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Determinants of banking outreach: An empirical assessment of Indian states

Ghosh, Saibal

Reserve Bank of India

2011

Online at <https://mpra.ub.uni-muenchen.de/38650/>

MPRA Paper No. 38650, posted 07 May 2012 22:19 UTC

Banking Outreach across Indian States: An Assessment

Saibal Ghosh¹

Reserve Bank of India, Mumbai

ABSTRACT

The paper explores the factors influencing banking outreach. Using time series data on Indian states for 1973-2004, the analysis indicates a divergence across states in terms of the outreach of formal finance over time, *ceteris paribus*. The findings also uncover an important role of literacy and physical infrastructure. As well, the findings also point to the fact that the spread and use of banking services can be adversely affected by unfavorable labor regulations. Robustness tests reinforce these findings.

JEL classification: D31, G21, O12

Key words: banking outreach; sub-national; India

Corresponding Author's Email Address: saibalghosh@ rbi.org.in

INTRODUCTION

Financial outreach is widely regarded as a critical factor in making financial products and services available to a wider segment of the population. This assumes all the more relevance in emerging economies where such facilities typically tend to exclude vast segments of the population, especially the underprivileged sections of the society. Cross-country evidence suggests that in several African economies, there is less than one bank branch per one lac people; in developed economies, these numbers are quite high. By way of example, UK has 18.4 branches per 100000 people, while it is even higher for Germany, Italy and the US (Beck *et al.*, 2007). In contrast, Zambia has just 0.2 bank branches per 1000 square kilometers compared to over 600 per square kilometers in Singapore.

The literature on financial sector development has primarily focused on measuring, assessing the determinants and evaluating the economic impact of financial sector depth. Presumably owing to paucity of adequate information, very little is known about the penetration, usage and availability of banking services across countries and most importantly, their determinants.

¹ Department of Economic Analysis and Policy, Reserve Bank of India, Fort, Mumbai. I would like to thank, without implicating, an anonymous referee for the suggestions and inputs on the earlier draft, which improved the exposition. The views expressed and the approach pursued in the paper are solely the author's own.

The paper employs India as a case study and examines the factors affecting banking outreach at the sub-national level. Taking on board the recent developments in the literature (Beck *et al.*, 2007), it utilizes a consistent set of indicators of banking outreach and explores their empirical association with a set of state-level variables, such as those relating to its economic structure, educational attainment, infrastructure availability and institutional quality.

The analysis highlights an important role for state-level variables in explaining banking outreach. While the importance of literacy in explaining banking outreach is quite pervasive, it appears from the analysis that institutional quality is an important factor affecting the penetration and availability of banking services, although its role in impacting the use of banking services is limited. As well, the analysis indicates significant differences in the extent of banking outreach for coastal *versus* land-locked states.

The paper makes several contributions. First, the paper augments the evolving literature on banking outreach. Second, the paper belongs to the literature that explores the sub-national effects of greater banking outreach. Finally, the study belongs to a wider literature which examines the role of economic policies in influencing banking outreach.

The sub-national governments within India offer an ideal laboratory to examine the different facets of banking outreach. First, like the US and several other emerging economies, India is a federal polity comprising of states with their own democratically-elected governments and consequently, a measure of policy autonomy. Over time, the states have acquired distinct characteristics, driven by a multitude of factors, including their geographical location, policies pursued, the quality of infrastructure availability and institutional characteristics. In this process, the feasibility of the strategies pursued to increase banking outreach can provide practitioners with useful leads to re-design and fine-tune their strategies. Second, comparison of institutional and financial characteristics across countries is often rendered difficult owing to divergences in their historical experiences, institutional environment and the legal setup. Sub-national data, in contrast, does not suffer from such deficiencies, limiting the possibility of unobserved heterogeneity at the cross-section level. Third, India is one of the few important emerging economies with a comprehensive and reliable state-level database. The cross-sectional and time varying nature of the data makes it amenable to rigorous statistical analysis. The findings could be representative of such association among the relevant variables in other emerging markets as well.

BANKING OUTREACH: THEORIES

There is by now a significant volume of literature that suggests that finance matters for growth. Cross-country studies (Levine and Zervos, 1998) as also evidence at the industry (Rajan and Zingales, 1998; Aghion *et al.*, 2008) and firm (Demirgüç-Kunt and Maksimovic, 1998) levels offer persuasive evidence that various measures of financial development are positively and significantly related to economic growth (See Levine, 2003 for an overview). Besides, finance helps in improving income distribution and poverty reduction. Beck *et al.* (2004) uncover evidence to suggest that financial development causes less income inequality. Clarke *et al.* (2006) also finds that the level

of inequality declines as finance develops. Honohan (2004) shows that financial depth explains the level of poverty.

