

Conduct of Banking Segments in India: Spread and Operating Efficiency

Prof. K.V. Bhanu Murthy¹, Dr. Renu Gupta², Dr. Ashis Taru Deb³

¹*Professor of Economics, Department of Commerce,
Delhi School of Economics, University of Delhi
bhanumurthykv@yahoo.com*

²*Assistant Professor, Commerce Department, SGGSCC, University of Delhi
renuguptadu@gmail.com*

³*Associate Professor, Economics Department, CVS, University of Delhi
tarudebashis@gmail.com*

Abstract: The notion of conduct in any industry arises out the broader framework called Structure-Conduct-Performance approach for analyzing any industry. 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. The study is set in the context of liberalization and competition in Indian Banking Industry.

Three variables, viz., absolute spread, wages bill ratio and operating efficiency are identified as measures of conduct. We use a panel regression approach with LSDV model to compare the conduct of these banking segments.

Most of the competition is taking place in form of incumbents vs. new banks rather than public banks vs. private banks. However, convergence is also taking place especially between incumbents and new banks with respect to wage bill and operating efficiency. As a result of liberalisation, incumbents have become competitive and their operating efficiency is also improved as expected by Narasimham Committee.

Keywords: Conduct in Banking, S-C-P, Public Sector Banks, competition in banking.

RAM

1. INTRODUCTION

The notion of conduct in any industry arises out the broader framework called Structure-Conduct-Performance approach for analyzing any industry. In this context, banking industry is no exception, although there are differences between banks and firms. Banking market is a part of banking industry under the industrial organization approach to banking. In a market, conduct indicates the behaviour or actions of the firms in relation to decisions made by the firms and the ways in which these decisions are taken. How prices are set whether independently or in collusion with other firms, how advertisement and research budgets are decided by firms and how much expenditure is devoted to these activities by the

firms in the market are some of the important considerations. The S-C-P approach argues that performance is determined by conduct of the firms, while conduct is determined by the structural characteristics of the market. Thereby, the traditional premise that performance is directly determined is unsound.

The dynamic version of S-C-P allows for feedbacks. After analyzing structural characteristics of the four banking segments (Murthy, Gupta and Deb, 2015), the present paper attempts to analyse the four banking segments in terms of their conduct as they have been considered as four distinct strategic groups. Moreover, attempt has been made to analyse conduct in terms of efficiency as in accordance with efficient conduct hypothesis (ECH); it is not structure but efficiency in conduct that facilitates better performance (Gupta, 2014).

In this backdrop, the present paper is segregated into seven sections. Section II highlights the conceptual framework on the basis of which present paper is designed. Section III highlights variables selected. Hypothesis and methodology are given by Section IV and Section V respectively. Empirical analysis is presented in Section VI. Finally, Section VII yields conclusion.

2. CONCEPTUAL FRAMEWORK

Present study is based on industrial organisation approach which lays down the foundation of the competitive industry. As a part of the industrial organization approach this study uses the Structure-Conduct-Performance approach, pioneered by Mason and Bain (1939). According them there are certain basic conditions which are given and these influence the structure of a market or industry; market structure impacts conduct and lastly, conduct influences performance.

However, this analysis is based on modified S-C-P developed by Murthy and Deb (2008) which is a better approach to

understand firm dynamics and industry dynamics as compared to traditional S-C-P. In this approach, basic conditions impact conduct by passing structure, there is a new concept of entry facilitators as against entry barriers. Their approach incorporates strategic groups in conduct as opposed to structure as per traditional S-C-P. Also, they state 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 is carried out. There are various hypotheses under S-C-P paradigm namely, S-C-P/S-P hypothesis, ESH, MES hypothesis and HET hypothesis. Within S-C-P approach Gupta (2014) has developed the ECH “efficient conduct hypothesis” states that efficient conduct directly leads to performance or profitability. As this study acknowledges the notion that there is a subtle difference between efficiency and performance. Efficiency leads to better performance but it is wrong approach to assume that efficiency and performance are interchangeable. Furthermore, present work presumes efficiency to be the part of conduct. Thus, efficiency is a narrow term and conduct is a wider one, that is, conduct also includes better decision making, better management and so on while efficiency is judged by ascertaining relationship between input and output, income and expenditure and so on but that is again facilitated by managerial decisions.

