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Is there excess capacity in rural banking markets: Some empirical insights for India

Abhiman DAS and Saibal GHOSH¹

Introduction

In recent times, the profitability and viability of regional rural banks (RRBs) in India has come to occupy the attention of regulators and policymakers alike. Recent evidence in this context (Bhatt and Thorat, 2001) points to the fact that several constraints, both at the institutional level (inappropriate implementation of policy programs, governance structures etc) as well as at the field level (inadequate infrastructure, staff motivation, etc) have acted as severe impediments on the financial performance of RRBs. Such evidence would suggest to the possibility that there is a need to enhance the viability of RRBs. This is an implicit pointer to the existence of excess capacity in rural banking markets.

The present chapter focuses on regional rural banks because, *if* excess capacity exists in banking, it is in this setting where it is likely to be most prominently manifested. If the demand for traditional banking activities declines, larger commercial banks are likely to have greater flexibility to scale back their operations and diversify their activities than RRBs with few offices and limited option to rationalise branches. These banks, owing to their niche markets and lack of sophisticated banking practices, are likely to have limited flexibility in scaling back operations in case of a decline in the demand for loans.

The study develops indicators of potential excess capacity in the RRB segment and illustrates its application to individual banking firms. The rest of the paper is structured as follows. The following section discusses the microeconomic foundations of the indicators and provides an overview of the admittedly limited literature in this area. This is followed by a discussion of the RRBs in the Indian context. The methodology and the data are subsequently followed by a simultaneous equation model to test various hypotheses about excess capacity in RRBs. The policy implications arising out of the analysis are contained in the penultimate Section. The final section concludes.

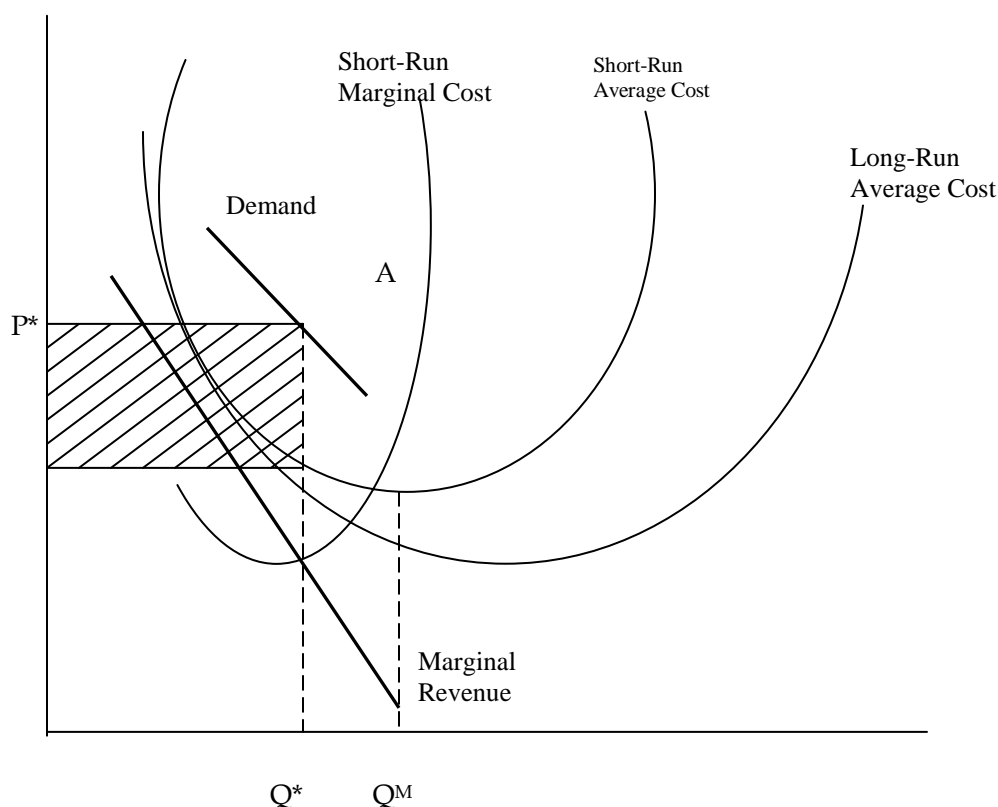
2. Excess Capacity in Economic Theory

There are several definitions of excess capacity that exist in the literature. Gorton and Rosen (1992) define excess capacity as a situation in which the expected return on non-bank investment exceeds the expected return on investment in banking. The approach adopted by the Federal Reserve of New

