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Competition in Banking: The Indian Experience

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Abstract—**Competition in banking is important, primarily for productivity, efficiency, consumers' welfare and overall economic growth of a country. Since 1991, Indian government and the financial system regulator have initiated many policy measures so as to enhance the efficiency and stability of the Indian Banking Sector. The policy measures have reduced the assets concentration of public sector banks, improved customer services and customer profitability. The article has used PRH statistic and assessed the degree of competition of the Indian Banking Sector after the penetration of private and foreign banks in India. It has used a dynamic panel data involving 75 domestic and foreign banks and found that the Indian Banking Sector is monopolistically competitive having a few bigger size banks, both in Public Sector and Private Sector, influencing the market conditions and pricing system.**

Keywords-Competition; Indian Banking System; Panel Data Regression; Panzar-Rosse Statistic

I. INTRODUCTION

Prior to reforms, Indian Banking Sector was functioning in a highly regulated environment. Controlled interest rate, pre-emption of credit, high Statutory Liquidity Ratio (SLR) and Cash Reserves Ratio (CRR) requirements were putting pressure on efficiency and financial stability of the banking sector. Profitability of Indian Banks was extremely low despite rapid growth in deposits. The survival of Indian Banking System was questioned as a consequence of erosion of capital, which led to the appointment of the new Committee on Financial System (CFS) in 1991. Pursuant to the recommendations of the Committee, gradual reform measures were initiated to improve efficiency, productivity, competition and stability of the banking sector. Basel Committee recommendations on income recognition, asset classification, provisioning, capital adequacy and supervision were introduced in a phased manner. There have been significant changes in the competitive conditions in the Indian Banking System with the diversification of ownership of public Sector Banks and flexible entry norms for private and foreign banks. Competition has energized the Indian Banking industry which led to product innovation, enhanced customers' services and new business practices. The reform measures, over the years, have improved efficiency, competition and financial stability of the banking sector. The prudential regulations have aligned the Indian Banking Sector with the market forces and allowed them to integrate with the world financial system. Indian Banks are now well placed compared to their counterparts in the developed countries.

The article seeks to estimate the degree of competition in the Indian Banking Industry using a panel data structure.

II. INDIAN BANKING SECTOR- A RETROSPECT

Government intervention in the Indian banking sector had its origin in nationalist thinking. Colonial banking was perceived to be biased in favour of the working capital loans to trade and large capitalist enterprises, and against rural areas and the common man. This legacy combined with socialist ideology culminated in the nationalization of all the large banks in 1969. The nationalized banks were explicitly set quantitative targets to expand their network in rural areas and to direct credit to priority sector. Over times, banks also became a major source of lending to the government and thus of financing fiscal deficits. By 1991, the country had created an unprofitable, inefficient and financially unsound banking sector. Indian banking sector was operated under a highly regulatory environment. Under law, Indian banks were obliged to maintain high reserve requirement (CRR and SLR). In 1991 the SLR and CRR, in total, were 52% of their deposits. The banks were also required to direct 40% of their advances to certain priority sector at low interest rates. Virtually all interest rates offered and charged by banks were stipulated by the Government. Thus, a staggering 63.5% of bank deposits were compulsorily captured by the RBI and the Government. Credit planning and rationing of credit were inevitable to achieve the objectives of monetary policy together with social obligations. As the interest rates were administered, the system became unduly complex overtime. The allocative efficiency was grossly undermined due to directed credit as also directed investment. The banking system had serious survival problem due to lack of profit and consequent erosion of capital. Besides these, low internal and organizational efficiency, lack of competition and political interference were other factors, because of which the banking sector in India was in a state of bankruptcy. A Committee on the Financial System under the chairmanship of Narasimham was appointed in August 1991. Major problem faced by the banking system was on account of constraint mainly in terms of massive pre-emption of banks' resources to finance Governments' budgetary needs and administered interest rates. Removal of these constraints meant a planned reduction in statutory pre-emption and a gradual deregulation of interest rate prescriptions. Pursuant to the recommendations of the Committee, prudential regulations such as income recognition, asset classifications, and provisioning and capital adequacy have been implemented for the banks, financial institutions as well as for non-bank financial companies in a phased manner. Both deposit and lending rates are substantially deregulated/rationalised. Directed investment by way of SLR has been reduced. The element of cross-subsidy has been reduced considerably over time. Commercial banks have been given functional autonomy with respect to their loan appraisal. Basel Committee recommendations of prudential system of recognition of income, classification of assets, provisioning of bad debts, capital adequacy norms and internationally accepted accounting practices were introduced in a phased manner. A comprehensive rating system, based on Capital Adequacy, Asset Quality, Earnings, Liquidity and Systems (CAMELS) methodology has been instituted for banks. Commercial banks in India have been allowed to increase their capital adequacy by going for dilution of their equity capital and also by long-term capital borrowing. The Indian government has infused completion in the Indian Banking System by initiating a liberal policy measures towards entry of domestic private banks and foreign banks. Greater public ownership of banks and mandate public disclosures of balance sheets, lead to more market-based assessment of performance of banks.