The theoretical framework adopted for the purpose of the present analysis entails modified S-C-P along with various hypotheses under S-C-P paradigm to measure and evaluate the impact of banking reforms in infusing competition in Indian banking. Thus, three conduct variables have been selected and interpreted in this paper to examine conduct of four banking segments in banking industry in India namely, absolute spread, wage bill and operating efficiency. Therefore, all the three variables selected for the purpose of the study will highlight the conduct of the banking segments under study in form of spread management, wage bill and operating efficiency.

3. STRATEGIC GROUPS, MARKET STRUCTURE AND CONDUCT

A controversial issue in the context of the S-C-P paradigm is whether strategic groups are an aspect of structure or conduct. In accordance with 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.”

However, in accordance with Murthy and 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 behaviour. The stable ‘elements’ arise out of continued pursuit of a certain type of strategic behaviour. The existence and continuance of different strategic groups within an industry rests on the members of a particular strategic group following similar strategies or conduct. Our approach is to refine the conventional S-C-P paradigm by including strategic groups within the ambit of conduct.

4. STRATEGIC GROUPS IN INDIAN BANKING INDUSTRY

Amel and Rhoades (1988) did not presuppose either the existence of strategic group or their number within the industry. They used cluster analysis to classify banks into groups and various other procedures to analyse quantitative differences among groups, and the stability of memberships in groups over time. Their work resembles Hayes, Spence and Marks (1983) on the one hand and Passmore (1985) on the other. The study concludes that stable groups exist in banking markets. This provides us with sufficient grounds to proceed with the study of strategic groups in banking industry of India. Broadly, Indian banking industry can be divided into public sector banks and private sector banks. Public sector banks constitute SBI group and nationalised banks whereas private sector banks include old private banks (OPBs)¹ and new private banks (NPBs).

Kumar and Gulati (2010) have made an attempt to draw a line of distinction between SBI group and nationalised banks. Firstly, the SBI, India’s largest commercial bank in terms of branches and assets, was established under the State Bank of India Act, 1955 and its 7 subsidiary banks which were established under the State Bank of India Act, 1959. While the 19 nationalized banks were established under the two Acts, that is, Banking Companies (Acquisition & Transfer of Undertakings) Act, 1970 and the Banking Companies (Acquisition & Transfer of Undertakings) Act, 1980. Thereby, the banks in SBI and NB groups are governed by the different statutes. Secondly, the Reserve Bank of India (RBI) owns the majority share of SBI, while the shares of subsidiary banks are owned by the SBI. On the contrary, nationalized banks are wholly owned by the Government of India (GOI). Thirdly, SBI besides carrying out its normal banking functions also acts as an agent of the central bank, RBI. SBI undertakes most of the government business transactions (including major borrowing programmes), thereby earning more non-interest

¹ Old private banks are the banks which were escaped or deprived of nationalisation after independence of the country.

income than nationalized banks (Shanmugham and Das, 2004). Albeit, this privilege has not been bestowed upon the nationalized banks. Fourthly, the SBI has a well defined system of decentralization of authority, while in case of nationalized banks the organizational structure differs from bank to bank.

Deb (2005) has made an attempt to identified old private banks (OPBs) and new private banks (NPBs) as two different strategic groups. Firstly, The low capital base and limited business opportunity of the old private banks in small towns and lack of courage to move into bigger towns have sealed the fate of these banks. The banks of the new breed chose bigger cities for their operations. They mainly opened branches in metropolitan centers, where there is high potential for large business growth. The regional characteristics of old private banks are quite visible in their operations, and their branch network is confined to their state of origin. Secondly, the new private banks stipulated higher levels of minimum amounts to be maintained as deposits with them and sought to service the needs of the affluent, aspiring and discerning customers. The old private banks cater to the common people. They have stipulated a minimum balance of Rs. 1,000, while the minimum balance for new private banks is Rs. 10,000². An important difference between the two groups of bank relates to the segment of the population served. This is likely to have a bearing on their differential conduct.

