Financial Development, Financial Inclusion and Human Capital: How Close is the Link? A Study of India

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- Financial sector reforms started in 1991
- Reforms gradual & cautious in nature
- Objectives of Reforms:
  - » Efficient allocation of resources
  - » Rise in the productivity of private sector
  - » Enhance financial stability
  - » To adopt prudential norms; international benchmarks and strengthen market discipline

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- Major financial sector reforms:

  » Deregulation of interest rates

  » Introduction of prudential norms

  » Transparency

  » Improved disclosures

Outcome of Reforms:

- » Banks profitability, efficiency and competition within the banking sector increased.
- » Capital base strengthened
- » Non-performing loans as ratio of assets declined
- Increase in Inequality
  - » Rural-urban
  - » High inter-state disparities
  - » Closure of many rural bank branches
  - » Reforms focused on banking institutions and profitability and not on spread of banking services

- What is Financial Inclusion?
- Benefits of Financial Inclusion
  - » Inclusive Balanced Growth
  - » Increase savings
  - » Provides business opportunity to banks and other intermediaries
- Several measures taken to increase financial inclusion
- In the pre-reform period: Opening of bank branches; nationalisation of bank branches; directed lending, still large no of people are unbanked

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Recent Indian approach to Financial Inclusion

- Commitment to Financial Inclusion both by Govt & RBI
- All villages with population more than 2000 to be provided access to financial services by March 2012
- Establishment of Financial Stability and Development Council
- Financial Inclusion and Financial Inclusion Technology Fund set up
- Banks asked to formulate Financial Inclusion Plan for 3 years till March 2013
- Financial Literacy and Credit Counselling centres set up by banks

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Delivery Model

- Multichannel approach (Handheld devices, mobiles, cards, Micro ATMs, Branches, Kiosks)

- Business Correspondent Model
  - » Corporates are allowed
  - » Interest rates on loans totally deregulated

- Know Your Customer requirements liberalised for small value accounts

- Availability of banking service conceptually implies:
  - » A savings cum Overdraft account
  - » A Remittance Product for EBT
  - » A Savings Product –recurring or variable recurring deposit

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Challenges facing Financial Inclusion

- Despite efforts to increase financial inclusion a number of challenges exist:

  - » Financial Inclusion perceived as obligation rather than a business opportunity
  - » Poor delivery model
  - » Inadequate number of Business Correspondents
  - » Development of Infrastructure
  - » Digital and Physical Connectivity of Banks

Limitations of financial inclusion approach

- Existing approach however, is supply centric

- Presumes that increasing supply of financial services will increase financial inclusion

- Ignores demand side constraints

- Poor human development and low literacy in many states may prevent population from financial inclusion efforts

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Objectives of Study

- In this study we examine associational relationship between finance and human capital

- Our study does not examine causality between finance and human capital

Theoretical Literature on finance and human capital

- Role of human capital in economic development has been firmly established (Benhabib and Spiegal, 1992)
- Strong relationship between financial development and human capital (Evans, Green, & Murinde, 2002)
- Physical capital combined with poor human development may produce low growth and poor development outcomes (Bergheim, 2005)
- Accumulation of physical capital takes place in the early stages and human capital accumulation follows (Graca, Jafarey, & Philippopoulos, 1995)

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Empirical Literature on Finance and Human Capital

- Evans *et al.* (2002)- study for 82 countries; findings that credit and human capital both contribute to growth

- Seghers *et al.* (2009) – survey data of 125 Belgian firms- findings that entrepreneurs with business education had better knowledge of financial products; basic (low) education had no effect on knowledge

- Brown, Earle and Lup (2004) – survey of 297 new small enterprises in Romania showed that access to external credit increases firms' sales and employment

