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Impact of Competition on the Operational Efficiency of Indian Banks

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Abstract

During the last three decades, the issues & challenges faced by most banking industries worldwide have been widely debated both in academic and policy level circles. Some of the topics more profoundly examined in the banking literature relate to the study of the effect of market power on managerial efficiency. Although there is no dearth of literature, majority of them have been confined to developed economies and the results also are inconclusive. Accordingly, this study tries to address this gap in the literature. In this study, inverse of concentration measure (HHI) is taken as a proxy for competition. For operational efficiency, cost to income ratio for banks is used. Results report that despite addition of more players, operational efficiency of Indian scheduled commercial banks has come down. One solution to enhance their operational efficiency is to shift their focus from traditional banking services to modern banking services. Further, private sector banks seem to be more operationally efficient that government owned banks. On analysing the flow of direction, there exists a causality running from competition to efficiency, thus rejecting the existence of quiet life hypothesis in Indian banking industry.

Keywords: Quiet Life Hypothesis, Competition, Operational Efficiency, Granger Causality Test

1. Introduction

Over the last four decades, worldwide, banking industry has witnessed many changes. Issues and challenges faced by banks worldwide have invited a remarkable interest both in academic and policy circles. Some of the topics more profoundly examined in the banking literature relate to the structure-conduct-performance (SCP) paradigm (Bain, 1956), and the ensuing efficient-structure (ES) hypothesis (Demsetz, 1973). Another branch of studies tried to examine the effect of market power on managerial efficiency, particularly, testing the evidence of quiet life hypothesis. The term "quiet life" has been introduced by Hicks to the field of economics.

> "It seems not at all unlikely that people in monopolistic positions will very often be people with sharply rising subjective costs; if this is so they are likely to exploit their advantage much more by not bothering to get very near the position of maximum profit, than by staining themselves to get very close to it. The best of all monopoly profit is a quiet life" (1935, p 8).

Going by the definition, quiet life hypothesis (QLH) states that banks (firms) enjoy the advantage of market power in terms of foregone revenue or cost savings (Hicks, 1935). This motivates them to enjoy lazy banking, thus remaining to be inefficient in their operations. In other words, there exists a negative correlation between concentration (market power) and efficiency. On reviewing existing studies, it is found that though the relationship between profitability, market concentration and efficiency of the banking industry has been tested in many studies, the available empirical evidence on the quiet life hypothesis is scarcer. Moreover, it is found that majority of studies seem to have been

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conducted in developed economies. To the best of our knowledge, no studies till date have been conducted in the Indian context.

As far as India is concerned, policy makers during the last two decades have been focusing on issuing new banking licenses to private entities. During 1994, ten private entities were issued new banking licenses to operate in India. Further, during 2004, two new private players were granted banking licenses. Finally during 2014, two more players were issued banking licenses to operate in India. All these reforms were initiated with the main objective of enhancing the competitiveness and profitability of scheduled commercial banks in India. In this backdrop, before issuance of another round of new banking license, it is important to examine as to whether addition of new players are resulting in enhancing the efficiency of Indian banks. In particular, this study tries to address the following questions. (i) Has the operational efficiency of Indian banks improved after two rounds of bank licensing? (ii) Are public sector banks operationally more efficient than private sector banks? (iii) Will competition assist in improving the operational efficiency of banks in India?

Findings from the study suggest that despite two rounds of licensing, operational efficiency of Indian SCBs has not improved. In a competitive environment, banks should focus more on generating income from fee-based services. This can certainly assist in spreading their fixed cost over multiple products and services, thus resulting higher level of operational efficiency. As regards to the direction of relationship, there exists a causality running from competition to efficiency. In other words, it can be stated that addition of new players can assist in enhancing the operational efficiency of scheduled commercial banks in India. However, it is to be noted that in absence of wider choice of products and services for investors and borrowers, the impact of competition on enhancing the operational efficiency might be minimal.

Accordingly, we strongly believe that policy makers should come up with granting of licenses to players who are offering differentiated services. This will assist in increasing the choice for both investors and borrowers. Thus, the latest initiative of granting licenses to payment banks, small finance banks etc. can play a major role in increasing the choice for retail as well as institutional investors and/or borrowers. Similarly, we also propose that regulators can think of linking the proportion of capital adequacy ratio in accordance with the efficiency levels of banks. This will incentivise efficient players to utilise the excess funds to be allocated to projects with positive NPV, thus enhancing the efficiency as well as profitability of the banking industry. The rest of the article will be divided into five sections. An attempt is made to review some of existing banking efficiency studies and is presented in the second section. Third section details the variables and the methodology used in the study. Fourth section reports the results of the study. Finally, implication from the study and the limitation is described in the last section.

