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REVIEW ARTICLE

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Strengthening Emerging Sector of Indian Banking

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1. INTRODUCTION

Strengthening financial systems has been one of the central issues facing emerging markets and developing economies. This is because sound financial systems serve as an important channel for achieving economic growth through the mobilization of financial savings, putting them to productive use and transforming various risks (Beck, Levin and Loayza 1999; King and Levin 1993; Rajan and Zingales 1998; Demirgüç-Kunt, Asli and Maksimovic 1998; Jayaratne and Strahan 1996). Many countries adopted a series of financial sector liberalization measures in the late 1980s and early 1990s that included interest rate liberalization, entry deregulations, reduction of reserve requirements and removal of credit allocation. In many cases, the timing of financial sector liberalization coincided with that of capital account liberalization. Domestic banks were given access to cheap loans from abroad and allocated those resources to domestic production sectors.

Since the Asian financial crisis of 1997-1999, the importance of balancing financial liberalization with adequate regulation and supervision prior to full capital account liberalization has been increasingly recognized. The crisis was preceded by massive, unhedged, short-term capital inflows, which then aggravated double mismatches (a currency mismatch coupled with a maturity mismatch) and undermined the soundness of the domestic financial sector. A maturity mismatch is generally inherent in the banking sector since commercial banks accept short-term deposits and convert them into relatively longer-term, often illiquid, assets. Nevertheless, massive, predominantly short-term capital inflows – largely in the form of inter-bank loans – shortened banks' liabilities, thus expanding the maturity mismatch. Further, a currency mismatch was aggravated since massive capital inflows denominated in foreign currency were converted into domestic currency in order to finance the cyclical upturn of domestic investment in manufacturing equipment, real estate and stocks (Asian Policy Forum 2000 and Yoshitomi and Shirai 2000).

In other words, many share the view that the proper sequencing of financial sector and capital account liberalization is one of the most important policies in preventing another Asian-type "capital account" crisis. It is now widely accepted that capital account liberalization should follow current account and domestic financial sector liberalization (Mckinnon 1973). This sequence issue is even more important for countries such as China and India, which have not yet launched full capital account convertibility and where public-sector banks still remain dominant. In such countries, financial sector liberalization comes against more politically difficult issues than those that have already opened up their capital account to a substantial degree since they have to first restructure predominant public-sector banks.

This chapter focuses on India's banking sector, which has been attracting increasing attention since 1991 when a financial reform programme was launched. It assesses whether the reform programme has been successful so far in restructuring public-sector banks and if so, what elements of the programme have contributed. This chapter tackles the following fundamental questions. In what way has the reform programme affected the behaviour of public-sector banks? To what extent have foreign and new domestic banks contributed to the performance of the whole banking sector? Has India's gradual approach to the privatization of banks been successful? What policy implications can we derive from India's experience?

2. DRASTIC VERSUS GRADUAL PRIVATIZATION APPROACHES

While India's financial reforms have been comprehensive and in line with global trends, one unique feature is that, unlike with other former planned economies such as Hungary and Poland, the Indian Government did not engage in a drastic privatization of public-sector banks. Rather, it chose a gradual approach toward restructuring these banks by enhancing competition through entry deregulation of foreign and domestic banks. This reflects the view of the Narasimham Committee that ensuring the integrity and autonomy of public-sector banks is the

more relevant issue and that they could improve profitability and efficiency without changing their ownership if competition were enhanced.

Since this approach was introduced, some criticisms have been expressed (Joshi and Little 1996). First, public-sector banks continue to be dominant thanks to their better branch coverage, customer base, and knowledge of the market compared with newcomers. Second, public-sector banks would find it more difficult to reduce personnel expenditure because of the strong trade unions. Third, the government would find it difficult to accept genuine competition within public-sector banks. In response to these concerns, the government decided to gradually expand private-sector equity holdings in public-sector banks, but still avoided the transformation of their ownership. The 1994 amendment of the Banking Act allowed banks to raise private equity up to

49 per cent of paid-up capital. Consequently, public-sector banks, which used to be fully owned by the government prior to the reform, were now allowed to increase non- government ownership. So far, only eight public-sector banks out of 27 have diversified ownership.

Meanwhile, a consensus is emerging that state ownership of banks is bad for financial sector development and growth (World Bank 2001). Based on data from the 10 largest commercial and development banks in 92 countries for 1970-1995, La Porta and others (2000) have found that greater state ownership of banks in 1970 was associated with less financial sector development, lower growth, lower productivity, and that these effects were greater at lower levels of income. Barth and others (2001a, 2001b) have shown that greater state ownership of banks tends to be associated with higher interest rate spreads, less private credit, less activity on the stock exchange, and less non-bank credit, even after taking into account other factors that could influence financial development. This suggests that greater state ownership tends to be anti-competitive, reducing competition from both banks and non-banks.

Barth and others have also noted that applications for bank licences are more often rejected and there are fewer foreign banks when state ownership is greater. Moreover, Caprio and Martinez-Peria (2000) have shown that greater state ownership at the start of 1980 was associated with a greater probability of a banking crisis and higher fiscal costs.