- Kendall (2009) – the only study done for India for 9 states at the district level; examines role of human capital and financial development in growth; findings show that low financial development constrains growth; increases in human capital promote growth
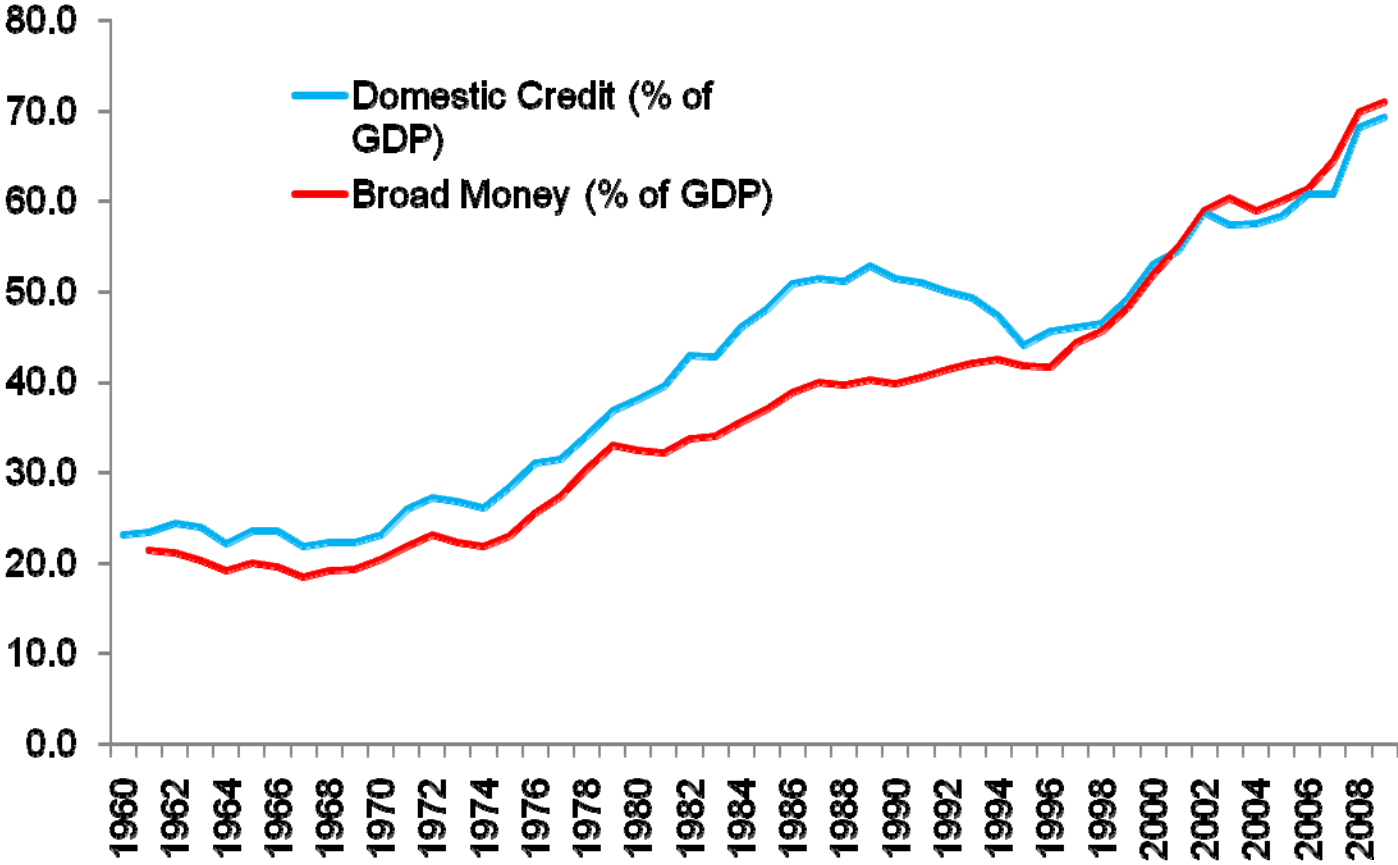
Financial Development of India

Table 1: Population Per Bank Branch (in thousands) at National level

Year	Population Per Bank Branch
June 1969	64
March 2002	16
March 2003	16
March 2004	16
March 2005	16
March 2006	16
March 2007	15
March 2008	15
March 2009	14.5
March 2010	13.8