Thirdly, differences in the target group naturally lead to differences in the mode of servicing clients. The tangible advantages of the old private banks include a larger network of branches and a strong customer base in their respective regions. OPBs possess a larger network of branches and use proportionately more labour. The NPBs on the other hand, rely more on modern methods of serving the clients rather than mere branch banking. They make more use of technology related services like telephone banking, Internet banking, call centers and ATMs. The marketing strategies of the new private sector banks include reliance on a smaller network of branches and manpower in order to create a host of technology led conveniences which cannot be easily copied by other local banks. They maintain high service levels and hard sell through well trained sales teams. Fourthly, the new private banks possess certain strategic tangible advantages not possessed by its competitors and optimise their use in line with their strategy. Their tangible assets include widespread access to information technology. All new private sector banks have the state of the art technology and have begun providing improved customer service, flexible and customized products. Basic delivery channels like ATMs, call centers, Internet banking and tele banking started acting as product differentiators through quality of services offered. The old private banks were slow to catch up with modern technology. The first old bank to provide the facility of Internet banking was Federal Bank. However, it could provide the service only as late as

April 2000. The gap between the technology profile of the OPBs and NPBs is very glaring as the new private banks entered the industry in 1995 with new technology.

Fifthly, NPBs made use of brand name and heavy advertisement from the very beginning of their inception, that is, ICICI bank and UTI bank started very aggressively campaigning for their high tech brands called "Infinity" and "I-connect". Global Trust bank, an erstwhile leading private bank also began offering high tech products to stay in the competition. It was clear that the bank, which would reach the customers faster and service him better, would win the race. In order to build brand name advantages in an attempt to differentiate products from the competitors, the new private banks entered in a big way into advertising campaigns. The NPBs produce technology-based products and services, differentiate products, constantly add new services and products and hence rely more on advertising compared to old banks. The intangible advantage of the old private banks including the presence of a dedicated clientage creates a situation in which advertising is not a strategic variable for them. By virtue of being community banks, they were practicing relationship finance since an era when such terms were not even coined.

Hence, the present study attempts to identify altogether the four banking segments: SBI group, nationalised 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 all other existing banking segments, that is, SBI group and nationalised banks as well.

5. SELECTION OF VARIABLES

As already stated that conduct reveals how firms react to the conditions imposed by market structure and interact with rivals, while pursuing their goals at their best level. Under conduct, 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 (Hay and Morris, 1973). However, one has to look closely at the variables in order to modify it so that an appropriate set of conduct variables in banking industry are arrived at. A subset of the variables in the list are retained which include absolute spread, wage bill and operating efficiency.

The logic of choosing these variables is that absolute spread gives the net interest margin of banks. This is the main source of earning. It depends on banking market conditions and on how well do individual banks or banking segments manage their interest rate structure. On the other hand, different banking segments have different conduct regarding the policy of employment and this would affect their cost. Further, the way in which a banking segment manages its operations can

² Now, it has been raised to Rs. 10, 000 from Rs. 5,000.

be captured by its operational efficiency. The three variables collectively determine a crucial aspect of the conduct of different banking segments.

Absolute Spread

Absolute spread depends on interest earned on advances and investment, and interest expended. Both of them are conduct variables. Interest expended depends on determination of borrowing rate, elasticity of supply of deposit, banking habit of the population. Return on advances depends on fixing the PLR as well as elasticity of demand for advances, while return on investments depends on choices of instruments for investment. Thus spread is derived from a number of conduct variables and hence it may be treated as such (Deb, 2005). This paper examines the banking segments under analysis on the basis of^{3,4} absolute spread⁵. Mathematically, absolute spread is given as:

$$\text{Absolute Spread} = \text{Interest Earned} - \text{Interest Expended}$$

Controversy of Absolute Spread

'Absolute Spread' is used in context of banking considered to be the variable indicating performance. As absolute spread⁶ deals with interest earned and interest expended and interest rates were strictly regulated earlier. Now, since interest rates have been deregulated for banks and they are free to decide interest rates on the deposits received and loans extended; absolute spread has fallen in the ambit of decision making or choice of strategy. Thus, absolute spread has been taken as a conduct variable rather than a performance variable.

Spread is the summary measure that depicts the total behaviour. Here, we have used absolute spread and not spread. As absolute spread is evolved out of the difference between interest earned and interest expended, we want to see whether different trends are emerging in components of absolute spread, that is, interest earned and interest expended and absolute spread itself. Moreover, it is considered as performance variable, but we have considered as conduct variable because since interest rates are deregulated, each bank is free to manage their absolute spread. Hence it is taken as

³ Interest earned includes interest/discount on advances/bills, income on investments, interest on balances with RBI and other inter-bank funds and others as per RBI data.