With respect to privatizing banks, moreover, the World Bank (2001) takes the view that privatization can yield real benefits to economies provided that an appropriate accounting, legal and regulatory infrastructure is in place. It should be noted that premature privatization may give rise to banking crises. Clarke and Cull (1998) have demonstrated that Argentina promoted the privatization of public-sector banks in a reasonably developed regulatory and infrastructure environment, and thus privatized banks improved productivity remarkably.

Considering the implications derived from the above studies, this chapter examines whether India's gradual approach has been successful so far by examining whether public-sector (commercial) banks have improved their performance (profitability, efficiency and soundness) in the reform period.

Two hypotheses have been adopted in this regard. The first hypothesis is that the degree of concentration in the banking sector has been declining in the reform period. The second hypothesis is that the performance of public-sector banks may have deteriorated initially during the adjustment period, but performance improved later on. Three types of performance indicators have been used: (a) profitability, (b) cost efficiency, and (c) earnings efficiency. It tests this hypothesis by analysing trend patterns and empirically testing the performance of public-sector banks.

3. DIVERSIFICATION OF BANKING ACTIVITIES

The second unique feature of India's banking sector is that the Reserve Bank of India has permitted commercial banks to engage in diverse activities such as securities- related transactions (for example, underwriting, dealing and brokerage), foreign exchange transactions and leasing activities. The 1991 reforms lowered the CRR and SLR, enabling banks to diversify their activities. Diversification of banks' activities can be justified for at least five reasons. First, entry deregulation and the resulting intensified competition may leave banks with no choice but to engage in risk-taking activities in the fight for their market share or profit margins. As a result, risk-taking would reduce the value of banks' future earnings and associated incentives to avoid bankruptcy (Allen and Gale 2000).

Second, banks need to obtain implicit rents in order to provide discretionary, repetitive and flexible loans. In addition, banks attempt to reduce the extent of information asymmetry by processing inside information on their clients and monitoring their performance. Such roles are unique to the banking system and important particularly for SMEs since information on them tends to be highly idiosyncratic. Without sufficient rents, however, banks are likely to cease providing these services and the implication for SMEs and economic development can be enormous. Thus, it is important for bank regulators to ensure adequate implicit rents to banks in order to encourage them to provide such unique services. Moreover, banks may lose an opportunity to collect implicit rents if their clients switch to capital markets once they become larger and profitable.

Diversification of banking activities helps banks to mitigate the two problems raised above by providing them with an opportunity to gain non-interest income and thereby sustain profitability. This enables banks to maintain long-term relationships with clients throughout their life cycles and gives them an incentive to process inside information and monitor their clients.

Third, banks can stabilize their income by engaging in activities whose returns are imperfectly correlated, thereby reducing the costs of funds and thus lending and underwriting costs.

Fourth, diversification promotes efficiency by allowing banks to utilize inside information arising out of long-term lending relationships. Thanks to this advantage, banks are able to underwrite securities at lower costs than non-bank underwriters. Firms may also obtain higher prices on their securities underwritten by banks because of their perceived monitoring advantages. Further, banks can exploit economies of scope from the production of various financial services since they can spread fixed physical (i.e., branches and distribution channels) and human capital costs (Steinherr and Huveneers 1990).

Fifth, diversification may improve bank performance by diluting the impact of direct lending (through requiring banks to allocate credit to priority sectors). Direct lending reduces the banks' incentives to conduct information processing and monitoring functions. As a result, this not only lowers banks' profitability by limiting financial resources available to more productive usages, but also results in a deterioration of efficiency and soundness by discouraging banks from functioning properly.

These five advantages, however, can be offset by the following disadvantages. First, public-sector banks' engagement in the securities business may promote a concentration of power in the banking sector since the asset size of banks expands. This is partly because anks have a natural tendency to promote lending over securities, thereby indirectly deterring the development of capital markets. Further, the reputation and informational advantages enjoyed by public-sector banks put them in an even more favourable position, preventing other banks and investment firms from competing on a level playing field.

Second, the engagement of banks in underwriting services may lead to conflicts of interest between banks and investors. Banks may decide to underwrite securities for troubled borrowers so that the proceeds of the issue of securities can be used to pay off these banks' own claims to the companies. Banks may dump into the trust accounts they manage the unsold part of the securities they underwrite. Further, banks may impose tie-in deals on customers by using their lending relationships with firms to pressure them to purchase their underwriting services (for example, using the threat of increased credit costs or non-renewal of credit lines). Banks may also use the confidential inside information that they possess when they underwrite firms' securities in a way that the firms do not contemplate, such as disclosing the information directly or indirectly to the firms' competitors.

Third, diversification may expose banks to various new risks. For example, banks may end up buying the securities they underwrite. They may also face greater market risks as they increase their share of securities holdings and market-making activities. Further, derivatives involve higher speed and greater complexity, which may reduce the solvency and transparency of banking operations.

The presence of these three potential disadvantages suggests that measures are needed to balance the advantages and disadvantages. The Reserve Bank of India tries to cope with the disadvantages by encouraging banks to engage in securities business through subsidiaries, thereby putting in place firewalls between traditional banking and securities services. The Reserve Bank of India also prohibits cross-holdings with industrial groups to minimize "connected lending" – one of the causes of the East Asian crisis.

To assess the overall impact of banks' activities, this chapter examines whether diversification improves bank performance. In particular, the impact of disadvantages can be assessed indirectly by examining how soundness is associated with diversification. It is also important to examine whether diversification has led to even greater dominance of public-sector banks by examining whether banks' asset portfolios differ between public-sector and private banks.

