study quantitative differences amongst groups, and the stability of memberships in groups over a period of time. Hayes et al. (1983) on the one hand and Passmore (1985) on the other were of the same opinion. However, the conclusion of the study was that stable groups exist in banking markets. This helps us to proceed with the study of strategic groups in banking industry of India. Indian domestic banking industry can be broadly divided into public sector banks and private sector banks. Public sector banks include SBI group and nationalized banks while private sector banks constitute old private banks (OPBs)<sup>2</sup> and new private banks (NPBs).<sup>3</sup>

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<sup>2</sup> Old private banks are the banks which were escaped or deprived of nationalization after independence of the country.

<sup>3</sup> Foreign banks are out of the purview of the present study.

The management of public sector banks falls under the purview of the Department of Banking in the Finance Ministry of GOI, which directly appoints the managing directors of these banks and determines the constitution of the Board of Directors. Given its proprietary interests, the GOI has its representatives on the Board of Directors, and, as the Report of the Narasimham Committee on Financial Sector Reforms (1991) had noted, there is a considerable degree of government intervention in the day to day operational decisions of these banks that has seriously abridged their operational autonomy. Domestic Indian banks are typically of two types: old private banks that coexisted with the public banks since nationalization and new private banks that came into existence after entry deregulation in 1992.

In 1994-1995, six new banks completed one year of operations, but their share in total banking business remained marginal, owing largely to their limited branch network. In many developing countries it is not uncommon to find government-owned financial institutions holding controlling stakes in private sector enterprises through which the government can exert significant influence on their operations. However, in India, neither government bodies nor government-owned financial institutions have any equity shareholding in old private sector banks. This is reflected by the absence of any nominees of the government-owned financial institutions on the Board of Directors of these private sector banks. It is only in the new private sector banks that government-owned financial institutions have substantial equity participation, as most of the new banks were promoted by these institutions. Subsequently, the new banks have been in the process of reducing the promoters' stake, as required by RBI regulations, through raising equity in the capital market.

The old private banks are typically small in size and regional in orientation. Most of these banks, until recently, were closely held by local communities. However, since 1992, an increasing number of these banks have accessed the capital market to raise funds and have thus become widely held. The shareholding is predominantly regional in nature and the secondary market for their shares, while it exists, is relatively weak as is evident from the low volume of shares traded. In contrast to the old private banks, the new banks are much larger in size, have larger capital base, operate primarily in metropolitan areas, and are technologically superior. Kumar & Gulati (2010) have made a clear distinction between SBI group and nationalized banks and Deb (2005) has highlighted points of differences between old private banks and new private banks suggesting them as two distinct strategic groups.

Hence, the present study attempts to identify altogether the four banking segments: SBI group, nationalized banks, old private banks, and new private banks as four distinct strategic groups on the basis of discussion made till now. Furthermore, it has also been the endeavour to test whether new private banks have been the source of competition to old private banks and other existing banking segments, that is, SBI group and nationalized banks as well.

### **Liability Structure of a Bank**

Liability structure of a bank consists of capital; reserves and surplus including capital reserves, statutory reserves, investments fluctuation reserves, revenue, and other reserves, balance of profit; deposits including demand deposits, saving bank deposits, and term deposits where demand deposits and term deposits can be further classified into interbank deposits and others. Other deposits comprising of deposits from branches in India and deposits from branches outside India. Moreover, liability side of a bank constitutes borrowings comprising of borrowings from Reserve Bank, borrowings from other banks and other institutions and agencies, and borrowings outside India. There are other liabilities as well, i.e., bill payables, inter-office adjustments, interest accrued, and provisions, etc.