Evidence appears to suggest that the use of financial services is positively correlated with economic development. In particular, the proportion of households with an account in a financial institution is higher in developed countries (Peachey and Roe, 2006; Honohan, 2006; Beck *et al.*, 2007). In addition, Beck *et al.* (2006b) reports that barriers to banking are negatively correlated with economic development. This would suggest that higher levels of per capita income would be associated with higher banking outreach. Besides, if greater use of formal financial channels can be interpreted as greater banking outreach, this would suggest that the initial value of banking outreach would be a major determinant of the current extent of banking outreach. This gives rise to our first hypothesis:

H1: Higher per capita income levels are associated with higher banking outreach

Second, the structure of the economy can have a significant bearing on banking outreach. Evidence appears to suggest a broad correlation between levels of banking outreach and levels of affluence (measured by GDP per capita), which is consistent with previous research (Kempson, 2006). Where affluence is high, banking outreach tends to be high. Taking this consideration on board, we consider the share of agriculture in the economy. It can be argued that higher shares of agriculture in total output is a proxy for poverty and high poverty would entail lower per capita incomes and consequently, lower banking outreach. This leads us to our second hypothesis:

H2: Higher share of agriculture would be associated with lower banking outreach

An important demand-side factor behind financial exclusion is the low levels of literacy in general, and financial literacy in particular. With growing sophistication of financial products and services, it is becoming increasingly difficult to navigate the financial marketplace and compare products for their risk and rewards. As a result, individuals are increasingly having to assume greater responsibilities in managing their finances. Under these circumstances, financial education can play a critical role by equipping consumers with the knowledge required to choose from a myriad of financial products and providers. In addition, financial education can help provide individuals with the knowledge necessary to create household budgets, initiate savings plans, manage debt and make strategic investment decisions for their retirement or for their children's education. Financially literate customers increase the demand for, and responsible usage of, financial services. Being educated financially therefore enables individuals to better appreciate the possible contingencies and save for a rainy day, in an appropriate manner. Therefore, having basic financial planning skills can help families to meet their near-term obligations and maximize their longer-term financial well-being. This leads to our third hypothesis:

H3: Higher levels of literacy are associated with increases in banking outreach

Lack of formal employment can engender additional barriers to inclusion in the formal sector. This will all the more be the case if there is lack of flexibility with which labor laws are administered (Besley and Burgess, 2004). Retrenchment of labor and closure of industrial units require the consent of state governments, permission on which might often be difficult to obtain. This could lead to sporadic incomes and make it difficult for individuals to accumulate savings. They tend to earn and spend their wages in cash, so their transactions circumvent banks. As a result, they do not develop a verifiable transactions history, limiting access to formal finance. This gives rise to hypothesis four:

H4: Higher mandays lost could lower banking outreach

An obvious supply side factor hindering banking outreach is the absence of formal financial institutions in close proximity. For low-income households, the costs of visiting a branch could be prohibitive. Such costs include not only transportation costs, but also the loss of daily wages. Therefore, many low-income people in remote areas where such facilities are not available within a reasonable distance tend to rely more on informal markets. This would suggest the following hypothesis:

H5: Lack of adequate infrastructure could act as a hindrance in banking outreach

Finally, the quality of institutions can help stimulate growth by making the policy environment more business friendly through deregulation, decontrol and procedural simplification. Recent economic research highlights the role of institutions in promoting and sustaining long-run growth (Acemoglu *et al.*, 2001; Rodrik *et al.*, 2004). To the extent that higher growth translates into better per capita incomes, this would imply that the impact of improved institutional quality on banking outreach would be positive. This leads to the final hypothesis:

H6: Improvements in institutional quality engender higher banking outreach

BANKING OUTREACH: OVERVIEW AND INDIAN EXPERIENCE

This paper is related to an emerging literature on access to financial services. Extant research analyzes access to financial services at the bank (Beck *et al.*, 2006a) and firm (Beck *et al.*, 2006b) levels. More recently, Beck *et al.* (2007) presents cross-country data on banking sector outreach (such as branch and ATM penetration, deposits per capita, and loans per capita) and show that these indicators closely track more difficult and costly to collect micro-level statistics of household and firm use of banking services.

A detailed study by the European Commission (2008) classifies the 25 EU economies in terms of their level of financial exclusion and finds four transition economies (Hungary, Poland, Lithuania and Latvia) experiencing maximum financial exclusion. The number of factors that increased the odds of being financially excluded increased with the level of financial exclusion experienced in a country. Salient among

these included age, employment status and household income of the respondents. Evidence for the UK indicates that the percentage of financially excluded (without access to any kind of bank account) in 2002-03 was roughly 8%, as compared to around 3-4% for Australia and Canada.

In the Indian case, the foundation for broad-basing the institutional credit structure and promoting greater financial access can be traced to the findings of the all-India Rural Credit Survey (RBI, 1954). The findings of the Survey indicated that, out of the total borrowings of farmers in 1951-52 estimated at Rs. 7.5 billion, commercial banks provided less than 1%, while moneylenders provided 70%. The distribution of bank branches was also highly skewed, with nearly 38% of the bank branches being located in urban and metropolitan/port town locales in 1969. Even in terms of distribution of bank credit, the share of private corporate business exhibited an overwhelming increase, from 44% during 1957-61 to over 60% for the quinquennium ending 1969.