The following hypotheses have been examined with respect to diversification. The third hypothesis is that banks' engagement in foreign exchange and securities business improves their performance. The fourth hypothesis is that investment in government securities has worsened banks' performance since it limits the realization of the diversification effect. The fifth hypothesis is that lending to priority sectors and the public-sector has lowered banks' performance.

4. IMPACT OF FOREIGN AND PRIVATE DOMESTIC BANKS

One interesting feature of India's banking sector is that some large public-sector banks appear to have been performing reasonably well in the post-reform period. This could be attributed to (a) the import of better risk management skills from foreign and private domestic banks, (b) intensified competition, (c) the diversification effect described above, (d)

reorganization (for example, mergers and acquisitions), and (e) goodwill. In India, however, given the virtual absence of an exit policy, large-scale mergers and acquisitions among problematic banks have not occurred so far.

It is generally thought that the entry of well-capitalized new banks is likely to improve the quality and variety of services, efficiency of bank management, and prudential supervisory capacity (Levine 1996; Walter and Gray 1983; Gelb and Sagari 1990). The entry of foreign banks tends to lower interest margins, profitability, and the overall expenses of domestic banks (Clarke, Cull, D'Amato, and Molinari 2000; Claessens, Demirgüç-Kunt and Huizinga 2000). Further, Claessens, Demirgüç-Kunt and Huizinga have reported that the number of entrants matters compared with their market share, indicating that foreign banks affect local bank competition upon entry rather than after they have gained a substantial market share. Moreover, these banks may be able to provide a source of new capital for enterprises and thus reduce government restructuring costs, especially when the domestic banking sector is devastated in the aftermath of a crisis. Some studies also find that foreign banks tend to go for higher interest margins and profitability than domestic banks in developing countries, while the opposite is true in developed countries (Claessens, Demirgüç-Kunt and Huizinga 2000).

On the other hand, premature deregulation and foreign entry may cause some downside effects. First, they may increase the risk of a banking crisis if there is macroeconomic or regulatory weakness, as was experienced in Argentina, Brazil and Chile in the 1970s (Demirgüç-Kunt, Asli and Detragiache 1998). Second, foreign banks may exhibit a home country bias, leading them to retreat promptly and massively at the first sign of difficulty. In the East Asian crisis, for example, it is widely believed that foreign banks, such as Citibank, played a major role in supporting the capital outflow without consideration as to the national damage caused.

This chapter assesses whether their performance shows statistically different results from that of public-sector banks through three steps: (a) analysing trend patterns, (b) testing the hypotheses that the average level of each indicator is the same between public-sector and foreign and private domestic banks, and (c) using ordinary least squares regression. The sixth hypothesis is that foreign and private domestic banks have performed better than public-sector banks, and thus have contributed to an improvement in overall banking sector performance. The seventh hypothesis is that new banks perform better.

B. APPRAISAL OF THE PERFORMANCE OF THE BANKING SECTOR

India's financial market has been gradually developing, but still remains bank-dominated in the reform period. The extent of financial deepening measured by total deposits in GDP has raised only modestly from 30 per cent in 1991 to 38 per cent in 1999. Capital market development has also been quite sluggish. Outstanding government and corporate bonds as a share of GDP rose from 14 per cent in 1991 to 18 per cent in 1999 and from only 0.7 per cent in 1996 to 2 per cent in 1998, respectively, while equity market capitalization dropped from 37 per cent in 1995 to 28 per cent in 1999.

Nevertheless, the government's commitment on restructuring the highly regulated banking sector appears strong. Since financial reforms were launched in 1991 and particularly when the entry of new banks was permitted in 1993, public-sector banks appear to have become more conscious of the need for greater profitability and efficiency, suggesting that the reform has had a favourable impact on India's financial market.

According to an analysis of the overall performance of state-owned, domestic and foreign banks based on trend patterns in 1993-2000, the overall performance of public- sector banks appears comparable with foreign and private domestic banks (table 1). In general, foreign banks performed better than domestic banks (public-sector and private domestic banks) in terms of cost, earnings efficiency and soundness. However, domestic banks overtook foreign banks in terms of profitability in 1999-2000. Moreover, all banks are comparable in terms of the scale of medium- to long-term credit and liquidity. The results are summarized below.

1. PROFITABILITY

Foreign banks' profitability (defined as the ratio of profits after tax to average assets [ROAA]) exceeded that of private domestic and public-sector banks in 1993-1997, despite a declining trend. However, private domestic banks have become more profitable than foreign banks in 1999-2000. IMF (2001) has also reported that foreign and new private domestic banks maintained higher profitability (about 1-2 per cent) than public-sector and old private domestic banks (0.6-0.8 per cent) during the period 1995/96-1999/2000. Profits from securities and foreign transactions, and brokerage/ commission services have also increasingly contributed to profitability for all banks, suggesting that the diversification effect is positive.