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York (1993) is to apply microeconomic theory. In such a framework, excess capacity is defined as a situation in which a substantial portion of an industry is operating at levels below minimum short-run average cost. In Figure 1, if the demand curve lies in region A and the typical firm in the industry maximises profits by equating marginal revenue with marginal cost, the firm will produce output Q^* , which is less than full-capacity output, Q^M . Thus, the firm operates with excess capacity and has higher per unit short-term and long-term cost than the minimum.¹

Figure 1: Diagrammatic Representation of Excess Capacity



Excess capacity may exist for several reasons: (a) interest rate deregulation renders large branch systems less necessary as a means of competing for deposits; (b) historical restrictions on branching produced many more banks than would otherwise exist; (c) the household sector's demand for bank deposits has declined because of attractive interest on non-bank sources; and (d) there has been a growing presence of foreign and new private banks in the urban areas and co-operative banks in the rural areas.

As early as 1993, for the US it was observed that the share of commercial bank loans in total borrowing by US non-financial business was witnessing a declining trend (Greenspan, 1993). Boyd and Gertler (1994), for instance, reported that the share of commercial bank assets in total financial assets in

the US declined from a peak of approximately 48 per cent in 1994 to around 35 per cent in 1992. The evidence finds support in the work of Gorton and Rosen (1995) and more recently, in the findings of Clark and Siems (2002), wherein it is observed that the share of commercial banks in total U.S financial intermediation has declined from 35 per cent in the early 1990s to 20 per cent in 2000, with a concomitant fall in the number of banks from over 14,000 to just over 8,000 over the same period. The select studies on excess capacity in banking are listed in Table 1.

Table 1: Studies on Excess Capacity in Banking

Author/Year	Country/Period	Issue
Radecki (1993)	US banks 1986-1992	Causes of excess capacity in US banks
Frydl (1993)	US banks 1976-92	Excess capacity in US banking
Federal Reserve Bank of New York (1993)	US banks	Survey of excess capacity in financial sector
Gorton and Rosen (1995)	US banks 1984-1992	Declining investment opportunities and excess capacity in banking

3. Regional Rural Banks in India

Regional Rural Banks were established way back in 1975 and were incorporated under the RRB Act, 1975. Originally established to drive the moneylender 'out of business' and bridge the capital gap supposedly unfilled by the rural co-operative and commercial banks, these banking institutions have expanded remarkably during the last decade (Table 2). Illustratively, in 1991, there were 196 RRBs with over 14,000 branches in 375 districts nationwide, with an average coverage of three villages per branch. The banks had disbursed over Rs.35,000 million in credit and mobilised over Rs.41,000 million in deposits. Over the period ending March 2001, the amount of advances granted increased five-fold, while deposits rose around ten-fold, leading to a gradual lowering of the credit-deposit ratio.²

Table 2: Expansion of RRB System: 1991-2001

Period (end-March)	Number of banks	Number of branches	Credit (Amount in Rs. million)	Deposit	Credit/ Deposit (Per cent)
1991	196	14,443	35,540	41,510	86
1995	196	14,509	62,910	111,500	56
1998	196	14,508	84,870	193,260	44
2000	196	14,644	126,630	300,510	41
2001	196	14,694	150,500	382,940	39

Despite this impressive geographic coverage and intermediation activity, the RRBs suffered from poor financial health, especially because of mounting loan losses and low capital base. As of June 1993, 172 RRBs were unprofitable, with non-performing loans being well over 40 per cent. By 1998, the number of loss-making RRBs was reduced to 68, with non-performing loans reduced to 33 per cent. There was a

further reduction in loss-making RRBs to 26 by 2000-01, with non-performing assets comprising 19 per cent of total loans. Despite this improvement, loan losses have remained high, underscoring the need for fundamental changes in the way RRBs conducted business.