Thus, excepting capital and reserves, liability structure of banks is broadly constituted of borrowings other than deposits but neither borrowing are related to the two basic functions of banks nor they contribute much to liabilities of a bank. It is needed to be associated with concept of money that includes currency notes and coins held by public, demand deposits, and other deposits. Demand deposits are withdrawal on public demand. If banks are not capable to honor the public demand, there is fear of

having run on bank. Therefore, banks need to maintain liquid assets. However, banks enjoy overdraft facility against demand deposits, but advances made against demand deposits earn so little interest that they are also known as clean loans. Therefore, they need to maintain term deposits. Term deposits contribute towards non-liquid assets of the bank. Moreover, term deposits form the basis of advances made by the banks at higher rate of interest and hence help in maintaining stability.

As two basic functions of a bank are receiving deposits and giving advances. Advances constitute assets and deposits constitute liabilities. Deposits can be broadly classified into demand deposits, saving deposits, and term deposits. Demand deposits insure liquidity and term deposits insure stability. Both demand deposits and term deposits are required to attain the basic objectives of a bank: profitability and stability. In case of demand deposits, withdrawals are frequent whereas rate of interest to be paid to creditors is low. While, in case of term deposits, funds supplied by creditors can be utilized to earn profits by lending them at higher rate of interest as date of withdrawal falls after a fixed period of time. Thus, demand deposits generate liquid assets and term deposits generate non-liquid assets for a bank. Saving deposits are of recurring nature where number of withdrawals are more than demand deposits and lesser than term deposits. Saving deposits can neither be classified as demand deposits and nor as fixed deposits. It is because of the fact that saving deposits are subject to number of restrictions unlike demand deposits on the one hand and on the other, saving deposits are subject to withdrawals on demand as against fixed deposits. Therefore, to have a clear cut distinction amongst four banking segments under study, demand deposits and term deposits have been taken into account specifically for the purpose of this study. With the help of this paper, we are interested in determining the trend of demand deposits and term deposits specifically as receiving of deposits is one of the most important function of a bank and both of the objectives of bank to maintain liquidity and stability rest upon collection of deposits mainly as deposits received from the main source of advances given by banks at higher rate of interest than that is received on deposits by them.

Moreover, this paper is a further attempt to investigate liability structure of Indian commercial banks after examining investment policy and assets structure of Indian banking segments (Murthy et al., 2016a). The last study shows that the focus of banking industry in general is changing from liquid assets to non-liquid assets, i.e., giving long-term loans and advances in place of commercial bills or short-term credits. Thus, Indian banking is moving towards anticipated income theory leaving behind shiftability theory. It might be the consequence of demise of DFIs in India. The need of industrial finance and infrastructural finance has been recognized by commercial banks in the absence of DFIs has already been proved. Is this significant finding having any association with liability structure of Indian banks as well in form of deposits received?, the paper attempts to cater to this question.

## Selection of Variables

As conduct shows how firms react to the conditions imposed by market structure and interact with rivals pursuing their goals at their best level. One conventionally looks at a host of decisions relating to the quality and range of products, pricing, advertising and marketing, financing, investment, R&D, collusion, and merger under conduct (Hay & Morris, 1979). Although, one has to look closely at the variables so as to modify it to arrive at an appropriate set of conduct variables in banking industry. Some variables in the list are retained, while a few new variables, typical of banking industry are added. They include demand deposits, term deposits, and ratio of demand deposits to term deposits.

Receiving deposits is one of the two important basic functions of banks. Moreover, Indian banks are free to determine interest rate to be paid on the deposits received and advances made by them. Hence, to find out whether four banking segments differ in terms of deposits collection categorically. Ratio of demand deposits to total deposits, ratio of term deposits to total deposits, and ratio of demand deposits to term deposits have been evaluated separately<sup>4</sup>. Mathematically, these ratios can be given as:

$$\text{Ratio of Demand Deposits to Total Deposits} = \frac{\text{Demand Deposits}}{\text{Total Deposits}}$$

<sup>4</sup> Though, saving deposits has not been included in the analysis.