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Table 2: Regional Financial Development of India

Region	Per Capita Income (Rs)	NDP per branch (Rs crore)	Population per branch (in 000s)	No of bank branches	Branches per sq km
North	50105	27.6	10	2376	4.3
North-Eastern	27162	34.0	20	304	.01
Eastern	28482	28.6	16	2225	.03
Central	23774	19.5	17	4650	.03
Western	63101	37.3	11	2468	.07
Southern	44786	34.6	10	3726	.13

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Table 3: Bank Services Across Regions

Region	Income per capita (Rs)	Deposits/NDP	Credit/NDP	Deposit per capita	Credit per capita
North	50105	198.2	147.0	102883 (29816)	85693 (16944)
North-Eastern	27162	94.5	32.9	17059	5817
Eastern	28482	120.5	49.1	24264	10061
Central	23774	129.5	51.2	21671	7953
Western	63101	211.5	129.4	94051	48008

Data Sources

- Our study focuses at national and subnational level (23 states)

- Data sources:
  - » Reserve Bank of India
  - » Government of India
  - » Handbook of Statistics on Indian Economy
  - » World Bank

Indicators at National Level

- **Time Frame:** 1975 to 2007
- **FD Indicator:**
  - » M3/national GDP
- **Human Capital:**
  - » Gross Enrolment Ratio (6-14 years)
  - » Expenditure on education as a percentage of total public spending
- **Infrastructure:**
  - » Electric power consumption (kWh per capita)
  - » Fixed telephone lines per 100 inhabitants

Methodology- National

- We estimate a model of the form:

$$FI_t = \alpha + \beta_1 GE_t + \beta_2 EE_t + \beta_3 EC_t + \beta_4 TP_t + \varepsilon_t$$

- Where:

- GE_t is the gross primary enrolment rates as a percentage of the total population in age category of 6-14 years at the tth year.

- Expenditure on education as a percentage of total government expenditure at the tth year is denoted by EE_t

- EC_t is the per capita consumption of electricity at the tth year.

- Number of fixed telephone lines per 100 inhabitants in India at the tth year is given by TP_t.

- Error term ε_i in the model below has usual properties .

Sub-national indicators:

- Regressions at two levels:

  » Excluding Infrastructure
  » Including Infrastructure

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First level : Finance and Human Capital: Sub-national level:

- Financial development indicator : Regional M3/GDP

- Education indicator:
  - » Gross enrolment ratio
  - » Teacher-pupil ratio

- Controlling variables:
  - » Population per bank branch
  - » Per capita income

First level (Finance and Human Capital): Subnational level

- In our equation :

$$\ln FI_{it} = a + \beta_1 GE_{it} + \beta_2 TP_{it} + \beta_3 PB_{it} + \beta_4 I_{it} + \varepsilon_{it}$$

Where:

- GE_{it} - gross enrolment rates in age category of 6-14 years in i^{th} state at t^{th} year.
- TP_{it} is a proxy measure that represent the quality of human capital development.
- Number of population per bank branch in i^{th} state at t^{th} year is given by PB_{it}.
- Average per capita income of the households is given by I_{it}.
- The error term ε_i in the model below has usual properties .

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Second Level: Finance and Infrastructure

- In our second exercise we have:

  Infrastructure variables:

$$\ln FI_{it} = a + \beta_1 RD_t + \beta_2 TF_{it} + \beta_3 EC_{it} + \beta_4 PB_{it} + \beta_5 I_{it} + \varepsilon_t$$

- Indicators
  - » Road length (RD),
  - » Telephone facilities (TF),
  - » Electricity installed capacity(EC) ,
  - » Number of bank branches per population (PB), and
  - » Per capita income (I).

Sub-national Regressions

- For both our estimates, we use a panel data set of 23 states, extending over a period of 1999 - 2008.