In essence, RRBs are commercial banks in nature and are included under the Second Schedule to the RBI Act, 1934. Their branches are licensed by RBI under Section 23 of the Banking Regulation Act, 1949. The National Bank for Agriculture and Rural Development (NABARD) inspects them under Section 35 of the Banking Regulation Act, 1949 having concurrent powers with RBI.³ RRBs were originally established as a hybrid structure with the objective of combining the local feel of the co-operative and the business acumen of commercial banks to exclusively cater to the credit needs of rural poor.⁴ As at end-March 2001, there were 196 RRBs functioning in 26 states covering 484 districts in the country with a network of 14,694 branches.

With a view to strengthening the capital base and improving the financial performance of RRBs, recapitalisation measures were initiated in 1994-95. Until March 2000, an amount of Rs.21,880 million has been provided to 187 RRBs towards cleansing their balance sheets. With this, 158 RRBs stand fully recapitalised, 29 RRBs partially recapitalised and 7 RRBs are still to be taken up for recapitalisation, while 2 RRBs did not require such recapitalisation. No subsequent capitalisation of RRBs has been effected since then.

Apart from recapitalisation, the fragile state of RRBs necessitated initiation of several policy changes by the Government in the recent past. These measures included:

- Greater emphasis on financing non-target groups,
- Broad basing and diversification of activities,
- Introduction of prudential norms,
- Complete deregulation of interest rate structure,
- Rationalisation of branch network and relocation of loss making branches, and
- Relieving 69 RRBs of their service area obligation and allowing them to finance throughout the area within their jurisdiction.

These measures provided the necessary impetus to RRBs to turn around and the financial results as on March 31, 2000 revealed that RRBs are on the path of recovery. The number of profit making RRBs and the quantum of their profit increased manifold from Rs.700 million in 1996-97 to 164 and Rs.6000 million in 2000-01. Similarly, the number of loss making RRBs and amount of losses have come down from 152 and Rs.8790 million in 1996-97 to Rs.1100 million in 1999-2000. The accumulated losses of RRBs have reduced from a peak level of Rs.31160 million in March 1998 to Rs.29860 million in March 2000.

While commercial bank profitability has increased since the inception of reforms, the same cannot be unequivocally stated about the rural banking segment. In fact, the profits of RRBs witnessed sharp fluctuations. Illustratively, over the period 1991 to 2001, the profits of RRBs fluctuated widely from

a very low level to a negative in 1995-96, which turned positive in 2000-01. The number of profit-making RRBs also increased markedly over the period (Table 3).

Table 3: Profitability of Regional Rural Banks - 1991 to 2001

Year/Variable	1990-91	1995-96	2000-01
Income	7040	14910	48590
Expenditure	6850	19170	42590
Operating Profits	--	2710	7300
Net Profits	190	-4250	6000
Total Asset	71670	187190	496410
Number of Reporting RRBs	196	196	196
Number of Profit-making RRBs	9	12	170

Figures in Rs. million

Several committees including Khusro Committee (1989) and the Narasimham Committee (1991) had gone into the question of restructuring the RRBs and several suggestions have emanated including merger of the RRBs. More recently, with a view to examining the various aspects of functioning of RRBs and making recommendations so as to enable these banks to take care of the financial needs of the rural populace, the Government set up a Working Group chaired by a reputed expert in the field to suggest amendments in the RRB Act, 1976 (NABARD, 2003). The Working Group made several recommendations, including, *inter alia*, widening the scope of financial services to be provided by RRBs, differentiated ownership structure based on financial health of RRBs, prescribed minimum level of shareholding, extension of area of operations of RRBs to encompass all districts, aligning the regulatory framework for RRBs on the lines of those for commercial banks with provision for such bank-specific relaxations as may be necessary for specific time period and adaptation of various IT-based innovations by RRBs at different stages of their development for providing competitive customer services in a cost-effective manner. The Report is since under consideration of the Government. While such discussions are underway, an important concern that might have been overlooked is the existence of excess capacity in RRBs. Economically, in the face of severe competition in the financial marketplace, it might well happen that the demand for loans of RRBs has been declining. Along with limited opportunities for diversification of business, this may have lowered their profitability levels, further weakening their capital position and leading to a vicious circle of excess capacity in these banks. Examination of this issue is the major concern of the chapter.