Reform measures over the years have reduced the market share of public sector banks, in total assets, from 90% in 1991 to 70% in 2008. The entry of new banks in private sector has reduced the asset concentration which indicates strengthening of competition in the Indian Banking System. The primary objective of the Banking Sector liberalization in India has been enhancement of efficiency and productivity through greater competition. The article has adopted a formal approach to examine level of competition in Indian Banking Sector after the liberalization and subsequent penetration of private and foreign banks.

III. Assessment of Competition in Banking- A Methodological Approach

Empirical assessment of degree competition in market are developed by Breshanan [1], Lau[2] and Panzar and Rosse[3]. The Breshanan model is a general market equilibrium model where the profit-maximizing firms would select their prices and quantities at that level where marginal costs equal to their perceived marginal revenue. On the other hand, the Panzar –Rosse H-Statistic (PRH) examines the relationship between change in factor input prices and revenue earned by specific bank. PRH develop a test that examines whether firm-level conduct is in accordance with the textbook models of perfect competition, monopolistic competition, or monopoly. The PRH-statistic is the sum of the elasticities of a firm's total revenue with respect to its factor input prices. H- represents the percentage variation in the equilibrium revenue resulting from a unit percentage increase in the price of all factor inputs. The standard procedure for estimation of the H-statistic involves the application of fixed effects (FE) regression to panel data for individual firms. Under this procedure, the correct identification of the H-statistic relies upon an assumption that markets are in long-run equilibrium at each point in time when the data are observed. The panel data fixed effect revenue function can be written as follows:

$$\text{In}\,(R_{i,t}) = \alpha_i+\beta_1\,\text{In}\,(W_{1,\,i,t})+ \beta_2\,\text{In}\,(W_{2,\,i,t}) + \beta_3\,\text{In}\,(W_{3,i,t}) + x_{i,t}\,Y+ e_{i,t} \text{ ---------(1)}$$

where i indexes banks and t indexes time. $R_{i,t}$ is financial income as a measure of the revenue for bank i in year t; $W_{j,i,t}$ is the price of factor input j (j = 1 for financial expenses, j = 2 for administrative and operating expenses, and j = 3 for personnel expenses), all measured as the ratio of each type of expense to total assets. $x_{i,t}$ is a vector of exogenous control variables at the bank level, which includes the ratio of equity to total assets, the ratio of net loans to total assets, and the ratio of other income to total assets. α_i is an individual bank effect, and $e_{i,t}$ is a random disturbance term. In the equation, the PRH statistic is given by the sum of the elasticities of revenue with respect to input prices, ($\beta_1+ \beta_2+ \beta_3$). Under monopoly, PRH < 0; under perfect competition, PRH = 1; and under monopolistic competition, 0 < PRH < 1. As in Vesala [4] and Bikker and Haaf [5], it can be interpreted that the estimates of the PRH statistic as providing a continuous measure of the level of competition, with larger values indicating stronger competition.