Table 1. Performance indicators of the banking sector, 1993-2000

	1993	1994	1995	1996	1997	1998	1999	2000
ROAA								
All banks	–0.1	0.1	1.1	0.8	1.1	1.0	0.5	0.4
Foreign	2.0	2.0	2.0	1.6	1.6	1.1	0.4	–0.2
Private	–0.2	0.5	1.2	1.2	1.3	1.1	0.7	1.0
Public sector	–1.3	–2.3	0.1	–0.4	0.4	0.8	0.4	0.6
COST								
All banks	81.5	78.4	82.6	162.7	84.8	76.8	83.8	78.3
Foreign	67.7	60.9	80.7	81.7	87.2	68.6	81.2	72.4
Private	86.4	83.9	80.3	80.1	80.5	80.1	85.0	80.0
Public sector	93.8	92.2	87.3	88.1	86.7	84.9	86.6	85.3
$INCOME_1$								
All banks	12.4	11.5	10.4	11.6	12.0	12.1	11.4	11.2
Foreign	14.5	12.9	12.1	13.2	13.3	13.8	12.3	12.5
Private	11.2	10.1	8.7	11.0	11.4	11.4	11.0	10.4
Public sector	10.9	11.1	10.7	10.6	10.9	10.7	10.4	10.2
$INCOME_2$								
All banks	7.6	7.3	5.0	5.5	6.3	5.8	5.3	4.0
Foreign	12.9	9.1	7.1	5.1	6.3	6.8	6.9	4.3
Private	5.2	7.6	3.9	5.1	6.5	5.6	4.2	3.7
Public sector	3.5	5.1	4.1	6.4	6.3	4.7	4.2	3.6
DIVERSE								
All banks	1.3	1.2	1.2	1.2	1.4	2.1	1.4	1.6
Foreign	1.8	1.6	1.4	1.5	1.9	3.2	2.0	2.1
Private	1.0	0.9	1.0	1.1	1.1	1.5	1.0	1.3
Public sector	1.1	1.1	1.1	1.1	1.1	1.1	1.0	1.1
GBOND								
All banks	20.4	23.8	20.7	19.1	21.3	22.0	23.3	24.3
Foreign	19.5	24.4	20.5	16.3	18.0	19.4	21.6	22.4
Private	21.0	20.5	17.5	17.5	20.6	21.2	22.0	23.5
Public sector	21.1	25.8	24.6	24.6	26.9	26.6	27.4	28.0
PROV								
All banks	2.4	2.3	1.5	1.1	0.8	1.2	1.5	1.7
Foreign	3.8	3.0	2.3	0.9	0.8	1.9	2.7	3.0
Private	1.1	1.0	1.2	1.0	0.7	0.8	0.5	0.7
Public sector	1.8	2.6	1.2	1.6	0.9	0.8	0.8	0.7
EQUITY								
All banks	4.1	4.6	8.7	13.6	14.4	13.3	13.6	11.4
Foreign	6.8	7.9	17.4	25.0	28.4	25.2	25.4	20.3
Private	1.7	2.2	3.6	3.3	4.0	4.8	4.4	4.2
Public sector	3.2	3.4	5.3	10.6	6.5	6.0	5.8	5.7

Source: PROWESS Database, Centre for Monitoring Indian Economy Pvt. Ltd.

Note: All indicators are estimated from PROWESS database with the available data.

2. COST AND EARNINGS EFFICIENCY

Foreign and private domestic banks are generally more cost-efficient than public- sector banks. The ratio of operating expenditure to operating income (COST) in 2000 was 72 per cent for foreign banks, 80-85 per cent for domestic banks, and 84 per cent for public-sector banks. While foreign banks are more cost-efficient, their efficiency level has somewhat deteriorated. Instead, domestic and public-sector banks improved efficiency over the sample period.

As for earning capacity, foreign banks are generally better performers. The earning indicator proxied by the ratio of income to assets (INCOME1) shows that foreign banks have consistently performed better than private domestic and public- sector banks. However, foreign banks' income-generating capacity deteriorated somewhat from 14.5 per cent in 1993 to 12.5 per cent in 2000, while the two other types of banks maintained their performance at a level of about 11 per cent. The inferior performance of domestic banks relative to foreign banks can be attributed to (a) the larger share of credit extended to the public-sector, (b) more stringent requirements imposed on direct lending, (c) a lesser degree of diversification, and (d) lower interest rate margins.

Implicit interest rate spread (defined as the difference between implicit lending and deposit rates [INCOME2]) has been shrinking for all banks over the sample period. While foreign banks have received higher interest rate spreads than private domestic banks and public-sector banks, their margins have become comparable in 2000. An alternative indicator (the difference between interest income and expenditure) shows that while all types of banks reduced interest rate margins over the sample period, those of public-sector and private domestic banks have generally remained negative and recently even worsened. This suggests that domestic banks must obtain income from other activities to maintain profitability and thus extend credit to the private sector.

3. CAPITAL, ASSET QUALITY, MANAGEMENT AND LIQUIDITY

The balance sheets of foreign banks appear to be more structurally sound than those of domestic and public-sector banks based on the following criteria: capital adequacy, asset quality, management and liquidity.

First, on the capital adequacy ratio proxies by equity plus reserves over total liabilities or total assets (EQUITY), the ratio of foreign banks increased from 7 per cent in 1993 to 20 per cent in 2000. While the ratios increased moderately for domestic banks, it still remains small. This suggests that foreign banks have greater incentives to lend prudently and remain well capitalized than the two other kinds of banks. This reflects the fact that foreign banks steadily reduced their deposit dependence ratio from 67 per cent of liability in 1993 to 47 per cent in 2000, while the two other types maintained their dependence ratio at about 85 per cent throughout the sample period.