⁴ As per RBI data, interest expended consists of interest on deposits, interest on RBI/inter-bank borrowings and others.

⁵ In general, spread refers to the ratio based on interest earned and interest expended. We have just taken absolute spread.

⁶ Here spread refers to absolute spread discussed later in this Chapter.

part of conduct as it reveals net interest margin that indicates firm's efficiency in spread management.

Wage Bill

It is expected that new private banks differ from incumbent banks on various grounds and wage bill may be one of such criterion on the basis of which four banking segments can be segregated from one another. As new private banks employ technology and hence, make less use of labour or employees and it should automatically lead to reduction of wage bill in their case specifically. Moreover, existing banks are also shifting to technology in the stretch of time period of the study. Hence, ratio of wage bill to operating expenses has been computed and examined to discern difference in the banking segments, if any. Wage bill⁷ constitute a very significant portion of the operating expenses⁸ of any firm. Mathematically, this ratio is given as follows:

$$\text{Ratio of Wage Bill to Operating Expenses} = \frac{\text{Wage Bill}}{\text{Operating Expenses}}$$

Reduction in wage bill indicates change of conduct by adopting automation in form of technology on the one hand and downsizing on the other hand result in operating efficiency.

Operating Efficiency

Furthermore, in an Endeavour to peer the overall efficiency of the four banking segments, operating efficiency⁹ (ratio of operating income¹⁰ to operating expenses) have been also calculated. This is specially done to check the expectation of Narasimham Committee Report I that entry of new private banks will infuse operating efficiency in the PSBs or existing banks and will make them competitive. Mathematically, operating efficiency is shown as follows:

$$\text{Operating Efficiency} = \text{Ratio of Operating Income to Operating Expenses} = \frac{\text{Operating Income}}{\text{Operating Expenses}}$$

⁷ Payments to and provisions for employees (PPE) as given in RBI data has been taken as wage bill in the study.

⁸ Operating expenses also known as intermediate cost include PPE; rent, taxes and lighting; printing and stationary; advertisement and publicity; depreciation on bank's property; director's fees, allowances and expenses; auditor's fees and expenses; law charges; postage, telegrams, telephones etc; repairs and maintenance; insurance and other expenditure as per RBI.

⁹ Concept of operating efficiency has been explained in detail in Chapter VII: Competition in Indian Banking Industry

¹⁰ Concept of operating income in case of a bank is mentioned in Chapter VI: Performance of Indian Banking Industry.

Therefore, behavioural aspect of the banking segments have been studied with the help of three conduct variables: absolute spread, ratio of wage bill to operating expenses and operating efficiency (ratio of operating income to operating expenses).

6. HYPOTHESES

In the light of preceding discussion and selected variables, following comparative hypotheses have been framed:¹¹

1. H₀₁: No difference is there between banking segments as regards to absolute spread.
2. H₀₂: Ratio of wage bill to operating expenses of banking segments is not different from one another.
3. H₀₃: The four banking segments do not differ from one another in terms of operating efficiency.

7. METHODOLOGY

All the three conduct variables judging behavioural aspect of the banking segments in the present paper have been analysed in log form with the help of panel regression for the study period 1995-96 to 2009-10.

We consider a type of fixed effects model 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' is 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

Time = Exogenous variable

a_1 = intercept of base segment (SBI group)

$a_2 - - - - a_4$ = Difference Dummy of Segment (2...4) with respect to SBI group

b_1 = Slope with respect to time

$b_2 - - - - b_4$ = 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 segment1 (base segment) would be a_1 . The intercept for banking segment2 would also include an additional intercept, a_2 , so the intercept for banking segment2 would be $a_1 + a_2$, and so on. The intercept for banking segment3 would include an additional intercept. Hence, its intercept would be $a_1 + a_3$. The slope for banking segment2 would be $b_1 + b_2$, while the slope for Segment3 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 nationalised 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.