Although the microeconomic theory underlying the Rosse–Panzar test is based on a static equilibrium framework, in practice adjustment towards equilibrium might be less than instantaneous, and markets might be out of equilibrium either occasionally, or frequently, or always. Goddard and Wilson [6] suggest for a dynamic panel data structure to a dynamic model of the revenue function. They advocate for partial adjustment towards the long-run equilibrium with a lagged dependent variable in the revenue equation.

$$\text{In}\,(R_{i,t}) = \alpha_i + \beta_0\,\text{In}\,(R_{i,t-1})+\beta_1\text{In}\,(W_{1,\,i,t})+\beta_2\text{In}\,(W_{2,\,i,t}) + \beta_3\text{In}\,(W_{3,i,t}) + x_{i,t}\,Y+ e_{i,t} \text{ ------------(2)}$$

Total Revenue as a percentage to Total Assets is considered as the dependent variables. Independent Variables are Employee Expenses, Administrative Expenses and Funds Expenses. One period lagged dependent variable has been introduced in the equation so as to capture the market equilibrium.

Revenue growth depends upon the growth in credit, investment and other income, which in turn depend upon the availability of Capital as per Basel-II norms. Hence, the ratio of equity capital to total assets is considered as the control variable in the revenue equation.

The period of study is spread over 1997 to 2008 and there are two panel data sets each 6 years. This would help in indicating the change in competition over time. 75 Commercial Banks, involving Public Sector, Domestic Private Sector and Foreign Banks have been considered in the analysis.

IV. Results and Discussion

Competition in Banking leads to progressive decline in the market shares of public sector banks and subsequent enhancement of market shares of domestic private sector banks and foreign banks. As mentioned above the market share in deposits and advances of public sector banks has declined from 90% in 1991 to 70% in 2008. This indirectly indicates the stiff competition in the Indian Banking Sector.

The article has used unit cost prices for funds, labour, administrative expenses and capital.

- Unit Cost Price for Funds : Ratio of Interest paid on funds to total funds
- Unit Cost Price for Capital : Ratio of interest paid on Tier-II bonds to Total Tier-II Bonds
- Unit Cost Price for Labour : Ratio of employee salaries and provisions to total number of employee
- Unit Cost Price for Administration: Ratio of Administrative expenses to total assets.

The results indicates there has been progressive enhancement of competition in the Indian Banking system as the PRH statistic has improved between periods 1997-2002 to 2003-2008. The PRH statistic, though positive, it is less than one indicating thereby existence of monopolistic free – entry market conditions. The results rejected the monopoly and perfect competition as PRH is neither zero nor one.

The ratio of equity to assets, as the control variable, is significant in both periods and thus influencing the growth in the revenue and thus the competition. Contribution of Unit Price of Funds to PRH Statistic is significantly high in both periods. This also indicates the competition is quite high in getting low cost funds and which primarily influence the revenue.

TABLE I. ESTIMATION RESULTS PANEL REGRESSION

Dependent Variable = Ln (Revenue/Assets)		
	1997 - 2002	2003 - 2008
Constant	-3.569 (0.151)*	-3.428 (0.131)*
Ln (Lagged Dependent)	-1.432 (0.02)*	-1.009 (0.122)*
Ln (Interest paid/Total funds)	0.451 (0.023)*	0.479 (0.029)*
Ln(Wage/Total Employee)	0.065 (0.012)*	-0.011 (0.002)*
Ln (Other Expenses/Assets)	0.021 (0.001)*	0.051 (0.001)*
Ln (Equity capital/Assets)	0.012 (0.007)*	0.038 (0.002)*
PRH- Statistic	0.549	0.551
Adjusted R-Square	0.972	0.986
Total Panel Observations	450	450
Number of Banks	75	75

*Significant at 1% level

V. CONCLUSIONS

The article examined the degree of competition in the Indian Banking Sector after the financial sector reforms. Financial sector liberalization has improved the efficiency, productivity and stability of the Indian Banking Sector. With two sub-periods panel data analysis, the article found that there has been improvement in the degree of competition since 1997. The PRH Statistic, which is positive and less than 1, indicates that the Indian Banking System is monopolistically competitive. It is true and validated the fact that about 70% of the banking system assets in India are owned state-owned banks. It is also found that unit price of funds and administrative expenses have significant contribution in the PRH statistic. It means that revenue growth is highly elastic to the funds cost and administrative expenses.

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