Nevertheless, the IMF report (2001) indicates that the risk-weighted capital ratio has been comparable among all banks and has improved from 1996/97 to 1999/2000: from 10.4 per cent to 11.9 per cent for foreign banks, from 11.7 per cent to 12.4 per cent for old private domestic banks, and from 10 per cent to 10.7 per cent for public- sector banks, while that of new private domestic banks declined from 15.3 per cent to 13.4 per cent.

Second, by contrast, the assessment on asset quality based on (a) the ratio of contingent liabilities to assets, (b) asset growth, (c) the ratio of investment in securities to assets, (d) the ratio of provisions for NPA to assets (PROV), and (e) the ratio of medium- and long-term credit to assets reveal mixed results. The first indicator reports that the ratio of foreign

banks (at around 25-30 per cent) has been greater than that of domestic banks and public-sector banks. While this indicates that foreign banks are more exposed to high potential losses in cases of default, this outcome may simply show that foreign banks provide more complex and sophisticated services than the two other types of banks, given that their activities are concentrated on urban areas, wholesale markets and large clients.

The second indicator reports that foreign and private domestic banks faced rapid credit growth in 1993-1997, signalling some kind of risk-taking behaviour. However, this may be explained simply by their early stage of establishment. The third indicator shows that all three banks invested about 30-40 per cent of assets in securities in response to the SLR, indicating that all of them have a large cushion against NPAs. In particular, public-sector and private domestic banks increased their share of investment in government bonds in assets in 1993-2000 from 21 per cent to 23 per cent and from 21 per cent to 27 per cent, respectively. This may be due to their preference for more liquid, safe assets as the Basle Accord was applied.

The fourth indicator reports that foreign banks generally allocated greater provisions for NPAs. Given that more stringent accounting and auditing standards of their mother countries are applied to foreign banks, the foreign banks are more resilient to adverse shocks. IMF (2001) has reported that foreign and new private domestic banks maintained small NPA ratios (about 2-4 per cent) during the period 1995-2000 – below the level of public-sector and old domestic banks, with the former declining from 9.2 per cent in 1996/95 to 7.4 per cent in 1999/2000 and the latter remaining at around 7 per cent. The final indicator reports that foreign and private domestic banks increased medium- to long-term credit in 1993-2000 from 7.5 per cent to 17 per cent and from 10 per cent to 13 per cent, respectively, suggesting their increased confidence in India's financial market. Public-sector banks maintained the same level of exposure throughout the sample period.

Third, management performance is assessed based on two indicators: (a) the ratio of credit to deposits; and (b) the ratio of equity and reserves to debt (inverse of leverage). The first indicator reports that foreign banks attempt to improve their income by expanding their lending operations as compared with other domestic banks. The ratio of foreign banks surged from 56 per cent in 1993 to 94 per cent in 2000, while the two other types of banks maintained the ratio at about 40 per cent over the same period. Given that foreign banks' ratio of credit to assets is similar to other domestic banks (about 35 per cent of assets), however, this simply suggests that foreign banks lowered the deposit dependence ratio. Based on the second indicator, foreign banks are generally less leveraged than domestic and public-sector banks.

Fourth, all three types of banks maintain a similar liquidity position, accounting for about 15 per cent in terms of cash and balances with banks; and about 50 per cent in terms of the sum of cash, balances with banks, and investment. This reflects the CRR and SLR.

4. TESTING THE DIFFERENTIAL BEHAVIOUR BETWEEN PUBLIC-SECTOR, FOREIGN AND PRIVATE DOMESTIC BANKS

As a second step, a statistical test was conducted to see whether the average levels of the following indicators are the same for public-sector, foreign, and private domestic banks: ROAA, COST, INCOME1, INCOME2, PROV, and EQUITY. The results show that foreign banks have generally performed better than public-sector banks in terms of all indicators (table 2). A similar pattern is observed for private domestic banks against public-sector banks. However, such differences were more pronounced in the earlier period compared with later periods. This may suggest that public-sector banks have made greater efforts to improve their performance as reforms have progressed.

C. TESTING HYPOTHESES

This section assesses the extent of concentration in the banking sector and conducts empirical estimation to test seven hypotheses.

1. CONCENTRATION INDEX: TESTING THE FIRST HYPOTHESIS

This chapter tests this hypothesis by adopting two approaches: (a) the m-bank concentration ratio adopted by Sarkar and Bhaumik (1998) and (b) the Herfindahl Index adopted by Juan-Ramon and others (2001). The m-bank concentration measures (a) one-bank concentration ratio (market share of the largest bank or the State Bank of India, (b) five-bank ratio, and (c) 10-bank ratio. Deposits are used to estimate the m-bank concentration indicator. The Herfindahl Index is defined as 100 x □i=1i=Nki2 where ki=Ki/□i=1i=NKi and N=number of banks during the period under consideration. This indicator can be calculated for the whole banking sector as well as for public- sector, foreign, and private domestic banks, respectively. The higher the indicator, the greater the concentration of the banking sector. The lower limit of this indicator is obtained as 100 divided by N and the upper limit is 100.