TABLE 1: COMMERCIAL BANKING PROGRESS IN INDIA

Indicators	June 1969	December 1980	March 1991	March 1998	March 2004
Number of commercial banks	73	154	272	300	290
Of which: Regional Rural Banks (RRBs)		107	196	196	196
Number of bank offices	8262	34594	60570	66408	69170
of which : Rural/semi-urban branches	5175	23227	46115	47130	47766
Annual growth rate (%) of rural / semi-urban branches	--	31.7	8.9	0.31	0.22
Population per bank office ('000s)	64	16	14	15	16
Deposits of commercial banks (Rs. billion)	46.5	404.4	2011.9	6054	15044
Per capita deposit (Rs.)	88	738	2368	6270	14089
Credit of commercial banks (Rs. billion)	35.9	250.8	1218.7	3241	8408
Per capita credit (Rs.)	68	457	1434	3356	8273
Deposits/national income (%)	15.5	36	48.1	46.4	60
Total Assets (Rs. billion)	68.4	710.8	3275.2	5215.4	11516.2

Figures in brackets are branches of Regional Rural Banks

Source: Statistical Tables relating to Banks in India, RBI (various years)

These egalitarian features in the pattern of credit extension coupled with several other disquieting features culminated in the process of bank nationalization (See, for instance, Nachane *et al.*, 2007). The first phase of nationalization, beginning July 1969, led to the advent of 'social banking' where the State took control of the banking sector and made it a tool for promoting social objectives. A critical ingredient of this strategy entailed the imposition of the 1:4 license rule in 1977, wherein banks could open a branch in a location with one or more branches only if it had opened four in a location with no branches ('unbanked location'). Thus, over the period 1969-91, over 50,000 new bank branches were built, predominantly in rural locales (Table 1). The outstanding deposits of these branches at Rs. 678 billion (US\$ 15 billion) in March 1991 constituted 35% of their total deposits, while loans outstanding at Rs. 438 billion (US\$ 10 billion) comprised two-

fifths of outstanding credit. As Burgess and Pande (2005) demonstrate, by improving access to cheap formal credit for the rural poor, this redistributive nature of branch expansion strategy made a significant dent on rural poverty.

The second phase of public policy towards promoting greater banking outreach can be traced to the inception of financial sector reforms in 1991. Salient features of this period included higher allocation of credit to private sector, lower pre-emptions by the government sector, moving away from administered to market-determined interest rates both for commercial and government borrowings, increased competitiveness with entry of *de novo* private banks and liberal entry of foreign banks. The 'market discipline' wrought in through broad-basing the equity base of state-owned banks made them consciously focus on their bottomlines, contain delinquent loans, introduce better risk management practices and extend banking outreach through better adoption of information technology (Chairlone and Ghosh, 2009). Although priority sector lending norms exist, the norms have progressively been expanded to encompass increasing number of sectors and activities. In a sense, the period has demonstrated that policies for inclusive banking have to exist concurrently with encouraging strong and efficient financial institutions.

Several important features of the strategy towards promoting inclusive banking during this period deserve mention. The first was the initiation of the Self Help Group (SHG)-Bank linkage program in 1992. The initial progress of the program was lackluster with only 32,995 groups being credit-linked during 1992-99. Since then, the pace of the program accelerated with the cumulative number of SHGs financed increasing from 0.1 million to 1.1 million during the four-year period ending March 31, 2004 and cumulative bank lending amounted to Rs. 39 billion (US\$ 0.9 billion).

Second, a system of *Kisan Credit Cards* (*Kisan*, meaning farmer) was initiated in 1999 to provide adequate and timely financial support in a flexible and cost-effective manner from the banking system to farmers for cultivation needs and purchase of inputs. Till 2004, a total of 9.3 million such cards have been issued with amount outstanding of nearly Rs. 380 billion.

On a broader plane, the Indian central bank has adopted a two-pronged strategy to generate greater awareness and expand the reach of banking services – which can be termed as empowerment and protection. As regards the former, banking outreach is the first stage of the process. This has been buttressed by inculcating awareness among the masses about financial products through financial education. Concurrently, an advisory mechanism in the form of credit counseling has been encouraged to help distressed borrowers and bring them within the fold of formal finance. As regards protection, a Banking Codes and Standards Board of India (BCSBI) have been established recently to ensure a comprehensive code of conduct for minimum standards of banking services to be offered by banks. In addition, a Banking Ombudsman Scheme has been instituted to redress deficiencies in customer service by banks.

BANKING OUTREACH IN INDIAN STATES: STYLIZED FACTS

We begin the analysis by providing an overview of banking outreach across states.¹ Following from Beck *et al.* (2007), we utilize the following indicators of banking sector outreach at the state-level:

- (a) geographic outreach: number of bank branches per 1000 sq. km
- (b) Loan accounts per capita: number of loan accounts per 1000 people
- (c) Loan-income ratio: average size of loans to per capita net state domestic product (NSDP)

In particular, we focus exclusively on banking outreach for two major reasons. First, in a majority of countries including India, it is the banking sector that intermediates most of the funds in the economy: bank asset to GDP stood at over 80% in 2004. Second, consistent statistical information is available primarily for this sector as compared to other non-bank service providers.

The indicators listed above take on board the three major dimensions of banking outreach: penetration, availability and usage.

We also examine the extent of banking outreach across states. For expositional simplicity, we classify the states on a three-fold criteria: income, region and geography. In our subsequent analysis, we employ dummies to examine differences in banking outreach across these classifications. Specifically, high-income states are as defined by World Bank (2005) and corroborate the earlier classification by Sachs *et al.* (2002a) and Ahluwalia (2002). Likewise, states have also been classified according to regions, following RBI (2007) and finally, as coastal or hinterland (Government of India, 2008a).²

The evidence indicates significant differences in both geographic and demographic inclusion across high- and low-income states; similar evidence is manifest in case of deposit and loan accounts as well. There is also evidence to suggest limited use of deposit services in the low-income states (Beck *et al.*, 2007). By way of example, the mean deposit/income ratio in the low-income states is 3.78 as compared to 2.54 in the high-income states. The difference is statistically significant at the 0.05 level.