2. Literature Review

Over the last two decades, studies on examining the relationship between market power/concentration competition and efficiency of banks have been widely discussed/debated both among academic and policy level circles.

Fare, Grosskopf, and Johnson (2012) examined variation in the relationship according to the level of market power in Spanish banking industry. The study measured the efficiency (cost, technical or allocative) and its impact on the type of banking firm (commercial or savings bank). Results suggest that quiet life may exists for some firms in the banking industry.

Coccorese and Pellecchia (2010) tried to analyse as to evidence of quiet life hypothesis in Italian banking industry using translog cost function. For this study, a sample of 703 banks was chosen. Results report a negative and highly significant relationship between cost efficiency and market power, thus favouring the quiet life hypothesis.

Koetter and Vins (2008) tried to study the impact of market power on cost and profit efficiency of German banks. The sample consisted of 457 German banks. The result suggests that both market power and average revenues declined among these banks between 1996 and 2006.

Another most common technique to examine the impact of market concentration on efficiency is linear regression model. Berger and Hannan (1998) conducted a study in US and the sample

consisted of 500 banks. The results support the existence of quiet life hypothesis. Further, the results also indicated that the welfare losses due to cost inefficiencies are substantially larger compared to that resulting from monopoly pricing.

Homma, Tsutsui, and Uchida (2014) had conducted a study on Japanese banking industry. They used a sample size of 26 banks. Market efficiency and market concentration are the variables used in the study. Linear regression is the technique that used in analysis. They find that more efficient banks become larger, which is consistent with efficient structure hypothesis. They also find that market concentration erodes bank's cost efficiency, which favours Quiet life hypothesis.

Rhoades and Rutz (1982) tried to investigate the relation between market concentration and risk taking ability of banks in U.S. For this, regression analysis is adopted in this study. Results report that banks tend to use their market power to reduce portfolio risk rather than to increase profits. In other words, banks tend to prefer enjoying a quiet life rather than trying to be more efficient.

Using the data of 72 banks, Huljak (2015) tested the evidence of quiet life hypothesis in Croatian banking industry. Cost efficiency and market power were the two variables taken for this study. Results report that on an average, banks are leveraging on their market power, and enjoying a quiet life, rather than being cost efficient.

Almounsor & Mensi (2016) studied the impact of market power on inefficiency of banks in Saud Arabia by employing Herberger's Triangle methodology. Results report that market power seem to be a significant factor that influence the banking inefficiency. In other words, the findings seem to support the evidence of quiet life hypothesis in Saudi banking industry.

On the other hand, Kouki and Al-Nasser (2014) analysed the impact of market power on efficiency and profitability of African banks. As a proxy for competition, Lerner index has been used in this study. Results report that high degree of market power is associated with high level of efficiency and profitability. In other words, the results do not support the evidence of quiet life hypothesis in African banking industry.

Hunter & Timme (1986) used single output translog function to test the evidence of quiet life hypothesis in U.S. banking industry. They found that on average, cost reduced by 15% during the sample period because of technical progress. Further, efficient banks (with more branches and/or higher level of output) were able to minimise their cost better as compared to their counterparts. Accordingly, the study rejects the evidence of quiet life hypothesis in U.S. banking industry.

In similar lines, Al-Muharrami and Matthews (2009) analysed the evidence of quiet life hypothesis in Arab Gulf Cooperation Council (GCC) banking industry. Results report that there is little evidence that market concentration lowers technical efficiency of banks in GCC markets. In other words, the study rejects the evidence of quiet life hypothesis in GCC banking industry.

Titko and Dauylbaev (2014) studied the impact of size on efficiency of banks as well the impact of market concentration on bank efficiency. The sample consisted of 33 banks operating in Baltic States. The efficiency scores were estimated using data envelopment analysis (DEA). For examining the impact of size and market concentration on bank efficiency, multiple regression analysis were employed. Results report that neither size nor market concentration had a negatively influence on the efficiency of banks. In other words, the study rejected the evidence of quiet life hypothesis among banks operating in Baltic States.

Gharsellaoui (2015) tested the evidence of quiet life hypothesis in Tunisian banking system. In this study, a non-structural approach is employed and the sample consisted of ten commercial banks in Tunisia. As a proxy for market concentration, Herfindahl Hercshman Index is used in this study. Results report that Tunisian banking industry is fairly competitive. Further, the results report that banks which are efficient are able to enhance their market share as compared to their inefficient counterparts. Thus, it can be stated that the findings tend to reject the evidence of quiet life hypothesis in Tunisian banking industry.