4. Methodology and Data

4.1 Indicators of Excess Capacity

Given the complexities in identifying excess capacity, the literature considers both necessary and sufficient conditions. Consistent with the theoretical discussion above, excess capacity is defined as a situation in which an individual bank meets *all three* of the following conditions: (a) *persistent* below-average loan demand, measured as the ratio of loans to total assets (b) *persistent* below-average profitability, (c) *persistent* above-average per unit cost. These conditions, taken together, would be sufficient to establish the existence of excess capacity. A necessary, but not sufficient condition exists when a majority of the indicators exhibit some evidence of excess capacity. In order to evaluate 'persistence', a period of eleven years starting from 1991 and extending upto 2001 has been employed.

Frydl (1993) estimates the extent of excess capacity in the banking system by examining the number of banks that failed to earn a return on equity capital to the one-year Treasury bill rate for each of the years 1976-82. However, the study did not consider a homogeneous set of banks for each of the years, which would have provided consistent inference regarding the existence of excess capacity. The approach also fails to consider the cyclical nature of bank profits. For example, the study observes a decline in the amount of excess capacity from 1990 to 1992. While this decline might be attributable to the fall in interest rates and the resultant rise in profits, it does not totally 'internalise' the cyclical factors, owing to the short time span of the study.

4.2 The Data

For the purpose of the study, we have chosen all the 196 RRBs operating in India over the period 1991 through 2001. The data has been culled out from the *Statistical Tables Relating to Banks in India* and the *Handbook of Statistics on Indian Economy*. As the aforesaid discussion reveals, this period spans a cycle of extremely low (e.g., 1995-96) and moderately high (e.g., 2000-01) profitability, with intermediate levels of profitability in certain other years. These banks are spread across 26 states of the country. The summary feature of the data over the sample period is described in Table 4.

Table 4: Summary Values of the Variables - 1991 to 2001

	Mean	Standard Deviation	Minimum	Maximum
Size	4.269	1.054	0.157	7.124
Return on Asset	-1.947	3.728	-36.750	5.744
Asset composition	37.132	14.230	0.659	79.119
Liability Composition	36.819	12.598	0.000	58.598

Table 4 reveals that the average size of the RRBs was 4.27, with low levels of profitability. The asset composition (loan to total asset ratio) of RRBs reveals that, on average, around 37 per cent of asset were in loans, with high variability. Similar trend was evidenced in case of liability composition (proxied by time deposit to total liabilities). The RRBs are spread across 26 states, comprising all the regions of the

country, with preponderance in the Northern region (27.6 per cent) and to a lesser extent in the Eastern (20.4 per cent) and Southern (17.3 per cent) regions, and among states, in Uttar Pradesh, Madhya Pradesh, Andhra Pradesh, Bihar and Rajasthan. These four states accounted for over 50 per cent of the total RRBs in the country (Table 5). Owing to the creation of certain new states recently, the number of RRBs in states like Bihar and Uttar Pradesh have since gone to these newly created states (like Uttaranchal and Chhattisgarh).

Table 5: Distribution of RRBs across States - 1991 to 2001

	Number of RRBs	Percent to total
Northern Region	54	27.6
Haryana	4	2.0
Himachal Pradesh	2	1.0
Jammu and Kashmir	3	1.5
Uttar Pradesh	36	18.4
Uttaranchal	4	2.0
Punjab	5	2.6
North-Eastern Region	11	5.6
Arunachal Pradesh	1	0.5
Assam	5	2.6
Manipur	1	0.5
Meghalaya	1	0.5
Mizoram	1	0.5
Nagaland	1	0.5
Tripura	1	0.5
Central Region	24	12.2
Chhattisgarh	5	2.6
Madhya Pradesh	19	9.6
Western Region	33	16.8
Gujarat	9	4.6
Maharashtra	10	5.1
Rajasthan	14	7.1
Southern Region	34	17.3
Andhra Pradesh	16	8.2
Karnataka	13	6.6
Kerala	2	1.0
Tamil Nadu	3	1.5
Eastern Region	40	20.4
Bihar	16	8.2
Jharkhand	6	3.1
Orissa	9	4.6
West Bengal	9	4.6

5. Simultaneous Equation Model and Hypotheses Tests

5.1 Simultaneous Equation Analysis

The important aspect of the study is to empirically address (a) the factors affecting the financial performance of RRBs, and, (b) the interrelationships among the three excess capacity indicators, in a multivariate context.