In terms of regional divergence, the differences in demographic inclusion and deposit accounts per capita are substantial. Illustratively, the number of bank office per 100000 people is the highest at 7.67 in the Southern region as compared with 4.73 in the Eastern region. This difference is statistically significant at the 0.01 level. The differences in loan accounts per capita are significantly higher in the Southern as compared to other regions; both deposit-income ratio and loan-income ratio exhibits limited divergence across regions. The evidence is consistent with recent findings which reports significant regional variation in the provision of financial services (Basu, 2006; Government of India, 2008b). Finally, across most indicators, coastal states exhibit higher levels of banking outreach; only in case of loan accounts per capita, the difference is observed to be statistically significant. These raw correlations however, do not control for state characteristics or the business cycle.

TABLE 2: BANKING OUTREACH ACROSS STATES

Variables	Bank office/ 1000 sq. km	Loan/ Income	Deposit account/ 1000 people	N.Obs
Panel A: Income				
High income	28.77 (19.56)	16.45 (22.21)	61.75 (36.10)	72
Low income	14.70 (9.81)	16.85(25.10)	37.97 (27.33)	40
t-test for difference	5.06***	-0.08	3.92***	
Panel B: Region				
Northern	23.75 (15.63)	17.79(21.39)	41.83 (22.12)	24
Southern	32.69 (23.94)	18.03(16.56)	84.63 (32.51)	32
Western	23.29 (5.25)	24.90(24.77)	36.39 (16.22)	16
Eastern	13.30 (15.71)	20.78(33.78)	45.37 (35.16)	24
Central	16.95 (9.87)	17.42(23.58)	36.33 (31.14)	16
t-test for difference				
Northern v. Southern	1.69 *	-2.17 **	-5.85***	
Northern v. Western	3.04 ***	-0.93	0.89	
Northern v. Eastern	0.09	-0.36	-0.41	
Northern v. Central	1.69 *	0.05	0.61	
Southern v. Western	4.38 ***	-2.69 ***	6.86***	
Southern v. Eastern	1.77 *	-1.83 *	4.27***	
Southern v. Central	3.21 ***	-1.57	4.99***	
Western v. Eastern	-2.89 ***	0.44	-1.09	
Western v. Central	-1.31	0.87	0.07	
Eastern v. Central	1.57	0.37	0.85	
Panel C: Location				
Coastal	25.63 (20.71)	14.83(20.93)	64.64 (37.24)	64
Land-locked	21.23 (13.41)	18.94(25.89)	38.08 (25.05)	48
t-test for difference	1.36	-0.89	4.51***	
Panel D: Reforms				
Pre reforms	19.41 (15.64)	24.42(26.39)	43.57 (33.14)	70
Post reforms	30.97 (19.51)	13.54(11.57)	69.40 (32.45)	42
t-test for difference	-3.26***	6.59***	-4.05***	

Standard deviation within parentheses

*** significance at 1%; ** significance at 5%; * significance at 10%

The differences in banking outreach for the pre- and post-reform period is also striking. The evidence indicates a significant improvement in both geographic and demographic inclusion; as well, the values of both deposit-income and loan-income ratio have declined, signifying greater outreach of banking services.

Although the present analysis represents perhaps the first systematic attempt to analyze banking outreach at the state-level, it is not without its limitations, either. First, the focus is primarily on banking exclusion; other dimensions of financial exclusion, such as price exclusion, marketing exclusion and self-exclusion have not been addressed. As Claessens (2006) observes, for communities with limited access to financial products, this process becomes self-reinforcing and is often an important factor in social exclusion. Additionally, the measures of financial exclusion considered are not devoid of certain shortcomings, either. By way of illustration, an individual or firm may receive more than one loan or have multiple deposit accounts, so that the number of loans and deposits accounts is far from being a perfect proxy of the number of people using these services within a state. Likewise, the average size of loans and deposits to per capita NSDP might not be representative of the value of services that a typical individual might receive.

DATA AND VARIABLES

For the analysis, we use state-level data for the period 1973-2004. We selected this time period for several reasons. First, it seems sufficiently long to allow long-run influences to play out. Second, the period coincides with the availability of consistent data on the concerned variables at the state level to clearly discern the impact of banking outreach on state level growth.

The dependent variables are the banking outreach indicators as discussed earlier. We sequentially introduce these indicators and ascertain the impact of various state-level factors on the banking outreach indicators. The initial value of the variable is included to examine convergence: if states with higher initial values of the variable exhibit higher outreach, this would entail a positive sign on the coefficient.

Following from our earlier discussion, we introduce a set of economic variables to ascertain their impact on banking outreach. Most of these variables have been employed by previous researchers in their analysis of Indian states (Ahluwalia, 2002; Purfield, 2006; Besley and Burgess, 2004; Kochhar *et al.*, 2006; Gupta *et al.*, 2009). First, we include the level of per capita income to test whether high-income states display higher banking outreach (Hypothesis 1). Second, we capture the state economic structure by including the ratio of agriculture in NSDP (Hypothesis 2). Third, we capture the quality of human capital by including the literacy rate (Hypothesis 3). Fourth, the industrial relations climate in a state is captured by including the ratio of mandays lost per worker (Hypothesis 4). Fifth, we include the logarithm of roads per 1000 square kilometers as a proxy for the availability of physical infrastructure (Hypothesis 5). Finally, as a measure of the institutional quality, we consider the transmission and distribution (T&D) losses of state electricity boards, or SEBs (Hypothesis 6).