8. PANEL REGRESSION ANALYSIS

Threepanel regressions have been estimated to judge the distinction between variables exhibiting behavioural conduct of the four banking segments for the study period. Table 1 and Table 2 provide the ANOVA panel results and summary

¹¹ All the hypotheses have been made in terms of growth rate of the corresponding selected conduct variables.

statistics corresponding to the variables under observation respectively.

TABLE 1: ANOVA Panel Regression Results

Variables	P-values
1. Absolute Spread	$1.41e^{-63}$
2. Wage Bill/Operating Expenses	$1.95e^{-31}$
3. Operating Efficiency	$4.12e^{-09}$

Table 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 .05 which leads to rejection of the null hypothesis in case of all the variables understudy¹². 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 understudy. 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.

TABLE 2: Summary Output: Panel Regression Statistics

Variables	Multiple R	R Square	Adjusted R Square	Standard Error	Observations
1. Absolute Spread	0.998543	0.997089	0.996697	0.075065	60
2. Wage Bill/Operating Expenses	0.974485	0.949622	0.94284	0.092194	60
3. Operating Efficiency	0.788567	0.621838	0.570931	0.090315	60

It is shown in Table 2 that Multiple R, R Square and Adjusted R Square pertaining to absolute spread and wage bill 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 this 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. Moreover, the aforesaid regression statistics in relation to operating efficiency are moderate and not very high. It proves that change in these variables is moderately associated with time and differential dummies constructed.

9. ANALYSIS OF SELECTED VARIABLES FOR CONDUCT

i. *Absolute Spread:* Table 3 present the trend and panel regression results in terms of absolute spread and semi-log equation formed for the purpose:

$$LN AbSp = a + d_2 + d_3 + d_4 + b_1t + b_2d_2t + b_3d_3t + b_4d_4t + \mu_t$$

where,
AbSp= Absolute Spread for SBI Group, Nationalised Banks, Old Private Banks and New Private Banks

a = Intercept for SBI group

b₁, b₂, b₃ and *b₄* = Beta coefficients for the SBI Group, Nationalised Banks, Old Private Banks and New Private Banks respectively

t = Time variable

μ_t = Random error component

d₂, d₃ and *d₄* = 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 3: Absolute Spread: Panel Regression Results

Regression Results	Coefficients	Standard Error	t Stat	P-value
Intercept	-219.939	8.985449	-24.477	3.31E-30
Year	0.116861	0.004486	26.05	1.65E-31
d ₂	-33.0998	12.70734	-2.6048	0.011959
d ₃	-70.9255	12.70734	-5.5815	8.75E-07
d ₄	-393.118	12.70734	-30.936	3.69E-35
d _{2t}	0.016798	0.006344	2.6479	0.010698
d _{3t}	0.034517	0.006344	5.4408	1.45E-06
d _{4t}	0.19552	0.006344	30.819	4.45E-35

Panel regression results for absolute spread as per Table 3 have been discussed as under:

- a. SBI Group: In Table 3, intercept and year have been stated as (-)219.939 and 0.1169 having P-values 3.31e⁻³⁰ and 1.65e⁻³¹ respectively. These results are highly significant reflecting growth of spread at the rate of 11.69% per annum in spite of having low initial value for SBI group.
- b. Nationalised Banks: The coefficients of d₂ and d_{2t} in relation to spread are mentioned as (-)33.0998 and 0.0168. Their respective P-values are 0.0119 and 0.0107 which are smaller than significance level 0.05. Thus,

¹² Already explained in earlier Chapter.

noticeable difference is found in the initial values and growth rates of two banking segments: SBI group and nationalised banks. Summing coefficients of d_2 and d_2t to the coefficients of intercept and year respectively, we get (-)253.039 and 0.1337. Thus, spread of nationalised banks is mounting at the rate of 13.37% per year.

- c. Old Private Banks: As per Table 3, the coefficients of d_3 and d_3t are (-)70.9255 and 0.0345 and their corresponding P-values are $8.75e^{-07}$ and $1.45e^{-06}$. These important results suggest there is substantial difference between initial values and growth rates of old private banks and SBI group. Thus, summing these coefficients to intercept and year respectively, we obtain (-)290.865 and 0.1514. Thus, absolute spread is growing at the rate of 15.14% per annum for old private banks having extremely low initial value.
- d. New Private Banks: The coefficients of d_4 and d_4t have been given as (-)393.118 and 0.1955 Their P-values are $3.69e^{-35}$ and $4.45e^{-35}$ that are highly significant. We obtain(-) 613.057 and 0.3124 respectively after adding d_4 and d_4t coefficients to the coefficients of intercept and year representing SBI group (base for comparison). Finally, it is proved that absolute spread is growing at the fastest pace of 31.24% per annum for new private banks.