Lindley *et al.*(1992) point out that since financial performance is determined by decisions made with respect to both sides of the balance sheet, simultaneous equation techniques are most appropriate to evaluate such performance. Keeping this in view, the following four-equation, simultaneous model is specified:

$$RoA = f_1(ASSTCOM, LIABCOM, CALL, EXPN, LOCATION, GDPGR) \quad (1)$$

$$EXPN = f_2(LIABCOM, CALL, TREND, SIZE, POPGR, LOCATION, GDPGR) \quad (2)$$

$$ASSTCOM = f_3(CALL, POPGR, LOCATION, GDPGR) \quad (3)$$

$$LIABCOM = f_4(CALL, SIZE, POPGR, LOCATION, GDPGR) \quad (4)$$

where, RoA=Return on Asset, ASSTCOM=asset composition, LIABCOM=liability composition, CALL=end of period call money rate, EXPN=ratio of operating expense to total asset, SIZE=natural logarithm of total assets, LOCATION=dummy for the state in which the RRB is incorporated, POPGR=population growth, TREND=time trend and GDPGR=real GDP growth.

In the aforesaid specification, we have four endogenous variables pertaining to profitability, expenditure pattern, asset and liability composition. The model is closed by including exogenous variables that have the power to explain some/all of these variables.

Three of the four endogenous variables (RoA, EXPN and ASSTCOM) are the excess capacity indicators discussed above. Economic theory suggests these variables as potential indicators of excess capacity. The fourth endogenous variable-liability composition-completes the system.

Return on Asset (RoA) is the measure of profitability. EXPN is the ratio of operating expense (comprising of wage and other related expenses) to total assets and measures the efficiency of bank performance. A high value of this variable indicates lower efficiency. ASSTCOM is the ratio of total loans to total assets. LIABCOM is the ratio of time deposits to total liabilities. This variable measures the extent to which banks use traditional retail deposits, which carry lower interest than purchased funds. Keeping in view the possible differential reaction of large and small banks in this category, we include a control for SIZE. LOCATION is a dummy variable for the state in which the RRBs is incorporated. Given that the RRBs are spread over 26 states, for identification purposes, the dummy variable for one state (i.e., Uttar Pradesh) was excluded, so that the estimated coefficients measure the excess capacity in the remaining states relative to the omitted state. Finally, GDPGR is included to control for the economic environment.

The model includes several exogenous variables: an interest rate variable (CALL), one-firm-specific variable (SIZE), a demographic variable (POPGR), a dummy variable for the state in which the bank is incorporated (LOCATION), real GDP growth (GDPGR) to control for the economic environment and a trend variable (TREND) to measure the effect of technical change (Hunter and Timme, 1991).

5.2 Hypotheses

As explained earlier, there are three indicators of excess capacity in banking: (a) low profitability, (b) low loan demand and (c) high expense ratio. All these criteria are, of course, inter-related. The hypotheses explore the various relationships between the indicators and also explore the question as to whether they are valid indicators. Specifically, the hypotheses are that, *ceteris paribus*:

Profitability is inversely related to expense ratio. Without this relationship, one of the key links between the three excess capacity indicators will not be present. In theory, if a bank is operating on the downward sloping portion of the average cost curve, it exhibits excess capacity. The resultant high expense ratio should result in lower profitability.

Profitability is positively related to asset composition. The fact that rates on loans are higher than rates on securities (the other major asset of banks apart from loans) leads to this expectation. This hypothesis helps to determine if low loan demand is a useful indicator of excess capacity.

Total expense is inversely related to total asset. This hypothesis attempts to test for scale economies.

Profitability is positively related to liability composition. This relationship follows from the fact that core deposits are cheaper than other liabilities. Rural banks generally operate with low levels of purchased funds and high levels of core deposits. The banks that have particularly high levels of core deposits should be more profitable than others because core deposits carry lower interest rates than competing money market liabilities.⁵

The expense ratio should be inversely related to the trend variable. If banks are utilising new technology and benefiting from it, the expense ratio should decline over time.