$$\text{Ratio of Term Deposits to Total Deposits} = \frac{\text{Term Deposits}}{\text{Total Deposits}}$$

$$\text{Ratio of Demand Deposits to Term Deposits} = \frac{\text{Demand Deposits}}{\text{Term Deposits}}$$

## Research Design

### Hypotheses

In the light of preceding discussion and selected variables, following comparative hypotheses have been framed:<sup>5</sup>

1.  $H_{01}$ : There is no difference between banking segments as regards to ratio of demand deposits to total deposits.
2.  $H_{02}$ : Ratio of term deposits to total deposits of banking segments is not different from one another.
3.  $H_{03}$ : The four banking segments are not different from one another in terms of ratio of demand deposits to term deposits.

### Data and Methodology

Data has been collected from RBI website. All the three conduct variables judging behavioral aspect of the banking segments in the present paper have been analyzed in log form with the help of panel regression for the study period 1995-96 to 2009-10.

We have considered a type of fixed effects model which has differential intercepts and slopes. This kind of model has intercepts and slopes that both vary according to the banking segment and over time. To formulate this model, we would include not only banking segment dummies, but also their interactions with the time-varying covariates. The one big advantage of the fixed effects model is that the error terms may be correlated with the individual effects. Therefore, the individual effects can be captured.

In our case we are interested in knowing the 'individual effects' in two ways. Firstly, we wish to know the effect of the presence of a banking segment effect. Secondly, we wish to know the effect over time. Therefore, we need to design the panel model so as to capture two effects. The first effect is due to the banking segment at a point of time. The second effect is due the change in the independent variable overtime. If the independent variable is time then it represents the exogenous factors or policy effect over time. In the first case the difference dummy is with respect to the base segment – SBI group. The intercept, therefore, shows the difference between SBI group and other banking segments to begin with. Thereafter, over a period of time the effect would be captured by the interactive dummy which is a product of the time variable and the individual banking segment dummy that is in difference form.

After we discuss types of fixed effects models, we proceed to show how to test for the presence of statistically significant group and/or time effects. Because i-1 dummy variables are used to designate the particular banking segment, this same model is sometimes called the Least Squares Dummy Variable model. The general form of the fixed effects model is:

$$Y_{it} = a_1 + a_2 \text{Segment}_2 + a_3 \text{Segment}_3 + a_4 \text{Segment}_4 + b_1 \text{Time} + b_2 \text{Segment}_2 * \text{Time} + b_3 \text{Segment}_3 * \text{Time} + b_4 \text{Segment}_4 * \text{Time} + U_{it}$$

Where,  $Y_{it}$  = Conduct variable

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<sup>5</sup> All the hypotheses have been made in terms of growth rate of the corresponding selected conduct variables.

Time = Exogenous variable

$\alpha_1$  = intercept of base segment (SBI group)

$\alpha_1$  .....  $\alpha_4$  = Difference Dummy of Segment (2...4) with respect to SBI group

$b_1$  = Slope with respect to time

$b_1$ .....  $b_4$  = Slope dummy of Segment (2...4) with respect to time

In this model, the intercepts and slopes vary with the banking segment. The intercept for banking segment<sub>1</sub> (base segment) would be  $\alpha_1$ . The intercept for banking segment<sub>2</sub> would also include an additional intercept,  $\alpha_2$ , so the intercept for banking segment<sub>2</sub> would be  $\alpha_1 + \alpha_2$ , and so on. The intercept for banking segment<sub>3</sub> would include an additional intercept. Hence, its intercept would be  $\alpha_1 + \alpha_3$ . The slope for banking segment<sub>2</sub> would be  $b_1 + b_2$ , while the slope for Segment<sub>3</sub> would be  $b_1 + b_3$ . In this way, the intercepts and slopes vary with the segment.