EMPIRICAL STRATEGY AND RESULTS

Regression specification

The univariate tests conducted earlier do not control for factors that might systematically impact state-level banking outreach. First, state-level controls are not accounted for. The pace of economic activity could also be an important consideration. Taking these aspects into account, we estimate the effect of various factors on state-level banking outreach. The regression specification for state s at time t assumes the following form:

$$\begin{aligned} Outreach_{s,t} = & \alpha_1 Outreach_{s,t-1} + \alpha_2 PCNSDP_{s,t} + \alpha_3 Agr_{s,t} + \alpha_4 Lit_{s,t} + \alpha_5 MDL_{s,t} + \\ & \alpha_6 Roads_{s,t} + \alpha_7 T \& D_{s,t} + \alpha_8 GDP_t + v_{s,t} \end{aligned} \quad (1)$$

In (1), the dependent variable (*Outreach*) is assumed to be a function of lagged outreach and a vector of state state-level controls, including measures of its economic structure (NSDP per capita, *PCNSDP* and share of agriculture, *Agr*), educational attainment (literacy rate, *Lit*), physical infrastructure (roads per 1000 sq. kms, *Roads*), institutional quality (transmission and distribution losses, *T&D*) and industrial climate (mandays lost, *MDL*). We control for the business cycle by including real GDP growth and finally, v denotes the error term.

Given the possible endogeneity of several of the explanatory variables, the econometric analysis utilizes a generalized method of moment (GMM) dynamic panel estimate to assess the relationship between state-level variables and measures of banking outreach. The GMM estimator has the advantage that it allows past realizations of the dependent variable to affect its current level, using lagged levels of the dependent and predetermined variables. Dummies for real GDP growth are included to account for time-specific effects.

Results and Discussion

In Panel A, the coefficient on initial inclusion is 0.07, which suggests that, on average, states with higher bank branches (in relation to their area) to start with witness increases in geographic inclusion. This result resonates across almost all specifications. What this indicates is a divergence across states in terms of banking outreach over time, *ceteris paribus*.

TABLE 3: SELECT REGRESSION RESULTS OF BANKING OUTREACH

Panel A: Geographic	Level of development	Economic structure	Human capital	Industrial climate	Physical infrastructure	Institutional quality
	(1)	(2)	(3)	(4)	(5)	(6)
Constant	-0.005 (0.004)	-0.015 (0.006)***	-0.026 (0.013)**	-0.009 (0.404)***	0.002 (0.004)	-0.010 (0.004)***
Initial outreach	0.068 (0.021)***	0.089 (0.053)*	0.077 (0.045)*	0.048 (0.053)	0.011 (0.028)	0.062 (0.051)
PCNSDP	-0.072 (0.017)***		-0.091 (0.530)			
Agriculture		-0.068 (0.039)*				
Literacy			0.302 (0.079)***			
Mandays				0.007 (0.006)		
Roads					0.174 (0.037)***	
T&D losses						-0.036 (0.021)*
GDPGR	0.686 (0.211)***	0.835 (0.328)***	-1.118 (0.309)***	0.679 (0.326)**	1.259 90.242)***	0.832 (0.177)***
Merger	0.014 (0.055)	0.053 (0.054)	0.003 (0.086)	0.044 (0.049)	-0.006 (0.057)	0.081 (0.039)**
States, N.Obs	14, 84	14, 84	14, 84	14, 84	14, 84	14, 83
Sargan test (p-Value)	0.919	0.925	0.929	0.898	0.971	0.866
AR 1, AR 2 (p-Value)	251, 0.234	0.235, 0.252	0.257, 0.153	0.218, 0.251	0.295, 0.205	0.217, 0.254
Panel B: Loan a/c pc						
Constant	-0.028 (0.008)***	-0.053 (0.008)***	-0.019 (0.007)***	-0.044 (0.009)***	-0.006 (0.009)	-0.013 (0.013)
Initial outreach	0.381 (0.056)***	0.368 (0.031)***	0.368 (0.032)***	0.382 (0.076)***	0.450 (0.112)***	0.437 (0.091)***
PCNSDP	0.019 (0.059)					
Agriculture		-0.259				