The m-bank concentration indicator reveals that the degree of concentration in the banking sector has barely changed during the period 1993-1999 (table 3). Since most of these large banks are public-sector banks, this indicates that public-sector banks continue to be dominant and enjoy scale advantages over new banks. On the other hand, the Herfindahl Index shows that the degree of concentration has declined consistently in the whole banking sector,

more or less in line with the first hypothesis. In addition, the

Table 2. Testing the differential behaviour between public-sector and foreign and private banks

	Foreign banks vs. public-sector banks	Private banks vs. public-sector banks		Foreign banks vs. public-sector banks	Private banks vs. public-sector banks
1993			**1997**		
ROA	4.213***	0.951	ROA	3.875***	3.537***
COST	-6.435***	-1.865*	COST	0.037	-2.745***
$INCOME_1$	3.704***	0.301	$INCOME_1$	1.414*	0.245
$INCOME_2$	5.128***	1.274	$INCOME_2$	-0.066	0.455
PROV	2.487**	-1.945**	PROV	-0.288	-1.812*
EQUITY	9.688***	1.469*	EQUITY	-0.008	0.263
1994			**1998**		
ROA	4.390***	2.637***	ROA	0.295	1.270
COST	-9.475***	-2.169*	COST	-5.456***	-2.266**
$INCOME_1$	1.565*	-0.821	$INCOME_1$	4.854***	1.089
$INCOME_2$	3.957*	0.976	$INCOME_2$	2.116*	2.861***
PROV	0.674	-3.785***	PROV	1.559	-0.184
EQUITY	4.435***	2.599***	EQUITY	0.541	1.436*
1995			**1999**		
ROA	6.684***	2.852***	ROA	0.057	1.355
COST	-0.530	-2.008**	COST	-0.835	-0.853
$INCOME_1$	1.255	-1.694**	$INCOME_1$	3.087***	0.967
$INCOME_2$	4.392***	-0.395	$INCOME_2$	2.615**	0.047
PROV	3.899***	0.037	PROV	1.608*	-2.008**
EQUITY	0.639	-0.231	EQUITY	0.687	0.025
1996			**2000**		
ROA	3.704***	2.870***	ROA	-1.299	2.361**
COST	0.971	-2.950***	COST	-4.127***	-2.797***
$INCOME_1$	1.297	0.188	$INCOME_1$	3.020***	0.351
$INCOME_2$	-1.161	-1.637*	$INCOME_2$	0.630	0.557
PROV	-2.024**	-2.026**	PROV	3.159***	0.065
EQUITY	-0.225	-0.461	EQUITY	0.273	0.234

Source: PROWESS Database, Centre for Monitoring Indian Economy Pvt. Ltd.

Note: The values reported are t-test values and *, **, *** indicate significance at 10 per cent, 5 per cent and 1 per cent significance level respectively.

concentration has declined even within foreign banks, private domestic banks, and public-sector banks. Since the lower limit (100/N) has also declined, this suggests that a number of new banks have entered the market and exerted some competition at the lower end.

2. EMPIRICAL ESTIMATION

There are two studies that assess the impact of India's reform programme. Based on data from 1993/94 and 1994/95, Sarkar, Sarkar and Bhaumik (1998) have shown that foreign banks are more profitable than public-sector banks, based on two indicators (profits divided by average assets and operating profits divided by average assets). The profitability of private domestic banks is similar to that of foreign banks, but private domestic banks spend more resources on provisions for NPAs. Second, foreign banks are more efficient than private domestic and public-sector banks, based on two measures (net interest rate margins and operating cost divided by average assets).

Table 3

Table 3. Concentration indicators, 1993-2000

	1993	1994	1995	1996	1997	1998	1999	2000
M-Bank Concentration Ratio								
1 bank concentration ratio	24.7	24.3	22.0	22.2	21.9	21.7	23.7	24.2
5 banks concentration ratio	50.2	48.5	47.3	47.4	46.9	46.7	47.7	48.1
10 banks concentration ratio	65.4	63.3	63.6	65.5	64.4	63.4	64.2	65.0
Herfindahl Index								
All banks	11.2	9.9	7.9	7.2	6.6	6.5	7.1	7.0
Foreign banks	14.1	12.6	11.5	11.9	10.8	10.9	11.7	12.2
Private banks	11.3	10.8	7.8	5.8	4.8	4.6	4.8	5.2
Public-sector banks	15.1	13.4	10.7	9.8	9.4	9.4	10.1	10.1

Source: PROWESS Database, Centre for Monitoring Indian Economy Pvt. Ltd.

Note: All indicators are estimated from PROWESS database with the available data.

Based on data from the period 1980-1997/98, Sarkar and Bhaumik (1998) have concluded that foreign banks, despite the superior quality of services they offer, have not been a competitive threat in Delhi, West Bengal and Maharashtra, where their presence is greatest. This shows that competition has emerged only at the fringe, since the entry of new banks has been at the lower end. Domestic private banks have gained some market share in these regions, but the impact on public-sector banks was small and gained at the expense of foreign banks. In Uttar Pradesh, Madhya Pradesh, Bihar, Orissa, Gujarat and Punjab, public-sector banks have been predominant before and since the reforms, thus no apparent impact from new entries was observed. In Tamilnadu, Kerala, Andhra Pradesh, Karnataka, Jammu and Kashmir and Rajasthan, private domestic banks have been more concentrated than in other regions and have experienced an increase in market share at the expense of public-sector banks. But the presence of foreign banks was small.