Casu and Girardove (2009) examined the evidence of quiet life hypothesis in European banking markets. The sample consisted of 2701 banks. Findings do not support the evidence of quiet life hypothesis, as increase in market power does not have resulted in decreasing the cost efficiency of banks. On the other hand, results of the reverse

causality tests provide no evidence that increases in efficiency precede increases in market power.

Maudos and de Guevara (2007) using logit regression model, analysed the relationship between market power and cost efficiency of banks in Europe. Results report a negative relationship between competition and efficiency, In other words, findings tend to reject the evidence of quiet life hypothesis in European banking industry.

Camillion and Jonathan (2016) examined the relationship between market concentration and efficiency in Maltese banking industry. The sample consisted of 'core' local banks. As a proxy for market concentration, Herfindahl-Hirschman index (HHI) was taken. Findings from the study suggest that there exists a negative relationship between market concentration and bank level efficiency. In other words, the findings from the study tend to reject the existence of quiet life hypothesis in Maltese banking industry.

2.1. Summary

Majority of the studies found that banks in more concentrated local markets charged higher rates on loans and paid lower rates on retail deposits (Berger & Hannan, 1998; Hannan & Berger, 1991). Studies that support quiet life hypothesis suggest that welfare losses due to cost inefficiencies are substantially higher than compared to that of resulting from monopoly pricing (Berger & Hannan 1998; Maudos & Guevara, 2007). On review, the following gaps were identified:

(i) Even though there is no dearth of literature, the results does not seem to be conclusive in nature.

(ii) Most of the studies have been conducted on developed economies and no studies have been conducted on emerging economies like India.

As stated earlier, policy makers are granting new licenses to private players (competition) with the objective of enhancing the operational efficiency of the Indian banking sector. However, no studies have tried to examine the role of competition in enhancing the operational efficiency of Indian banks. Accordingly, this study tries to address the gap in the literature, and the main objective is to examine the impact of competition on operational efficiency of Indian banks.

3. Research Methodology

As mentioned earlier, this study tries to describe the nature of relationship between the variables, viz. competition and operational efficiency of scheduled commercial banks in India. Data has been taken from reliable secondary sources, *viz.,* RBI website and World Bank website. As per RBI reports, presently there are 148 scheduled commercial banks in India (Basic Statistical Returns of Scheduled Commercial Banks in India, 2015, p. 10). Going by ownership, it has been segmented into (i) public sector banks (PBs) (consisting of both nationalised as well State Bank of India associates), (ii) private sector banks (PVBs) (consisting of both old as well as new private sector banks), (iii) foreign Banks, and (iv) regional rural banks. In this study, both foreign banks and regional rural banks have been excluded as their scope and operations seem to differ from other SCBs. A balanced panel data of 31 SCBs has been taken as the sample of the study. This consists of 18 PSBs, 13 PVBS been taken from reliable secondary sources, *viz.,* RBI website and World Bank. Two variables, *viz.,* (i) competition and (ii) operational efficiency have been used in this study.

Going by the prior studies, Herfindahl-Hirschman index (HHI) is used as a proxy for market concentration. It is computed by taking the market share of each firm (bank's total assets in this study), squaring them and taking the sum total for each year. In this study, (1- HHI score) is computed and is taken as a proxy for competition.

$$HHI = \sum_{i=1}^{n} MS_i^2 \quad \text{(i)}$$

$$\text{Competition} = (1 - \text{HHI}) \quad \text{(ii)}$$

where HHI is Herfindahl-Hirschman index

Secondly, as a proxy for operational efficiency, cost to income ratio is taken. Cost to income (CI) ratio is defined as a ratio of operating expense to total income. Here total income includes both interest income and non-interest income. A low CI reflects a high level of operational efficiency and vice versa.

In order to examine the impact of ownership on operational efficiency of scheduled commercial banks in India, Kruskal-Wallis test is used in this study.

3.1. Econometric Approach

In this study, Granger causality test has been used, in order to examine causal relationship between the two variables. Before testing the direction of relationship, the data need to stationary. Accordingly, in this study, Augmented Dickey-Fuller test (ADF) test is used. The null hypothesis states that the variable is not stationary or has unit root, whereas the alternative hypotheses states variable is stationary. Here, Augmented Dickey Fuller (ADF) test with constant and trend is examined (refer equation iii).