		(0.046)***				
Literacy			-0.163 (0.058)***			
Mandays				-0.086 (0.023)***		
Roads					-0.188 (0.044)***	
T&D losses						-0.177 (0.062)***
GDPGR	-1.755 (0.415)***	-1.456 (0.277)***	-1.029 (0.393)***	-1.185 (0.340)***	-0.740 (0.326)**	-2.169 (0.322)***
Merger	-0.206 (0.057)***	-0.116 (0.093)	-0.178 (0.084)**	-0.227 (0.074)***	-0.108 (0.101)	-0.085 (0.064)*
States, N.Obs	14, 84	14, 84	14, 84	14, 84	14, 84	14, 83
Sargan test (p-Value)	0.854	0.888	0.872	0.860	0.897	0.871
AR 1, AR 2 (p-Value)	0.157, 0.439	0.157, 0.708	0.170, 0.765	0.160, 0.579	0.172, 0.030	0.165, 0.437
Panel C: Loan/ Income						
Constant	0.111 (0.025)***	0.070 (0.046)	0.063 (0.033)*	0.116 (0.036)***	0.115 (0.055)**	0.122 (0.049)***
Initial outreach	0.151 (0.032)***	0.138 (0.036)***	0.145 (0.044)***	0.162 (0.035)***	0.149 (0.049)***	0.125 (0.042)***
PCNSDP	-0.211 (0.099)***					
Agriculture		0.128 (0.103)				
Literacy			-0.437 (0.243)*			
Mandays				0.091 (0.030)***		
Roads					-0.052 (0.186)	
T&D losses						0.261 (0.175)
GDPGR	-0.408 (0.097)***	-0.347 (0.107)***	-0.657 (0.135)***	-0.489 (0.119)***	-0.298 (0.194)	-0.361 (0.109)***
Merger	0.109 (0.084)	0.221 (0.101)**	0.217 (0.091)***	0.188 (0.079)***	0.144 (0.091)	0.203 (0.086)***
States, N.Obs	14, 84	14, 84	14, 84	14, 84	14, 84	14, 83
Sargan test (p-Value)	0.583	0.482	0.499	0.559	0.554	0.526
AR 1, AR 2 (p-Value)	0.126, 0.501	0.188, 0.430	0.173, 0.230	0.180, 0.308	0.193, 0.350	0.192, 0.471

Standard errors within brackets

***, ** and * denote statistical significance at 1, 5 and 10%, respectively

AR(1) and AR(2) denote the first and second order autocorrelation and follow N (0,1)

The coefficient on PCNSDP is negative and statistically significant at the 0.01 level. In other words, states with higher levels of economic development exhibit lower geographic inclusion. Without loss of generality, it seems likely that economically developed states are those which already have high branch presence. Besides the economic significance, the magnitude is statistically meaningful, as well: a one standard deviation rise in PCNSDP lowers geographic inclusion by roughly 1.5 standard deviation.

The coefficient on *Agr* is negative, attesting to the fact that states with greater shares of agriculture display lower geographic outreach. In terms of magnitude, a 10%

rise in agriculture share lowers geographic inclusion by roughly 0.7 percentage points. This is consistent with Hypothesis 2 which indicates that higher agriculture share would entail lower geographic outreach.

The results obtaining in specification (3) appear to indicate that literacy is an important factor behind geographic inclusion. The coefficient on literacy is positive and significant at the 0.01 level, highlighting the importance of literacy in general in improving geographic inclusion. In order to gauge the economic relevance of this variable, we perform a standard comparative dynamics exercise. Specifically, we compute the total impact on geographic inclusion if we are moving from a state at the 10th percentile of the distribution of literacy to a state at the 90th percentile. The effect on geographic inclusion based on the estimated coefficients in the regression in Panel A (Model 1) is positive.⁴ The evidence thus indicates that the effect of literacy is, on average, positive and significant, both statistically and economically. This lends credence to the hypothesis that literacy exerts a salutary effect on banking outreach.

In the final two specification, the coefficient on both *roads* and *T&D losses* have expected signs, which suggests that both the paucity of physical infrastructure as also inadequate institutional quality are a major hindrance in the quest for greater geographic inclusion. All specifications control for the impact of mergers during the post-reform period. Wherever significant, the coefficient bears expected signs. The specification tests of the model indicate that the model is well-specified.

Panel B focuses on loan accounts per capita, a proxy measure for the use of banking services. More often than not, literacy and infrastructure draw significant attention presumably owing to their visible impact on banking outreach. Labor regulations however are observed to be important as well. By constraining output and employment, protective employment regulations can also hinder banking outreach. Consider, by way of example, Model 4 in Panel B. The coefficient on mandays is -0.086, which suggests that a rise in mandays lost by 10% lowers the use of loan accounts by about 1 percentage point.

The final panel explores the use of banking services relative to the level of development. Higher values for the average size of loans or deposits relative to income would signify that banking services are more limited in use, implying lower banking outreach. Wherever significant, the coefficients bear expected signs.

In separate regressions (not reported), we also included dummy variables according to state characteristics such as income, region and location, besides the various state-level variables as earlier.⁵ The results lend credence to the univariate findings of significant differences in banking outreach across income and regional characteristics. While the differences in income permeated across all indicators of banking outreach, in case of regional characteristics, the difference was particularly striking for Eastern region as compared to Southern and Western regions. This concurs with the evidence of substantial regional differences in financial services in India (See, RBI, 2009). Consistent with Sachs and Bajpai (2005), loan accounts per capita appear to be significant higher for coastal (as compared to land-locked) states. This is not surprising, given the high growth of export-oriented units along the coast (Sachs *et al.*, 2002a; 2002b). Contextually as well, the hinterland in China also experienced lower economic growth compared to the coastal regions and this seems to have widened over the last two decades.

CONCLUDING REMARKS

The paper makes a systematic attempt to ascertain the factors influencing banking outreach at the sub-national level. Borrowing from the literature, we employ measures of banking outreach that capture the penetration, use and availability of banking services. We subsequently examine the factors that impact banking outreach, using data on major states in India covering the period 1973 to 2004.