6. Econometric Methodology

The simultaneous equation system is estimated by three-stage least squares (3SLS) procedure. The 3SLS is, in essence, a full information technique, which estimates all the parameters of the structural model simultaneously. The first stage of 3SLS estimates all reduced-form coefficients using the least squares estimator, while the second stage estimates all structural coefficients by applying two stage least squares (2SLS) to each of the structural equations. The third stage of the process involves the generalised least squares estimation of all the structural coefficients of the system, using a covariance matrix for the disturbance terms of the structural equation that is estimated from the second stage residuals. In terms of the properties of estimators, the 3SLS can be shown to be asymptotically more efficient than the 2SLS, because it takes into account cross-equation correlations. Thus, the basic rationale for 3SLS, as opposed to 2SLS, is its use of information on the correlation of the disturbance terms of the structural equation in order to improve asymptotic efficiency.

7. Results and Discussion

The equation system is fitted using the 3SLS procedure. The results of the estimation process are contained in Table 6.

Table 6: 3SLS Results of Excess Capacity in Regional Rural Banks

Variable	RoA	EXPN	ASSTCOM	LIABCOM
Intercept	79.605 (1.18)	-447.145 (-1.95)**	19.525 (18.37)*	32.388 (17.45)*
EXPN	1.961 (0.60)	---	---	---
LIABCOM	-0.599 (-1.36)	15.172 (1.75)***	---	---
ASSTCOM	-1.15 (-1.51)	---	---	---
CALL	0.201 (1.61)***	2.649 (1.85)**	1.098 (19.69)*	-0.687 (-11.22)*
TREND	---	-26.683 (-2.19)*	---	---
SIZE	-7.169 (-0.68)	18.007 (0.06)	---	2.014 (7.53)*
POPGR	---	-4.249 (0.05)	0.991 (3.17)*	0.071 (0.232)
GDPGR	2.019 (0.21)	1.326 (0.23)	0.878 (0.36)	0.643 (0.21)
Andhra Pradesh	22.488 (1.57)	64.670 (0.05)	-17.354 (-5.18)*	3.698 (3.95)*
Arunachal Pradesh	-11.545 (-1.31)	-18.897 (-0.52)	-10.339 (-4.59)*	0.857 (0.25)
Assam	-10.985 (-1.39)	-92.396 (1.84)**	-11.191 (3.26)**	-4.212 (-3.01)*
Bihar	-5.292 (-1.41)	26.782 (0.05)	6.1151 (5.09)*	4.159 (4.44)*
Chhattisgarh	-11.665 (-1.56)	10.656 (0.05)	-5.595 (-3.90)*	1.827 (0.55)
Gujarat	7.796 (1.48)	-1.991 (-0.03)	-7.278 (-2.17)**	6.874 (5.77)*
Haryana	19.888 (1.50)	-59.442 (-0.15)	15.978 (16.81)*	14.637 (8.47)*
Himachal Pradesh	-0.536 (-0.10)	-14.782 (-0.09)	-2.639 (-1.33)	18.069 (4.68)*
Jammu and Kashmir	-16.887 (-.64)***	171.547 (0.05)	-10.313 (-3.08)*	1.965 (1.01)
Jharkhand	-7.881 (-1.64)***	192.901 (0.05)	-3.714 (-1.11)	0.316 (0.22)
Karnataka	21.528 (1.66)***	-385.379 (-0.09)	16.989 (5.07)*	3.398 (2.88)*
Kerala	30.608 (1.79)***	-110.394 (1.79)***	0.323 (0.27)	-6.501 (-2.74)*
Madhya Pradesh	2.980 (0.87)	-228.629 (-0.07)	7.741 (4.49)*	7.248 (8.60)*
Maharashtra	0.941 (0.53)	52.101 (0.07)	35.415 (14.80)*	-4.156 (-2.93)*
Manipur	-22.169 (-1.43)	-176.726 (-1.65)***	0.737 (0.80)	-7.441 (-2.23)**
Meghalaya	-17.278 (-1.34)	184.998 (0.05)	-3.257 (-0.97)	-3.484 (-1.05)
Mizoram	-12.955 (-1.27)	-26.060 (-1.66)***	-13.269 (-6.73)*	-9.238 (-2.79)*
Nagaland	-34.520 (1.15)	-79.945 (-0.80)	3.465 (2.22)**	-1.649 (-0.48)
Orissa	3.455 (0.82)	-77.441 (-0.09)	3.876 (3.23)*	-2.200 (-1.86)***
Punjab	10.640 (1.57)	-266.747 (-1.93)**	-10.754 (-4.49)*	6.459 (4.21)*
Rajasthan	6.088 (1.09)	-87.967 (-0.07)	1.782 (2.11)*	12.514 (12.67)*
TamilNad	22.654 (1.76)***	88.196 (0.05)	11.111 (9.26)*	1.655 (0.85)
Tripura	26.059 (1.19)	-59.495 (-0.08)	-4.384 (-4.61)*	23.341 (7.07)*
Uttaranchal	-1.989 (-0.66)	69.069 (0.04)	6.807 (-2.03)**	3.010 (1.55)
West Bengal	2.997 (0.77)	-41.949 (-0.09)	18.554 (15.47)*	6.153 (5.19)*
Number of observations	2156	2156	2156	2156
Adjusted R ²	0.43	0.44	0.40	0.34