H_0: Variable is not stationary.

H_1: Variable is stationary.

$$(1 - L)y = b0 + b1*t + (a - 1)*y(-1) + e \qquad \text{(iii)}$$

While testing for stationarity, choice of appropriate lags is very important. In this study, for ascertaining the optimum lag order, Hannan-Quinn Criterion (HQC) is used. Once the variables are tested for stationarity, the impact of lagged independent variable (competition) on operational efficiency is being examined. For this vector auto regression (VAR) model is used in this study (refer equation iv).

$$\text{Operational efficiency}_{t} = C_1 * \text{Competition}_{t-i} + C_2 * \text{Operational efficiency}_{t-j} + u_{1t} \qquad \text{(iv)}$$

Analysing the results from VAR model, it is important to examine the direction of causality between two variables. In other words, it is important to examine as to whether there exists a relationship running from competition to operational efficiency or vice versa. Accordingly, granger causality test is used in this study. The hypothesis to be tested is

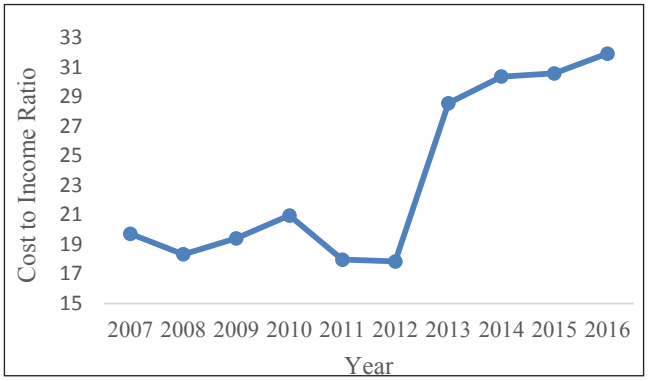
H_0: Competition does not granger cause operational efficiency.

H_1: Competition does granger cause operational efficiency.

All data are analysed using Stata software. The period of the study has been taken from 2007 to 2016. During 2004 second round of banking licensing were issued to two private banks, *viz.,* Kotak Mahindra Bank and Yes Bank. Further, during 2014, another two more private entities were given new banking licenses. In this backdrop, it is imperative to examine whether addition of new players will enhance the efficiency of Indian SCBs. In other words, does competition results in improving the efficiencies of SCBs in India.

4. Results

As mentioned earlier, cost to income ratio is taken as a proxy for operational efficiency. A higher ratio indicates lower efficiency and vice versa. Ideally, with more number of players, banks would be trying to maximise their efficiency, by allocating their resources in the most productive manner. However, going by the trend, the operational efficiency of Indian SCBs seem to have decreased over time and is against the spirit of competition (Fig. 1).



Source: Collected from RBI Reports

Fig. 1: Operational Efficiency of Indian SCBs

One of the argument could be majority of the banks are still heavily dependent on fund based income when compared to fee based income. In a competitive environment, it is a known fact that banks will not be able to extract monopoly rent from the customers by charging exorbitant rates. In order to retain their position in the market, the banks will be trying to pass on the benefit to the customers in the form of reduced lending rates, in turn hitting badly on their spreads. Therefore, so as to improve their operational efficiency, banks should focus on extracting more information about the client requirement by providing them an array of products and services. This portfolio of services will assist the banks to shift their focus primarily from generating revenue fund based services to fee based services.

On examining the trend of operational efficiency, it is evident that addition of more players has not been beneficial in reducing the cost to income ratio of

banks (Fig. 1). However, at this juncture, it is also important to examine whether there operational efficiencies of public sector banks seem to be better off when compared to their private counterparts. Before proceeding with the appropriate test for analysing the impact of ownership on operational efficiency, it is important to examine the data structure. On analysis, it is found that the data does not seem to follow normal distribution, as the p-value reported from both tests are below 0.05 (Table 1).

Table 1: Tests of Normality

	Kolmogorov-Smirnov[a]			*Shapiro-Wilk*		
	Statistic	*df*	*Sig.*	*Statistic*	*df*	*Sig.*
CI	.406	31	.000	.264	31	.000

a. Lilliefors Significance Correction

Source: Authors Calculation

Accordingly, non-parametric Levene's test is conducted to test for equality of variance. Results report that the null hypothesis is accepted (p-value .889) and assume that there is homogeneity of variance (Table 2).