Thus, in the empirical tables presented in this paper; the intercept indicate the initial level and year represents the beta coefficient or slope of the SBI group.  $d_2$ ,  $d_3$  and  $d_4$  represent the differential intercept dummies of the nationalized banks, old private banks, and new private banks respectively. Similarly,  $d_2t$ ,  $d_3t$ , and  $d_4t$  indicate the differential slope dummies of the three banking segments, respectively. To find out their intercepts and slopes, their respective coefficients pertaining to intercept dummies:  $d_2$ ,  $d_3$ , and  $d_4$  are added to the intercept of SBI group along with sign and similar exercise has been done in case of the coefficients reflecting slope dummies and hence, coefficients of  $d_2t$ ,  $d_3t$ , and  $d_4t$  have been added to the beta coefficient of SBI group that is indicated by year in all the empirical results. This has been done by estimating semi-log regression equations in all the cases.

### Panel Regression Analysis

Three panel regressions have been estimated to judge the distinction between variables exhibiting liability structure of the four banking segments for the study period. Table 1 and Table 2 provide the ANOVA panel results and summary statistics corresponding to the variables under observation respectively.

**Table No. 1: ANOVA Panel Regression Results**

Variables	P-values
1. Demand Deposits/Total Deposits	$4.1e^{-20}$
2. Term Deposits/Total Deposits	$2.81e^{-18}$
3. Demand Deposits/TermDeposits	$1.26e^{-17}$

Table no. 1 reveals that P-values of all the three variables empirically examined with regard to ANOVA in this paper using panel regression are very less than alpha that is 0.05 which leads to rejection of the null hypothesis in case of all the variables under study. Hence, it is to be concluded that change in all the variables is highly correlated with time in loop of dummies constructed in case of all the four banking segments under study. There is a joint influence of time, which is an exogenous variable that captures growth rate and the intercept and slope dummies against the time variable.

It is revealed by table no. 2 that Multiple R, R Squared, and Adjusted R Squared in terms of selected variables: demand deposits, term deposits, and ratio of demand deposits to term deposits are very high (generally between 80 percent and 90 percent or even more than 90 percent or 100 percent approximately). It manifests that change in these variables is not only highly related with time but most of the change is taking place due to time and the intercept and slope dummies of other three banking segments. It proves that change in these variables is highly associated with time and differential dummies constructed.

**Table No. 2: Summary Output: Panel Regression Statistics**

Variables	Multiple R	R Square	Adjusted R Square	Standard Error	Observations
1. Demand Deposits/Total Deposits	0.928143	0.861449	0.842798	0.098096	60
2. Term Deposits/Total Deposits	0.91463	0.836548	0.814544	0.043709	60
3. Demand Deposits/TermDeposits	0.909198	0.826642	0.803305	0.137133	60

**Analysis of Selected Variables for liability structure**

*i. Demand Deposits/Total Deposits:* In this regard, the panel regression results have been shown as under with the help of table no. 3. Following semi-log equation has been designed as a fixed effects model.

$$LN \frac{DmdD}{TD} = a + d_2 + d_3 + d_4 + b_1 t + b_2 d_2 t + b_3 d_3 t + b_4 d_4 t + \mu_t$$

where,

$DmdD/TD$  = Ratio of Demand Deposits to Total Deposits for SBI Group, Nationalised Banks, Old Private Banks, and New Private Banks

$a$  = Intercept for SBI group

$b_1, b_2, b_3,$  and  $b_4$  = Beta coefficients for the SBI Group, Nationalised Banks, Old Private Banks, and New Private Banks respectively

$t$  = Time variable

$\mu_t$  = Random error component

$d_2, d_3,$  and  $d_4$  = Differential intercept dummies for Nationalised Banks, Old Private Banks, and New Private Banks respectively

$d_2 t, d_3 t,$  and  $d_4 t$  = Variables indicating differential slope dummies for Nationalised Banks, Old Private Banks, and New Private Banks respectively.