t-ratios in brackets; *, ** and *** indicate significance at 1, 5 and 10 per cent, respectively.

As observed from the table, the first hypothesis is not borne out by evidence since the coefficient on the expense ratio is positive (and not significant) in the RoA equation. This is in contrast to the

evidence obtaining for US rural banks, which indicates a negative and significant relationship between expense ratio and profitability (Wall, 1989; Humphrey, 1987).

The second hypothesis, profitability is positively related to asset composition (as measured by loan demand) does not find support from the data. Clearly, although the sign on asset composition in the profitability equation is positive, it is not significant at conventional levels.

The third hypothesis, total expense is inversely related to asset size, is not borne out by the evidence as well. In fact, it is observed that total expense is positively related to size, suggesting lack of scale economies.⁶

The fourth hypothesis, profitability is positively related to liability composition (as measured by the ratio of time deposits to total liabilities) is also not supported by analysis. In fact, the negative sign on liability composition in the profitability equation would suggest that banks with high levels of core deposits are not necessarily more profitable than others and these banks need to pay higher rates to attract core deposits.

The final hypothesis, the expense ratio is inversely related to the trend variable finds support in the data. This is suggestive of the fact that these banks are benefiting from new technology and consequently, witnessing a lowering of their expense ratio.

We also examined whether any of the dependent variables was different across states.

The findings suggests that:

(a) profitability of RRBs was, on average, higher in the Southern region (Karnakata, Kerala and TamilNad),

(b) the expense ratio of RRBs was lower in certain Southern states (e.g., Kerala), Northern (e.g., Punjab) and particularly in several North-Eastern states (e.g., Assam, Manipur and Mizoram), owing to the lower wage costs.⁷

(c) relative to Uttar Pradesh, the asset composition of most states was more skewed in favour of loans, major exceptions being primarily states in North-Eastern region (Arunachal Pradesh, Assam, Mizoram, Tripura and Nagaland), and finally,

(d) the ratio of core deposits to total liabilities was higher *vis-à-vis* the benchmark for most states, with certain exceptions in the North-Eastern (Assam, Manipur, Mizoram), Eastern (West Bengal), Western (Maharashtra) and Southern (Kerala) regions. This would indicate that in these states, competing avenues for fund deployment by depositors are sufficiently well-developed, suggesting a low ratio of time deposits to liabilities.

We present the alternate estimates with Ordinary Least Square (OLS) estimates. Maddala (1977) indicates that OLS is more robust against specification errors and that the predictions from OLS equations often compare favourably with those from simultaneous equation models and suggests that it is useful to report OLS estimates along with those from other methods. For this reason, Table 7 reports the OLS

estimates. Since the primary purpose is to ascertain whether there exists excess capacity in RRBs, the location dummies have not been reported in the analysis.