To conclude, absolute spread is growing at the fastest pace of (31.24%) for new private banks. They are adopting a strategy of generating huge spread (absolute) by earning highest interest income and paying interest at the highest rate as well. Moreover, other banking segments are also using different strategies to generate more and more absolute spread.

- ii. *Ratio of Wage Bill to Operating Expenses: Table 4* manifest the trend and panel regression results for the ratio of wage bill to operating expenses and semi-log equation used to arrive at the conclusion is as given below:

$$LN \frac{WB}{OE} = a + d_2 + d_3 + d_4 + b_1t + b_2d_2t + b_3d_3t + b_4d_4t + \mu_t$$

where,
WB/OE = Ratio of Wage Bill to Operating Expenses 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

μ_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 4: Ratio of Wage Bill to Operating Expenses: Panel Regression Results

Regression Results	Coefficients	Standard Error	t Stat	P-value
Intercept	28.85062	11.03585	2.614263	0.01167
Year	-0.01459	0.00551	-2.64823	0.010688
d_2	-2.8167	15.60705	-0.18048	0.857481
d_3	-7.30557	15.60705	-0.46809	0.641673
d_4	-23.9468	15.60705	-1.53436	0.131003
d_2t	0.001405	0.007792	0.180308	0.857612
d_3t	0.003581	0.007792	0.459589	0.647727
d_4t	0.011512	0.007792	1.477394	0.145601

Analysis of panel regression results as per Table 4 for ratio of wage bill to operating expenses has been given as below:

- a. SBI Group: The coefficients of intercept and year in Table 4 have been given as 28.8506 and (-)0.0145 and their P-values are 0.0117 and 0.0106 respectively. Hence, both initial value and negative growth rate pertaining to ratio of wage bill to operating expenses are significant in case of SBI group at 0.05 significance level. This result indicates that proportion of wage bill in operating expenses of SBI group is declining at the rate of around 1.45% per year.
- b. Nationalised Banks: The coefficients of d_2 and d_2t have been mentioned in the Table 4 as (-)2.8167 and 0.0014 along with their P-values 0.8575 and 0.8576 and both are insignificant being greater than 0.05 significance level. It specifies that there is no significant difference between the initial values and growth rates in relation to ratio of wage bill to operating expenses of nationalised banks and SBI group. Thus, it can be stated that ratio of wage bill to operating expenses is declining at the rate of 1.45% per annum for nationalised banks as well.
- c. Old Private Banks: The coefficients of d_3 and d_3t have been indicated by Table 4 as (-)7.3056 and 0.0036. Their

respective P-values are 0.6417 and 0.6477 and both are insignificant. This outcome states that there is no significant difference between the initial values and growth rates with respect to ratio of wage bill to operating expenses of old private banks and SBI group. Thus, ratio of wage bill to operating expenses is deflating for incumbents at a rate of 1.45% per annum.

- d. New Private Banks: Table 4 presents the coefficients of d_4 and d_{4t} as (-)23.9468 and 0.0115 and their corresponding P-values are 0.131 and 0.1456. Both of these P-values are insignificant being much higher than 0.05. Thus, no significant difference between the initial values and growth rates pertaining to ratio of wage bill to operating expenses of new private banks and SBI group has been established in this analysis. Thus, wage bill is declining for all the banking segments at the same rate of 1.45% per annum.

Thereby, it can be said that ratio of wage bill to operating expenses is declining significantly (at the rate of 1.45%) in case of all the banking segments. It means that the main thrust of Narasimham Committee to enhance operational efficiency has remained successful through opening up, automation, downsizing, computerization etc. Thus, it is one more evidence of convergence taking place in entire banking industry.