Table 2: Test of Homogeneity of Variance

CI_Diff			
Levene Statistic	*df1*	*df2*	*Sig.*
.020	1	30	.889

Source: Authors Calculation

Results from one-way Anova report that the difference in variances between the two groups is not statistically significant (p-value .467). Accordingly, it can be stated that there is equality of variance between the two groups (Table 3).

Table 3: ANOVA

CI_Diff					
	Sum of Squares	*Df*	*Mean Square*	*F*	*Sig.*
Between Groups	11.024	1	11.024	.542	.467
Within Groups	609.981	30	20.333		
Total	621.005	31			

Source: Authors Calculation

Going by the mean ranks, Private sector banks seem to be better off as against Public sector banks. However, the difference needs to be statistically validated. As mentioned earlier, since the data does not seem to be normally distributed, Kruskal-Wallis test is used in this study. Results report that there is a difference between the mean ranks (p-value <.05) for operational efficiency across public and private sector banks (Table 4). In other words, private sector banks seem to be operationally more efficient when compared to public sector banks.

Table 4: Kruskal-Wallis Test Result

	Ownership	*N*	*Mean Rank*	*Chi- Square*
CI	Public	18	13.94	3.053**
	Private	13	19.79	
	Total	31		

Note:,*,*** indicates significance at 10%, 5% and 1% levels*

Source: Authors Calculation

Hon. Finance Minister of India Shri Arun Jaitley also have emphasised the importance of consolidation in the Indian banking industry.

> "What we need are strong banks. There shouldn't be any weakling in the link…What we need are strong banks than numerically a large number,"….. This merger (SBI and its five associates) will lead to far greater operational efficiency,". There will be synergy in operations within these banks, which will also cut down the cost of operations and thus cost of funds."

Similar views has been expressed by a credit rating agency.

> "We believe that consolidation coupled with higher capital requirements and governance reforms would position the banking system better in support of a more open and higher-growth economy," …..These large banks (public sector banks) in a consolidated banking system enjoy scale benefits leading to better diversification of risks and stronger overall profitability contributing to higher credit ratings," – Fitch said.

Thus, in summary, it is believed that consolidation in the banking industry should be able to enhance the operational

efficiency of scheduled commercial banks in India.

Finally, the last objective of the study is to examine the flow of direction between the two variables. For this, granger causality test is used in this study. In order to perform this test, the variables should be stationary. Augmented Dickey Fuller (ADF) test is used to test whether variables are stationary. However, while performing ADF test, selection of appropriate lags is very important. For this, HQC criterion has been followed in this study (Table 5).

Table 5: Lag Selection Criteria

lags	*loglik*	*AIC*	*SBIC*	*HQC*
0	-76.4259	19.6065	19.4725	19.6263
1	-61.6832	16.9208	16.5189	16.9804
2	-57.3927	16.8482*	16.9475*	16.1784*

Source: Authors Calculations

Accordingly, it is reported that the optimum lag order is 2. The other two indicators, *viz.,* AIC and SBIC also report that the optimum lag order size is 2. The results from ADF test also report that both variables seem to be insignificant at levels. However, at first difference, the variables seem to be statistically significant (Table 6).

Table 6: Augmented-Dickey Fuller Test Result

Variable Name	*At levels*	*At first difference*
Operational Efficiency (CI)	-2.00163	-3.15631*
Competition	-3.26858	-3.93893*

*Note: *,**,*** indicates significance at 10%, 5% and 1% levels*

Source: Authors calculation

Thus, after ensuring that the variables are stationary, it is important to examine whether Indian SCBs follow a quiet life hypothesis. In other words, does addition of more players (competition) assist in enhancing the operational efficiency of banks? Or are Indian banks by leveraging on market power enjoying "lazy banking", thus enjoying a quiet life hypothesis. Results from VAR model suggest that lagged values of competition variable only seem to have a significant negative relationship with CI (Table 7). In other words, more competition will reduce the CI of the banks, thus resulting in higher level of operational efficiency.

Table 7: Vector Auto Regression (VAR) Results

CI		*Coefficients*
	CI	
	L1.	.5760132
	L2.	.5781387
	L1.	-.0275561***
	L2.	-.01633
	_cons	4.671847**
Comp		
	CI	
	L1.	60.5697
	L2.	-65.94855
	HHI	
	L1	-.1264757
	L2	1.20684
	_cons	- 27.39894

*Note: *,**,*** indicates significance at 10, 5, and 1 percent levels*

Source: Authors calculations

Results from Table 8 report that Competition does granger cause operational efficiency and is significant at 5 percent levels (p-value .0157). Further, it can be stated that both lag one and lag two of competition variable can jointly influence the operational efficiency of scheduled commercial banks in India.