**Table No. 3: Ratio of Demand Deposits to Total Deposits: Panel Regression Results**

Regression Results	Coefficients	Standard Error	t Stat	P-value
Intercept	63.02817	11.74227	5.36763	1.88E-06
Year	-0.03237	0.005862	-5.52229	1.08E-06
$d_2$	-1.16162	16.60608	-0.06995	0.944501
$d_3$	-29.0454	16.60608	-1.74908	0.086177
$d_4$	-72.2242	16.60608	-4.34926	6.39E-05
$d_2 t$	0.000375	0.008291	0.045226	0.9641
$d_3 t$	0.014278	0.008291	1.72225	0.090968
$d_4 t$	0.03603	0.008291	4.345912	6.46E-05

Interpretations of the ratio of demand deposits to total deposits with regard to panel regression results as per table no. 3 are as under:

(a) SBI Group: Table no. 3 represents the intercept as 63.0282 and is significant as well indicated

by its low P-value  $1.88e^{-06}$ . This shows that ratio of demand deposits to total deposits was high in the beginning of the study period for the SBI group. On the contrary, the slope reflected by year is (-) 0.03237 is also significant as its P-value  $0.08e^{-06}$  is smaller than alpha level 0.05. It states that proportion of demand deposits in total deposits is constantly declining at the rate of 3.24% annually in case of SBI group. This may be attributed to competition given by new private banks.

- (b) Nationalised Banks: In table no. 3, the coefficient of  $d_2$  is given as (-) 1.1616 having very high P-value 0.9445. It reveals that there was no significant difference in the ratio of demand deposits to total deposits of nationalized banks and SBI group. Moreover, coefficient of  $d_2t$  has been given as 0.0038 approximately. And again found to be insignificant due to very high P-value 0.9641. It manifests that there is no substantial difference between the slopes of the two banking segments: SBI group and nationalized banks. Hence, ratio of demand deposits to total deposits is also declining annually at the same pace (3.24%) that of SBI group.
- (c) Old Private Banks: The coefficient of  $d_3$  is mentioned in Table No. 3 as (-)29.0454. Its P-value is 0.0862 that is higher than 0.05 but lower than 0.1 significance level. Still, adding the coefficients provided by intercept and  $d_3$ , we get 33.9827. It specifies that the initial value of the ratio of demand deposits to total deposits in relation to old private banks is approximately half of that of SBI group. Further, coefficient of  $d_3t$  for old private banks is given as 0.0143. Its P-value 0.0909 is again higher than .05 but lower than 0.1. Adding coefficient of  $d_3t$  to slope of SBI group, we get (-) 0.0181. It suggests that proportion of demand deposits to total deposits is decreasing at the rate of around 1.81% annually in case of old private banks.
- (d) New Private Banks: In case of new private banks, the coefficient of  $d_4$  is stated as (-) 72.2242 and its P-value is  $6.39e^{-05}$ . Extremely low P-value indicates very much difference in the initial values of the ratio of demand deposits to total deposits of the two banking segments: new private banks and SBI group. Adding coefficients of  $d_4$  and intercept, we get (-) 9.196. It reveals how proportion of demand deposits to total deposits was very low for new private banks in the beginning of the study. Moreover, coefficient of  $d_4t$  is 0.036 and its P-value is  $6.46e^{-05}$  which is much smaller than 0.05. It indicates substantial difference between the slopes of new private banks and SBI group in terms of ratio of demand deposits to total deposits. Summing coefficient of  $d_4t$  and slope of SBI group represented by year, we get 0.0036. It suggests that the proportion of demand deposits in total deposits is constantly rising at the rate of .04% approximately annually in case of new private banks.

To conclude, the ratio of demand deposits to total deposits was high in the beginning of the study period for incumbent banking segments but constantly declining (at the rate of 3.24% and 1.81% per annum for PSBs and OPBs respectively). While in case of new private banks, same is rising slowly and constantly though it was initially very low. It indicates the success of new private banks in attracting demand deposits in their favor against incumbents in spite of imposing condition of high minimum balance of Rs 10,000 and others.