- iii. *Operating Efficiency*: Trend and panel regression results have been shown in Table 5. And Semi-log equation is presented in this context as follows:

$$LNOEf = a + d_2 + d_3 + d_4 + b_1t + b_2d_{2t} + b_3d_{3t} + b_4d_{4t} + \mu_t$$

where,

OEF = Operating Efficiency to Total Expenses 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

μ_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 5: Operating Efficiency: Panel Regression Results

Regression Results	Coefficients	Standard Error	t Stat	P-value
Intercept	-35.5886	10.81095	-3.2919	0.001793
Year	0.018083	0.005397	3.350324	0.001509
d_2	-38.1134	15.28899	-2.49287	0.015894
d_3	12.49617	15.28899	0.817331	0.417468
d_4	43.34779	15.28899	2.83523	0.006508
d_{2t}	0.019005	0.007633	2.489885	0.016013
d_{3t}	-0.00621	0.007633	-0.81321	0.419805
d_{4t}	-0.02159	0.007633	-2.82906	0.006617

Interpretation of panel regression results with respect to operating efficiency as per Table 5 is given as follows:

- a. SBI Group: The coefficients of intercept and year for operating efficiency in case of SBI group have been given as (-)35.5886 and 0.0181 in Table 5. Both of these coefficients are significant as depicted by their small P-values 0.0017 and 0.0015. These results show that SBI group was having negative operating efficiency in the beginning; but SBI group is improving at the rate of 1.18% per annum as regards to operating efficiency.
- b. Nationalised Banks: The coefficients of d_2 and d_{2t} are (-) 38.1134 and 0.019 as per Table 5 and their P-values are 0.0158 and 0.016 respectively. The small P-values suggest that there is significant difference between initial values and growth rates with respect to operating efficiency for SBI group and nationalised banks. Thus, adding coefficients of d_2 and d_{2t} to coefficients of intercept and year in the Table 5, we get (-)73.702 and 0.0371 implying that operating efficiency of nationalised banks was much lower as comparison to SBI group but it is growing at a significantly higher rate of 3.71% per annum.
- c. Old Private Banks: As per Table 5, coefficients of d_3 and d_{3t} are 12.4961 and (-)0.0062 and their P-values are 0.4174 and 0.4198 approximately. These high P-values are the indication of no significant difference between old private banks and SBI group in terms of operating efficiency. Thus, SBI group along with OPBs is growing in terms of operating efficiency at the same rate of 1.18% per annum.
- d. New Private Banks: The coefficient of d_4 representing difference in initial values of operating efficiency for new private banks and SBI group is given in Table 5 as 43.3477 and its P-value is 0.0065 that is smaller than 0.05 significance level. Hence, there is remarkable difference between the initial values of operating

efficiency of new private banks and SBI group as specified by the result. Adding the coefficient of d_4 and coefficient of intercept, we obtain 7.7591 which is positive as against negative initial operating efficiency of SBI group. Similarly, the coefficient of d_{4t} manifesting difference in the slopes of new private banks and SBI group is (-)0.0215 whose P-value is 0.0066 and hence significant. Summing the coefficients of d_{4t} and year (slope of SBI group), we get (-)0.0035. It states that operating efficiency is declining for new private banks at a rate of 0.035% per annum being very high in the beginning.

Therefore, the aforementioned results state that the operating efficiency of incumbents is rising significantly though it was initially low in their case especially nationalised banks have shown highest improvement in this respect. On the other hand, in case of new private banks, operating efficiency was high and positive in the beginning but found to be deflating at the rate of 0.035% per annum though it remained high for longer stretch of time as compared to incumbents. One, the expectation of Narasimham Committee report that entry of new private banks would infuse operating efficiency and will provide competitive edge to existing banks especially PSBs is proved to be true. Two, convergence is taking place in the behaviour of incumbents and new private banks.

10. CONCLUSION

Conduct refers to behavior or actions of the firms in the market or industry. Therefore, three conduct variables to contrast the behavioural aspect of the four banking segments in terms of spread management, automation (computerization and downsizing) and operating efficiency (ratio of operating income to operating expenses) have been analysed in this paper. As this study acknowledges efficient conduct hypothesis "ECH" which states that efficiency in conduct leads to better performance directly.

To precise the Indian banking industry in relation to conduct after liberalisation, it can be stated that absolute spread of NPBs is growing at more than double pace approximately than that of incumbents. This indicates that all the banking segments are using different strategies in this direction but NPBs have been proved to be the best strategic group of all.