The analysis indicates significant regional divergences in banking outreach across states, as also in terms of their income characteristics. More importantly, the multivariate regressions indicate an important role of literacy and infrastructure in explaining banking outreach. We thus complement the extant literature on sub-national economies by providing a rationale behind the high growth of certain states/ regions *vis-à-vis* others.⁶

The analysis also suggests a role for improving labor regulations. More often than not, educational attainment and infrastructure development draw significant attention, owing to their visible impact on banking outreach. Labor regulations however are observed to be important as well. By constraining output and employment, protective employment regulations can also hinder banking outreach. While the importance of financial development for industrial growth is well-documented (Rajan and Zingales, 1998), the present analysis suggests a reverse link from growth to finance: rigid state-level labor regulations could hold back industrial growth and in turn, impede banking outreach.

Attaining the millennium development goals is an important objective for policymakers worldwide (UNDP, 2008). Central to this process is the promotion of inclusive growth. Globally, policymakers across countries and continents are making concerted efforts to achieve inclusive growth (Government of India, 2008b; HM Treasury, 2007; Weingarten, 2007; European Commission, 2008). The Indian experience with regard to banking outreach testifies to this point.

REFERENCES

- Acemoglu, D., S. Johnson and J. Robinson (2001), “The Colonial Origins of Comparative Development: An Empirical Investigation”, *American Economic Review*, 91: 1369-1401.
- Aghion, P., R.Burgess., S.Redding and F.Zilibotti (2003), “Entry Liberalization and Inequality in Industrial Performance”, *Journal of the European Economic Association* 2/3: 291-302.
- Aghion, P., R.Burgess., S.Redding and F.Zilibotti (2008), “The Unequal Effects of Liberalization: Evidence from Dismantling the License Raj in India”, *American Economic Review* 98: 1397-1412.
- Ahluwalia, M.S. (2002), “State level Performance under Economic Reforms in India. in A.O.Krueger (ed.), *Economic Policy Reforms and the Indian Economy*, Oxford University Press: New Delhi.

- Basu, P. (2006), *Improving Access to Finance for India's Rural Poor*, World Bank: Washington DC.
- Beck, T, A. Demirguc-Kunt and R. Levine (2004), "Finance, Inequality and Poverty", World Bank Policy Research Working Paper 3338, The World Bank: Washington DC.
- Beck, T., A. Demirguc Kunt, L .Laeven and V. Maksimovic (2006a), "The Determinants of Financing Obstacles", *Journal of International Money and Finance* 25: 932-52.
- Beck, T., A. Demirguc Kunt, and M .S. Martinez Peria (2006b), "Banking Services for Everyone? Barriers to Bank Access and Use Around the World, World Bank Policy Research Working Paper 4079, The World Bank: Washington DC.
- Beck, T, A. Demirguc-Kunt and R. Levine (2007), "Reaching Out: Access To and Use of Banking Services across Countries", *Journal of Financial Economics*, 85: 234-66.
- Besley, T., and R.Burgess (2004), "Can Labor Regulation Hinder Economic Performance? Evidence from India", *Quarterly Journal of Economics*, 119: 91-134.
- Bhandari, A.K. (2009), "Access to Banking Services and Poverty Reduction: A State-wise Assessment in India", IZA Discussion Paper No. 4132, Bonn: Germany.
- Burgess, R., and R. Pande (2005). "Do Rural Banks Matter? Evidence from the Indian Social Banking Experiment", *American Economic Review*, 95: 780-95.
- Chairlone, S., and S. Ghosh (2009). "Indian Banking System", in P. Bongini, S. Chairlone and G. Ferri (eds.) *Emerging Banking Systems*, Palgrave McMillan: UK.
- Claessens, S. (2006), "Access to Financial Services: A Review of the Issues and Public Policy Issues", *World Bank Research Observer*, 21: 207-40.
- Clarke, G.L., C. Xu and H. Zou (2006), "Finance and Income Inequality: What Do the Data Tell Us?", *Southern Economic Journal*, 72: 578-96.
- Demirguc-Kunt, A. and V. Maksimovic (1998), "Law, Finance and Firm Growth", *Journal of Finance*, 53: 2107-37.
- Easterly, W., and R. Levine (2002), *It's Not Factor Accumulation: Stylized Facts and Growth Models*", Central Bank of Chile Working Paper No.164 (June). Santiago: Chile.

- EPW Research Foundation (2003), Domestic Product of States of India: 1960-61 to 2000-01. EPW: Mumbai.
- European Commission (2008), "Financial services provision and prevention of financial exclusion", Directorate-General for Employment, Social Affairs and Equal Opportunities, Brussels: Belgium.
- Government of India (2008a). Ministry of Environment and Forests (Legislations on Environment, Forests and Wildlife), Available at <[http:// envfor.nic.in](http://envfor.nic.in)>
- Government of India (2008b). Report of the Committee on Financial Inclusion (Chairman: Dr. C. Rangarajan), Government of India: New Delhi.
- Government of India, Statistical Abstract of India, New Delhi (various years).
- Hasan, R., D. Mitra and K. V. Ramaswamy (2007), "Trade Reforms, Labor Regulations and Labor-Demand Elasticities: Empirical Evidence from India", Review of Economics and Statistics, 89: 466-81.
- His Majesty Treasury (2007), Financial inclusion: The Way Forward, London: UK.
- Honohan, P. (2004), "Financial Sector Policy and the Poor", World Bank Policy Research Working Paper 43, The World Bank: Washington DC.
- Honohan, P. (2006), "Household Financial Assets in the Process of Development", World Bank Policy Research Working Paper 3965, The World Bank: Washington DC.
- Kalra, S. and P. Sodsriwiboon (2010), "Growth Convergence and Spillovers among Indian States; What Matters? What Does Not?", IMF Working Paper 96. IMF: Washington DC.
- Kempson, E. (2006), "Policy Level Response to Financial Inclusion in Developed Countries: Lessons for Developing Countries", Paper presented at the Conference on Access to Finance, Washington DC (May 30-31). Available at <[www. worldbank.org](http://www.worldbank.org)>
- Kochhar, K., U. Kumar, R. Rajan, A. Subramaniam and I. Tokatlidis (2006), "India's Pattern of Development: What Happened, What Follows?", Journal of Monetary Economics, 53: 981-1019.
- Levine, R. (2005), "Does Firm Size Matter for Growth and Poverty Alleviation?", Paper prepared for the Brookings Blum Roundtable: *The Private Sector in the Fight against Global Poverty*. Brown University and the National Bureau of