- ii. *Ratio of Term Deposits to Total Deposits:* Empirical analysis in this regard has been presented with the help of table no. 4. The semi-log equation set for the purpose is given as follows:

$$LN \frac{DmdD}{TD} = a + d_2 + d_3 + d_4 + b_1 t + b_2 d_2 t + b_3 d_3 t + b_4 d_4 t + \mu_t$$

Where,

$TrmD/TD$  = Ratio of Term Deposits to Total Deposits for SBI Group, Nationalised Banks, Old Private Banks, and New Private Banks

$a$  = Intercept for SBI group

$b_1, b_2, b_3,$  and  $b_4$  = Beta coefficients for the SBI Group, Nationalised Banks, Old Private Banks, and New Private Banks respectively

$t$  = Time variable

$\mu_t$  = Random error component

$d_2, d_3,$  and  $d_4$  = Differential intercept dummies for Nationalised Banks, Old Private Banks, and New Private Banks respectively

$d_2t, d_3t,$  and  $d_4t$  = Variables indicating differential slope dummies for Nationalised Banks, Old Private Banks, and New private Banks respectively.

**Table No. 4: Ratio of Term Deposits to Total Deposits - Panel Regression Results**

Regression Results	Coefficients	Standard Error	t Stat	P-value
Intercept	-1.13414	5.232029	-0.21677	0.829236
Year	0.000307	0.002612	0.117662	0.906789
$d_2$	-9.46941	7.399206	-1.27979	0.2063
$d_3$	6.118517	7.399206	0.826915	0.412064
$d_4$	37.60083	7.399206	5.081738	5.17E-06
$d_2t$	0.00477	0.003694	1.291191	0.202348
$d_3t$	-0.00295	0.003694	-0.79839	0.428277
$d_4t$	-0.01868	0.003694	-5.05809	5.62E-06

Interpretations with regard to panel regression results for ratio of term deposits to total deposits as per table no. 4 are as follows:

- SBI Group: Table no. 4 presents the coefficient of intercept as (-)1.1341 that is highly insignificant as depicted by very high P-value 0.8292 in respect of ratio of term deposits to total deposits for SBI group. Moreover, slope of SBI group represented by year has been mentioned as 0.0003 and its P-value is 0.9068 that is highly insignificant. Thus, it can be said that both initial value and growth rate of ratio of term deposits to total deposits are not substantial enough in case of SBI group.
- Nationalised Banks: The coefficient of  $d_2$  as shown by table no. 4 in respect of nationalized banks is (-)9.4694 and its P-value is 0.2063. Thus, the initial value of ratio of term deposits to total deposits is not sufficient to be considered. Similarly, coefficient of  $d_2t$  is 0.0048 and its P-value is 0.2023 and hence insignificant. Thus, it is observed neither initial value nor growth rate of the ratio of term deposits to total deposits as regards to nationalized banks is significant.
- Old Private Banks: It can be noted with the help of table no. 4 that both initial value and growth rate of ratio of term deposits to total deposits are not substantial for old private banks just like SBI group and nationalized banks. This is proved by the coefficients of  $d_3$  and  $d_3t$  which are given as 6.1185 and (-)0.0029 respectively with their very high P-values 0.4121 and 0.4283.
- New Private Banks: The coefficient of  $d_4$  showing initial value of the proportion of term deposits to total deposits for new private banks is 37.6008 and its P-value is  $5.17e^{-06}$  and significant being much lesser than alpha 0.05. It indicates the ratio of term deposits to total deposits was very high since the inception of new private banks. Similarly, coefficient of  $d_4t$  is manifested as (-)0.0187 and its P-value is  $5.62e^{-06}$  that is highly significant. This result signifies that there is

constant decline of approximately 1.87% per annum in the proportion of term deposits to total deposits for new private banks.