The progress of India's financial reforms has been investigated via two steps. In the first step, the overall impact of the financial reform on public-sector banks has been assessed by using pooled data. The performance measures adopted are ROAA, COST and INCOME1. Some of these indicators were employed from Claessens, and others [2000]; Demirgüç-Kunt and Huizinga [1997]; Sarkar Sarkar and Bhaumik [1998]; and Sarkar and Bhaumik [1998].

The time dummy (TIME) has been introduced to capture time differences in the sample. Five control variables account for banks' specific features and behaviour: (a) diversification (proxied by the sum of profits from securities and foreign exchange transactions and brokerage and commissions/assets [DIVERSE]), (b) investment in government securities/assets (GBOND), (c) lending to priority sectors (proxied by lending to priority sectors/assets

[PRIORITY]), (d) lending to the public sector (proxied by lending to the public sector/assets [PUBLIC]), and (e) size of the bank (proxied by the log of each bank's asset size [SIZE]). This analysis uses data from the Prowess database for 1993-2000 compiled by the Centre for Monitoring Indian Economy Pvt. Ltd., which includes most of the major banks in India.

The results from this estimation are reported in table 4. A significant coefficient of the time dummy variable would indicate that the particular year was different, which could be due to numerous factors, including regulatory changes, if any, that happened during that year. First, the time effect on ROAA (and COST) given in columns 1 and 2 was negative (positive) and statistically significant initially. Since many of the regulatory changes took place during the earlier period of reforms, the significance of the time effect could reflect the initial negative impact of the reform, which has disappeared in the later period. Based on these outcomes, the financial reforms appear to have had a non-negligible impact on the overall performance of public-sector banks. While the reforms lowered their profitability and cost efficiency at the initial stage, this negative effect disappeared later on as they adjusted to a new environment, supporting the second hypothesis.

Table 4. Regression results of public-sector banks

Explanatory variables	*Dependent variables*		
	ROAA	*COST*	*INCOME1*
Constant	−4.67 (−1.47)	119.91*** (10.15)	9.15** (2.43)
Time93	−1.87*** (−2.75)	9.65*** (4.16)	0.62 (0.84)
Time94	−2.67*** (−4.87)	5.55*** (2.68)	0.82 (1.24)
Time95	−0.38 (−0.72)	1.83 (0.91)	0.33 (0.51)
Time96	−0.85 (−1.63)	2.69 (1.37)	0.19 (0.31)
Time97	0.13 (0.27)	−0.05 (−0.02)	0.7 (1.16)
Time98	0.24 (0.51)	−0.14 (−0.07)	0.36 (0.61)
Time99	−0.04 (−0.09)	0.23 (0.13)	0.38 (0.66)
DIVERSE	1.24*** (3.12)	−10.92*** (−7.33)	2.27*** (4.77)
GBOND	−0.08*** (−3.18)	0.66*** (6.59)	0.004 (0.12)
PRIORITY	0.07** (2.48)	−0.49*** (−4.34)	−0.008 (−0.24)
PUBLIC	0.03 (1.08)	−0.15 (−1.45)	−0.03 (−0.91)
SIZE	0.32 (1.55)	−2.18*** (−2.84)	−0.09 (−0.38)
R^2	0.36	0.53	0.14

Note: *** indicates significant at 1 per cent significance level.
** indicates significant at 5 per cent significance level.
* indicates significant at 10 per cent significance level.

Second, DIVERSE has exerted a statistically positive (negative) contribution to ROAA and INCOME1 (COST), indicating that the diversification effect on the performance of public-sector banks is favourable and thus the third hypothesis is supported. The statistically significant and negative (positive) impact of GBOND on ROAA (COST) is present. This suggests that investment in government bonds limits banks in the diversification of their asset portfolios and thus the fourth hypothesis is supported. On the other hand, PRIORITY has made a statistically significant and positive (negative) impact on ROAA (COST), contrary to the fifth hypothesis. This implies that while lending to priority sectors is generally regarded as the cause of NPAs, some lending activities have generated high income and have allowed banks to improve cost efficiency.

As a next step, the analysis examines the overall impact of the whole banking sector by using pooled data of all commercial banks for 1993-2000. In addition to the approach adopted above, ownership dummy variables ([FOREIGN] and [PRIVATE]) have been used to capture differences in ownership. FOREIGN (PRIVATE) equals 1 if the bank is foreign (domestic)-owned and equals 0 otherwise. Moreover, the age dummy (AGE) has been used to capture the differences between new and old banks. AGE is equal to 0 if the bank existed before 1991 and equals 1 otherwise.

The estimation results reported in table 5 are summarized as follows. First, if the entry of foreign and private domestic banks brings in more skilled banks, the profitability and efficiency of the banking sector is expected to be higher. The results reported in columns 1-3 indicate that the coefficients of FOREIGN and PRIVATE in the ROAA equation were statistically significant and positive, although their coefficients were not significant in the COST equation. Further, coefficients of FOREIGN are positive and statistically significant in the INCOME1 equation. These results suggest particularly that foreign banks perform better than domestic banks, and that ownership matters, thus supporting the sixth hypothesis.

Second, the coefficient of TIME is negative (but statistically insignificant) initially in the ROAA equation of the whole banking sector, but is positive and statistically significant in 1995 and 1997. The TIME coefficient was also positive and statistically significant in the INCOME1 equation.