Wage bill is declining in case of all the four banking segments significantly but NPBs were spending least in terms of wages but fall in their wage bill is comparatively lower than that of incumbents. This result depicts rise in operational efficiency of Indian banking industry in general after liberalisation and deregulation due to downsizing, computerization and automation as expected by Narasimham Committee Report I. In a nutshell, it can be said that new banks brought operational efficiency in the Indian banking industry in the beginning but they are losing this benefit to incumbents. This result is further corroborated when operating efficiency of the four banking

segments is observed specifically to distinct them as incumbents are significantly improving in terms of operating efficiency while operating efficiency of new private banks is declining but it is also the fact that operating efficiency of NPBs remained high for a longer stretch of time even in the last year of study period (Gupta Renu, 2014). Thus, convergence is seen in the behaviour of incumbents and new banks.

No doubt, liberalisation 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 absolute spread. But on the other hand, incumbents including PSBs and OPBs are improving in terms of operating efficiency. While, new private banks are found to be losing in relation to operating efficiency

Moreover, most of the competition is taking place in form of incumbents vs. new banks rather than public banks vs. private banks. However, convergence is also taking place especially between incumbents and new banks with respect to wage bill and operating efficiency. As a result of liberalisation, incumbents have become competitive and their operating efficiency is also improved as expected by Narasimham Committee though this result was expected by Narasimham committee in absence of any sound theoretical framework. Better spread management and operating efficiency highlights improved conduct and better conduct facilitate better performance as stated by ECH (efficient conduct hypothesis is also proved.

REFERENCES

- [1] Amel, D. F. and Rhoades, S.A. (1988). "Strategic Groups in Banking", *Review of Economics and Statistics*, 70(1), 685-689.
- [2] Deb, A.T. (2005). *The Impact of Deregulation on Private Banking Industry*. Unpublished Ph.D. thesis submitted to University of Delhi.
- [3] Ferguson, P. and G. Ferguson (1994). *Industrial Economics*. Macmillan Press Ltd, London.
- [4] Gupta, Renu. (2014). *Banking Reforms and Competition: A Comparative Study of Public and Private Banking Industry in India*. Unpublished Ph.D. thesis submitted to University of Delhi.
- [5] Hay, D. and D. Morris (1979). *Industrial Economics and Organisation: Theory and evidence*. Oxford University Press, London.
- [6] Hayes, S., A.M. Spence and D.V.P. Marks (1983). *Competition in the Investment Banking Industry*. Harvard University Press, Cambridge.
- [7] Kumar, S. and R. Gulati (2010). "Dynamics of Cost Efficiency in Indian Public Sector Banks: A Post-Deregulation Experience": http://www.igidr.ac.in/~money/Dynamics%20of%20cost%20efficiency_sunil%20kumar.pdf.s

-
- [8] Mason, E.S.(1939). "Price and Production Policies of Large Scale Enterprises", *American Economic Review Supplement*, 29, 61-74.
- [9] Murthy K.V. B. and Ashis Taru Deb (2008). "Operationalising and Measuring Competition: Determinants of Competition in Private Banking Industry in India": http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1073682.
- [10] Murthy K.V. B, Renu Gupta and Ashis Taru Deb (2015). "Comparative Analysis of Market Structure of Banking Segments in Indian Banking Industry" paper presented at National Conference titled *Banking Sector Reforms in India: Experience, Opportunities and Challenges* organized by SRCC, University of Delhi on 6-7 April, 2015.
- [11] Narasimham, M., (1991). *Report of the committee on financial system*. Reserve Bank of India, Mumbai.
- [12] Newman, H.H. (1978). "Strategic Groups and the Structure-Performance Relationship", *Review of Economics and Statistics*, 60(1), 417-427.
- [13] Passmore, S. W. (1985). "Strategic Groups and the Profitability of Banking", *Research Paper no 8507*, Federal Reserve Bank of New York.
- [14] Reserve Bank of India, *Report and Trends of Banking in India*, various issues, RBI, Mumbai.
- [15] Reserve Bank of India, *Statistical Tables Related to Banks*, various issues, RBI, Mumbai.
- [16] Shanmugam K.R. and A.Das (2004). "Efficiency of Indian commercial banks during the reform period", *Applied Financial Economics*, 14, 681-686.