Thus, results depict that ratio of term deposits to total deposits was initially high for new private banks and is constantly declining (at the rate of 1.86% per annum). However, it remained insignificant both in terms of initial value and growth rate for incumbent banks. Opening of other channels of long-term savings providing better returns and flexibility to the customer in comparison to term deposits in banks might be the possible reason for this type of behavior towards long-term deposits in banks.

iii. *Demand Deposits/Term Deposits*: In this regard, the panel regression results have been shown as under with the help of Table 5 on the basis of following semi-log equation which has been designed, as a fixed effects model.

where,

$DmdD/TrmD$  = Ratio of Demand Deposits to Term Deposits for SBI Group, Nationalised Banks, Old Private Banks, and New Private Banks

$\alpha$  = Intercept for SBI group

$b_1, b_2, b_3$  and  $b_4$  = Beta coefficients for the SBI Group, Nationalised Banks, Old Private Banks, and New Private Banks respectively

$t$  = Time variable

$\mu_t$  = Random error component

$d_2, d_3$  and  $d_4$  = Differential intercept dummies for Nationalised Banks, Old Private Banks, and New Private Banks respectively

$d_2t, d_3t$ , and  $d_4t$  = Variables indicating differential slope dummies for Nationalised Banks, Old Private Banks, and New private Banks respectively.

**Table No. 5: Ratio of Demand Deposits to Term Deposits: Panel Regression Results**

Regression Results	Coefficients	Standard Error	t Stat	P-value
Intercept	64.16231	16.41513	3.908731	0.00027
Year	-0.03268	0.008195	-3.98778	0.000209
$d_2$	8.307797	23.21449	0.357871	0.721888
$d_3$	-35.1639	23.21449	-1.51474	0.135893
$d_4$	-109.825	23.21449	-4.73088	1.75E-05
$d_2t$	-0.00439	0.01159	-0.37919	0.706089
$d_3t$	0.017228	0.01159	1.486453	0.143198
$d_4t$	0.054715	0.01159	4.720948	1.81E-05

Interpretations of the ratio of demand deposits to term deposits with regard to panel regression results as per table no. 5 are as under:

- (a) SBI Group: Table no. 5 shows the intercept as 64.1623 and is significant also as represented by its small P-value 0.00027. This depicts that ratio of demand deposits to term deposits was high in the beginning of the study period for the SBI group. On the contrary, the slope reflected by year is (-) 0.03268 is also significant as its P-value 0.0002 is lower than alpha level 0.05. It states that proportion of demand deposits to term deposits is constantly declining at the rate of

3.27% annually in case of SBI group. This may be attributed to competition given by new private banks.

- (b) Nationalised Banks: In table no. 5, the coefficient of  $d_2$  is given as 8.3078 having very high P-value 0.7219. It reveals that there was no significant difference in the ratio of demand deposits to term deposits of nationalized banks and SBI group right from the very beginning. Moreover, coefficient of  $d_2t$  has been given as (-) 0.0044 approximately. And again found to be insignificant due to very high P-value 0.7061. It reveals that there is no significant difference between the slopes of the two banking segments: SBI group and nationalized banks. Hence, ratio of demand deposits to term deposits is also declining annually at the same pace of 3.27% that of SBI group.
- (c) Old Private Banks: The coefficient of  $d_3$  is specified in table no. 5 as (-)35.164 approximately. Its P-value is 0.1359 that is higher than 0.05 significance level. It specifies that the initial value of the ratio of demand deposits to term deposits as regards to old private banks is not significantly different to that of SBI group. Furthermore, coefficient of  $d_3t$  for old private banks is given as 0.0172. Its P-value 0.1432 is also higher than 0.05. It suggests that proportion of demand deposits to term deposits is decreasing at the same rate of 3.27% annually in case of old private banks.
- (d) New Private Banks: In case of new private banks, the coefficient of  $d_4$  is stated as (-) 109.825 and its P-value is  $1.75e^{-05}$ . Extremely low P-value indicates very much difference in the initial values of the ratio of demand deposits to term deposits of the two banking segments: new private banks and SBI group. Adding coefficients of  $d_4$  and intercept, we get (-) 45.6627. It shows how ratio of demand deposits to term deposits was very low for new private banks in the beginning of the study. Also, coefficient of  $d_4t$  is 0.0547 and its P-value is  $1.81e^{-05}$  which is very lower than 0.05. It manifests significant difference between the slopes of new private banks and SBI group in terms of ratio of demand deposits to term deposits. Adding coefficient of  $d_4t$  and slope of SBI group represented by year, we get 0.0223. It suggests that the ratio of demand deposits to term deposits is constantly rising at the rate of 2.23% approximately annually in case of new private banks.