Economic Research. Available at
http://www.brookings.edu/global/200508blum_levine.pdf.

- Levine, R. and S. Zervos (1998), “Stock Markets, Banks, and Economic Growth”, *American Economic Review*, 88: 537-58.
- Levine, R. (2003), “More on Finance and Growth: More Finance, More Growth?”, *Federal Reserve Bank of St. Louis Economic Review* (July-August), 31-46.
- Mitra, D., and B.P. Ural (2007), *Indian Manufacturing: A Slow Sector in a Rapidly Growing Economy*, World Bank Working Paper 4233. The World Bank: Washington DC.
- Nachane, D.M., P. Ray and S.Ghosh (2002), “Does Monetary Policy have Differential State-Level Effects? An Empirical Evaluation”, *Economic and Political Weekly*, 47: 4723-28.
- Nachane, D.M., S. Ghosh and P. Ray (2007), “Banking in India”, in K. Basu (ed.) *Oxford Companion to Economics in India*. Oxford University Press: New Delhi.
- Nagaraj, R., A. Varoudakis and M. A. Veganzones (2000), “Long-run Growth Trends and Convergence across Indian States”, *Journal of International Development*, 12: 45-70.
- Peachey, S. and A. Roe (2006), “Access to Finance: Measuring the Contribution of Savings Banks”, World Savings Bank Institute, Brussels: Belgium.
- Planning Commission (2001), *National Human Development Report 2001*, Government of India: New Delhi.
- Purfield, C. (2006), “Mind the Gap: Is Economic Growth in India Leaving Some States Behind?”, IMF Working Paper 103. IMF: Washington DC.
- Rajan, R.G., and L. Zingales (1998), “Financial Dependence and Growth”, *American Economic Review*, 88: 559-86.
- Rao, G., and N. Singh (2007), “The Political Economy of India’s Fiscal Federal System and its Reform”, *Publius: The Journal of Federalism*, 37: 26-44.
- Reserve Bank of India (1954), *Report of the Committee on all India Rural Credit Survey* (Chairman: A.D.Gorwala), RBI: Mumbai.
- Reserve Bank of India (2004a) *Handbook of Statistics on State Government Finances*, RBI: Mumbai.

- Reserve Bank of India (2004b). Handbook of statistics on Indian economy, RBI: Mumbai.
- Reserve Bank of India (2007). Basic Statistical Returns of Scheduled Commercial Banks in India, RBI: Mumbai.
- Reserve Bank of India, Statistical Tables Relating to Banks in India (various years), RBI: Mumbai.
- Reserve Bank of India (2009), Report of the Committee on Financial Sector Assessment (Vol. III: Financial Stability Assessment and Stress Testing), RBI: Mumbai.
- Rodrik, D., A. Subramaniam and F. Trebbi (2004), "Institutions Rule: The Primacy of Institutions over Geography and Integration in Economic Development", *Journal of Economic Growth*, 9: 131-65.
- Sachs, J.D. and N. Bajpai (2005), "India in the Era of Economic Reforms: From Outsourcing to Innovation", *Think On* (May 25). Available at www.earth.columbia.edu/articles
- Sachs, J.D., N. Bajpai & A. Ramaiah (2002a), "Understanding Regional Economic Growth in India", CID Working Paper 88, Center for International Development, Harvard University, Cambridge: MA.
- Sachs, J.D., N. Bajpai and A. Ramaiah (2002b), "Geography and Regional Growth", *The Hindu* (February 25 and 26). Available at <www.hinduonnet.com>
- Sarma, M. (2008), "Index of Financial Inclusion", Working Paper No. 215. Indian Council for Research on International Economic Relations. ICRIER: New Delhi.
- Sarma, M. and J. Pais (2008), "Financial Inclusion and Development: A Cross-country Analysis (mimeo).
- Topalova, P. (2008), "India: Is the Rising Tide Lifting all Boats?", IMF Working Paper 54, IMF: Washington DC.
- United Nations Development Programme (2008), The Millennium Development Goals Report, UNDP: New York.
- Weingarten, R. (2007), "Inclusive Financial Sectors: A Global Issue with an African Perspective", Address at the Commonwealth Finance Ministers Meeting. UN Capital Development Fund. New York: USA.
- World Bank (2005), State Fiscal Reforms in India: Progress and Prospects, Macmillan India Ltd.