Third, DIVERSE has improved profitability and the cost and earnings efficiency of the whole banking sector, in line with the third hypothesis. The coefficient of DIVERSE shows that the diversification impact on ROAA and INCOME1(and COST) was positive (negative) and statistically significant.

Table 5

Table 5. Regression results of the whole banking sector

Explanatory variables	*Dependent variables*		
	ROAA	*COST*	*INCOME1*
Constant	0.49 (0.46)	273.52** (2.28)	6.49*** (3.49)
FOREIGN	0.79** (2.05)	−60.36 (−1.36)	2.65*** (3.87)
DOMESTIC	0.96*** (3.02)	−60.48 (−1.63)	0.58 (1.01)
Time93	−0.62 (−1.24)	3.22 (0.07)	1.69** (2.29)
Time94	−0.14 (−0.36)	−17.46 (−0.39)	0.64 (0.92)
Time95	0.72** (2.01)	4.18 (0.098)	0.14 (0.22)
Time96	0.25 (0.74)	100.99** (2.47)	1.27** (2.01)
Time97	0.67** (2.07)	13.87 (0.36)	1.44** (2.39)
Time98	0.30 (0.97)	15.70 (0.41)	0.82 (1.37)
Time99	0.12 (0.37)	8.32 (0.22)	0.62 (1.05)
DIVERSE	0.36*** (4.98)	−17.38** (−2.09)	0.79*** (6.20)
GBOND	−0.08*** (−5.46)	7.71*** (4.89)	0.08*** (3.29)
PRIORITY	−0.003 (−0.31)	−1.61* (−1.83)	−0.003 (−0.21)
PUBLIC	0.014 (0.99)	0.199 (0.12)	−0.04* (−1.74)
AGE	−0.23 (−0.93)	16.91 (0.59)	−0.77* (−1.73)
SIZE	0.08 (0.92)	−34.83*** (−3.56)	0.11 (0.71)
R^2	0.15	0.07	0.17

Note: *** indicates significant at 1 per cent significance level.
** indicates significant at 5 per cent significance level.
* indicates significant at 10 per cent significance level.

Fourth, GBOND helps banks to increase holdings of safe, liquid assets, and thus improve their liquidity position. At the same time, however, it reduces the opportunity to allocate limited financial resources toward more needed sectors and hence profit-ability and cost and earnings efficiency. The results indicate that the coefficients of GBOND on ROAA (and COST) were negative (positive) and statistically significant, supporting the fourth hypothesis. Contrary to our expectations, however, the impact of GBOND on INCOME1 was positive and statistically significant.

Fifth, lending to priority sectors and the public sector would be expected to lower the profitability and earnings efficiency of the whole banking sector, reflecting that this type of lending is characterized by direct lending. Despite the share of credit extended to priority sectors accounting for more than 20 per cent of their total credit, the coefficients of PRIORITY and PUBLIC with respect to ROAA turn out to be insignificant, contrary to the fifth hypothesis. Moreover, the coefficient of PRIORITY on COST was negative and statistically significant, implying that some types of those credits have enhanced cost efficiency. However, the coefficient of PUBLIC on INCOME1 was negative and statistically significant, suggesting that such lending lowers banks' income earnings capacity.

Sixth, the coefficient of AGE with respect to ROAA and INCOME1 was negative but statistically insignificant.

D. CONCLUSIONS

Since the financial reforms of 1991, there have been significant favourable changes in India's highly regulated banking sector. This chapter has assessed the impact of the reforms by examining seven hypotheses. It concludes that the financial reforms have had a moderately positive impact on reducing the concentration of the banking sector (at the lower end) and improving performance.

The empirical estimation showed that regulation (captured by the time variable) lowered the profitability and cost efficiency of public-sector banks at the initial stage of the reforms, but such a negative impact disappeared once they adjusted to the new environment. In line with these results, tables 1 and 2 show that profitability turned positive in 1997-2000, cost efficiency steadily improved over the reform period, and the gap in performance compared with foreign banks has diminished.

Moreover, allowing banks to engage in non-traditional activities has contributed to improved profitability and cost and earnings efficiency of the whole banking sector, including public-sector banks. By contrast, investment in government securities has lowered the profitability and cost efficiency of the whole banking sector, including public-sector banks. Lending to priority sectors and the public-sector has not had a negative effect on profitability and cost efficiency, contrary to our expectations.

Further, foreign banks (and private domestic banks in some cases) have generally performed better than other banks in terms of profitability and income efficiency. This suggests that ownership matters and foreign entry has a positive impact on banking sector restructuring.

The above results suggest that the current policy of restructuring the banking sector through encouraging the entry of new banks has so far produced some positive results. However, the fact that competition has occurred only at the lower end suggests that bank regulators should conduct a more thorough restructuring of public-sector banks. Given that public-sector banks have scale advantages, the current approach of improving their performance without rationalizing them may not produce further benefits for India's banking sector. As 10 years have passed since the reforms were initiated and public-sector banks have been exposed to the new regulatory environment, it may be time for the government to take a further step by promoting mergers and acquisitions and closing unviable banks. A further reduction of SLR and more encouragement for non-traditional activities (under the bank subsidiary form) may also make the banking sector more resilient to various adverse shocks.

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