To conclude, the ratio of demand deposits to term deposits was high in the beginning of the study period for incumbent banking segments but constantly declining (at the rate of 3.27% per annum. While in case of new private banks, same is rising constantly at the rate of 2.23% though it was initially very low. It indicates the success of new private banks in attracting demand deposits in their favor as compared to term deposits against incumbents.

## Conclusion

Banking reforms were initiated in India as a part of liberalization policy to infuse competition and efficiency in Indian domestic commercial banks. As a result, new private banks were allowed to enter in private sector of Indian banking industry in early nineties. In the light of SCP paradigm, the present paper examines the conduct in terms of liability structure of four banking segments namely, SBI group, nationalized banks, old private banks, and new private banks for the period ranging between 1995-96 to 2009-10 with the help of fixed effects panel regression model. Conduct indicates the behavior or actions of the firms in the market or industry. Hence, three conduct variables to contrast the behavioral aspect of the four banking segments have been analyzed in this paper in relation to liability structure. These variables include ratio of demand deposits to total deposits, ratio of term deposits to total deposits, and ratio of demand deposits to term deposits.

It is proved that incumbents are losing business to new private sector banks in terms of demand deposits as ratio of demand deposits to total deposits is significantly waning in case of existing banking segments while the same is slowly and constantly rising for new private banks. On the contrary, there is no change in the position of incumbents as regards to term deposits as ratio of term deposits to total deposits exhibits no significant change in their case whereas term deposits are falling steadily in case

of new private sector banks. These results are further strengthened by ratio of demand deposits to term deposits which is constantly falling for incumbents while rising for new entrants. These results indicate that competition has actually ushered in Indian banking as a result of banking reforms by allowing entry to new banks in the private sector. As on the one hand, existing banks are losing to new banks in terms of demand deposits still maintaining their stability in form of term deposits and giving competition to new banks. On the other hand, new private banks have marked their presence as regards to demand deposits but losing in form of term deposits.

These results imply that new private banks are more cautious to maintain liquidity as against incumbents. This might be due to the fact that new banks have lesser number of branches. That is why, they lack liquidity. Moreover, new banks are aware of the volatility of market, they tend to maintain liquidity through demand deposits. On the other hand, the existing banks are not much afraid of liquidity crisis, they are not taking much caution of maintaining liquidity. In general, Indian banking industry is moving towards anticipated income theory as against shiftability theory of banking. That is, Indian banks are inclined to maintain non-liquid assets as compared to liquid assets (Murthy et al., 2016). Another interesting implication of these results is that competition has emerged in the form of incumbents vs. new banks rather than public banks vs. private banks.

No doubt, liberalization and deregulation has ushered competition in Indian banking industry. Actually, it is a dynamics of competition where it becomes difficult to say with certainty which of the banking segments is doing better. Of course, new private banks are giving competition to incumbents in terms of demand deposits. But on the other hand, incumbents including PSBs and OPBs are stable in terms of term deposits. While new private banks are found to be losing in relation to term deposits. Moreover, most of the competition is taking place in form of incumbents vs. new banks rather than public banks vs. private banks.

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