- We estimate the above model using the Pooled OLS, state specific fixed effects and Random Effects specifications.

- Our results are shown in Tables 5 and 6

Table:4 Relationship between financial development, human capital and infrastructure development – National

Variables	OLS regression	Feasible Generalized Least Squares method (Praise-Winston method)	
		Lin-Lin	Log-log
Gross enrolment (primary)	0.108* (2.02)	-0.010 (-0.16)	-0.014 (-0.16)
Expenditure on education	5.339*** (4.71)	2.889** (2.24)	0.153 (1.40)
Electricity consumption per capita	0.017** (2.32)	0.030** (2.32)	0.140 (1.01)
Fixed telephone lines per 100 inhabitants	6.110*** (11.44)	6.194*** (6.23)	0.207*** (3.30)
Constants	5.532 (1.28)	20.719 (3.33)	2.950 (3.19)
DW statistics	1.1711	1.7782	1.4914
Adjusted R square	0.9830	0.8799	0.9745
No of observations	31	31	31

Results at National Level

- Positively significant relationship between expenditure on education and financial development indicator: M3/GDP

- Both infrastructure variables- fixed telephones lines and electricity consumption per capita are positively and significantly related to financial development

- Gross enrolment ratio at the national level was not found to be significant.

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Table 5: Relationship between Financial Development and Human Capital at the sub-national level (First Exercise)

Variables	OLS	Random effect	Fixed effect
Gross enrolment(GE)	0.197*	0.239***	0.254***
	(1.67)	(4.23)	(4.49)
Teacher pupil ratio (TP)	0.533***	-0.139**	-0.191***
	(6.34)	(-2.17)	(-2.91)
Average population per bank branch (PB)	-0.322***	-0.007**	-0.007**
	(-3.00)	(-2.37)	(-2.33)
Income (I)	0.508***	0.374***	0.319***
	(5.26)	(4.56)	(3.72)
Constant	-2.713	-0.038	0.619
	(-2.05)	(-0.04)	(0.67)
Adjusted R-square	0.318	0.1005	0.0725
Number of observations	208	214	214

Results at the sub-national level: First Exercise

- Higher gross enrolment ratio is associated with higher financial development

- Significantly negative relationship between Pupil Teacher ratio teacher and financial development.

- Accessibility to financial services measured in terms of number of population per bank branch (PB) also indicates a negative relationship

- Positive relationship between states per capita income and financial development

Results contd. (First Exercise)

- Hausman test results suggest that probability of chi-square test is 0.0002

- This indicates that fixed effects estimators are more appropriate

- Next, we included infrastructure variables in our analysis at the sub-national level

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Table 6: Relationship between Infrastructure and Financial Development (Second Exercise)

Variable	OLS-Linear model	Random effect	Fixed effect
Telephone	0.327 (1.34)	0.517*** (4.10)	0.532*** (4.10)
Installed capacity	0.009*** (13.82)	0.007*** (5.39)	0.005*** (3.18)
Income	0.001* (2.12)	0.001* (1.73)	0.001* (1.87)
Constant	27.613 (5.75)	37.421 (5.35)	41.997 (7.34)
R-square	0.6361	0.6330	0.6049
Number of observations	163	163	163

Results of the Second Exercise at Sub-national level

- As at the national level, results at the sub-national level too suggest positively significant relationship between infrastructure variables- electricity and telephones and financial development

- Hausman test results suggest that probability of chi-squre test is 0.294. This indicates that random effects estimators are more appropriate

Conclusion

- Our results both at the national and sub-national level showed positively significant relationship between Financial development and Human Capital
- Infrastructure variables too were found to be positively associated with financial development.
- Our results also showed that richer the states, higher the financial development
- Obviously higher the population covered per branch, lower the financial development

Policy Implications

- As our results showed a supply centric approach to financial inclusion is not enough

- Human capital was found to be positively associated with financial development

- Thus human capital needs to be improved simultaneously along with efforts to increase financial inclusion

- Improving infrastructure too will influence financial development

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- Thank You!

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