Table 8: Granger Causality Wald Test

Equation	*Excluded*	*F-value*
CI	Comp	22.808**
CI	ALL	22.808**
Comp	CI	0.68857
Comp	ALL	0.68857

*Note: *,**,*** indicates significance at 10, 5, and 1 percent levels*

Source: Authors calculations

In other words, there exists a causality running from competition to efficiency. Thus, results from the study are also in line with recommendations taken at the policy circles. With more number of players in the field, competition is expected to improve. This increase in competition will have a positive influence on the efficiency of scheduled commercial banks in India. The reason being, efficient banks with their superior knowledge on technology, will be more efficient in operations, thus grabbing a higher market share.

Thus, addition of more players is certainly expected to enhance the operational efficiency of scheduled commercial banks in India. In summary, it can be stated, that results from the study reject the existence of "quiet life hypothesis" in Indian banking industry and does support "efficient structure hypothesis".

5. Conclusion and Suggestion

The impact of competition on efficiency has been widely studied in the banking literature. However, despite a wide range of studies, results do not seem to be conclusive. Going by the literature, two major hypotheses have been studied. They are (i) efficient structure hypothesis (ESH) and (ii) quiet life hypothesis (QLH). Former is of the view that competition will force banks to be efficient. Such banks because of being efficient are able to enjoy a higher market power. On the other hand, QLH is of the view that lack of competition (concentration) will help banks and managers not to take an extra effort to become more efficient in their operations and will try to enjoy a quiet life. In India, policy makers have been focusing on adding more players with the main objective of enhancing the operational efficiency and profitability of Indian banking industry. In this, backdrop, it is very important to examine whether competition can result in improving the operational efficiency of Indian SCBs.

Going by the banking literature, to the best of our knowledge, no studies till date have tested the existence of quiet life hypothesis in Indian banking industry. Accordingly, this study tries to examine the evidence of quiet life hypothesis among Indian SCBs. For this, a balanced panel dataset of public and private banks have been taken. Foreign banks as well as regional rural banks have been kept out of the scope of this study as their operational and policy requirements seem to be different from other banks. Two variables, *viz.,* (i) cost to income ratio (CI) and (ii) Herfindahl-Hirschman index (HHI) have been used as a proxy for operational efficiency and market concentration. As a measure of competition, inverse of concentration ratio has been used in this study. The time period of the study has been confined to last one decade from 2007 to 2016. For examining the direction of relationship, granger causality test is being used in this study. Results report that after two rounds of licensing, operational efficiency of banks does not seem to have improved. This is against the spirit of competition. However, ownership seems to have had a significant influence on the operational efficiencies of scheduled commercial banks in India. Finally with reference to the direction of causality, there seem to be relationship running from competition to operational efficiency. In other words, it can be stated that SCBs in India do not seem to support the "quiet life hypothesis".

Accordingly, it is to be understood that more and more efficiency gains can be achieved through competition. However, it is to be noted that mere addition of new players in the banking industry will not assist in enhancing the competition-induced efficiency. Instead, policy makers should focus on issuing licenses to banks on the basis of differentiated services. This will provide customers (both retail and corporates), to have a wider variety of choice for both investment and raising of low cost capital. Furthermore, this differentiated licensing will pressurise existing SCBs to find out new strategies to attract as well as retain customers. Such initiatives will force the banks and managers to come out of their quiet life and become more efficient. The latest initiatives by the policy makers as well as the government in form of issuing licenses to small finance banks, payment banks etc. all are focusing on the same theme of increasing the choice to both corporate as well as household investors.

Another suggestion to enhance the operational efficiency of banks, is by linking the capital adequacy ratio (CAR) to the efficiency levels. In other words, efficient banks shall be given the flexibility to lower the CAR, thus enabling them to provide more funds for projects with positive NPV. However, inefficient banks should be penalised with higher level of CAR.

As is known, no study without limitations, here we have taken cost to income (CI) ratio as a proxy for operational efficiency and HHI as a proxy for concentration ratio. Instead of operational efficiency, cost efficiency should have been taken which we strongly believe could have been a better indicator. Similarly, instead of HHI, other measures of competition such as Lerner index or Boone indicator would be more ideal so as to measure the extent of competition in the banking industry. Thus, future studies can incorporate better measures of efficiency and competition measures and conduct cross-country studies for testing the evidence of quiet life hypothesis.

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