Table 7: OLS Results of Excess Capacity in Regional Rural Banks

Variable	RoA	EXPN	ASSTCOM	LIABCOM
Intercept	-9.130 (-1.46)*	-8.252 (-20.96)*	15.525 (17.85)*	32.308 (14.38)*
EXPN	-0.481 (-10.65)	--	--	--
LIABCOM	-0.085 (-6.72)	0.007 (1.79)**	--	--
ASSTCOM	-0.008 (-1.28)	--	--	--
CALL	-0.008 (-0.44)	0.012 (1.27)**	1.109 (19.69)*	-0.607 (-12.89)*
TREND	--	-0.232 (-12.09)*	--	--
SIZE	2.914 (18.83)	2.948 (35.87)*	--	2.011 (5.21)*
POPGR	--	0.106 (2.24)**	0.980 (3.46)*	0.071 (0.25)
GDPGR	2.132 (0.20)	1.422 (0.21)	0.786 (0.34)	0.589 (0.20)
LOCATION DUMMY	Included	Included	Included	Included
Adjusted R ²	0.41	0.39	0.42	0.27

t-values in brackets

*, ** and *** indicate significance at 1, 5 and 10 per cent, respectively.

As table 17.7 indicates, the OLS results support two of the five hypotheses. Specifically, (a) there is an association between higher profitability and lower expense ratio and (b) the expense ratio declines as time variable increases, indicating that this group of RRBs does benefit from technical change. The other three hypotheses are not supported by evidence. These results are generally in conformity with the 3SLS estimates, except for the inverse relation between expense and technical change variable and broadly confirm the relationships among the excess capacity indicators.

8. Policy Implications

The foregoing analysis highlights certain policy implications of the study. First, it seems that the wage costs of RRBs in certain states is comparatively higher. This would suggest that RRBs with high wage costs could institute regimes that reward staff members for better performance in assessing, extending and collecting loan and in promoting and servicing savings. Tying employee bonuses to quantifiable performance criteria are often found to be successful in increasing accountability and motivating staff.

A big problem with the RRBs is the high delinquency of loans. Available data on the aggregate level of non-performing loans for RRBs suggests that the default rates on loans were extremely high, with non-performing loans to total loans well over 20 per cent in 2000. This would suggest the need to introduce a standardised structure of loan repayments to achieve financial discipline. One possibility in this context is to introduce loan repayment incentives: borrowers who have been making timely repayments gradually increased the amount of credit they were eligible to receive. This can be coupled

with routine meetings with borrowers in which social pressure could be applied to achieve prompt repayments. Such meetings could highlight the defaulting borrowers, which would also be an occasion for loss of social standing.

Third, the analysis would suggest limited opportunities for lending for certain states, particularly in the North-Eastern region. This would suggest the need for diversification of business products as a prime need in these rural banking institutions. The diversified avenues may include, *inter alia*, housing loans, consumer loans, consortium financing, financing of services sector, distribution of insurance products, etc. This would necessitate that banks not only upgrade their skills, but also invest in information technology in order to build up an improved Management Information System in order to provide efficient and affordable service.

Finally, the cost of credit is an important factor affecting the absorption of credit as also the delinquency rate. The recent Report of the Advisory Committee on Flow of Credit to Agriculture has observed that cost of funds for RRBs is somewhat higher than that of commercial banks as RRBs in the past had accepted long-term deposits by offering higher rates of interest, which provides limited maneuverability to reduce their lending rates. It is therefore imperative for RRBs to reduce their lending rates if they are to successfully compete with their commercial banking counterparts.

9. Concluding Observations

The present chapter develops a methodology for identifying excess capacity at RRBs in India based directly on microeconomic foundations. It is suggested that, if excess capacity exists, it is more likely to have an adverse impact on financial performance at RRBs. Towards this end, the entire sample of RRBs were selected, encompassing a sufficiently long time period spanning from 1991 through 2001 to test the 'persistence' of excess capacity, if any, in these banks. The results indicate that there does not exist any conclusive evidence to support excess capacity in RRBs. In particular, both the 3SLS estimates as well as the OLS estimates support a lowering of expense ratio over time, indicating the positive externalities wrought in by technical change. Most other indicators of excess capacity are not supported by the data.

While rural banking markets are frequently characterized as 'monopolistic' or 'oligopolistic', it appears that, in the study, the excess capacity effect is not persistent in the Indian scenario. However, there seems evidence to support the fact that the expense ratio of RRBs was lower in certain states owing to the lower wage costs.

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