The Growth of a Shadow Banking System in Emerging Markets: Evidence from India

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Objective of the Study

Our goal is to investigate the rapid growth of the non-deposit taking nonbank finance corporations (NBFCs) in India to understand

- Incentives underlying the formation of shadow banking institutions, if any.
- Linkages between banking sector and NBFCs.
- How the nature of the banking sector (state-owned versus private banks) affects the growth and constraints on NBFCs.

Summary of Results

- Bank lending to the non-deposit taking NBFCs
  - forms a significant proportion of these NBFC's liabilities.
  - fluctuates in line with bank allocation to priority lending sectors.
  - appears to be greater for banks that have lower branching in semi-urban areas relative to metropolitan areas.

- However, bank lending to these NBFCs is virtually non-existent for the largest state-owned bank, State Bank of India (SBI), and its affiliates, which have strong semi-urban branching.

- These bank-NBFC linkages are present for those NBFCs that do loans or asset financing and not for investment companies, and also affect the credit growth of these NBFCs.

- Starting with the financial crisis of Fall 2008, bank lending to these NBFCs experienced a permanent contraction that is related to the shift of term deposits towards SBI Group.

What is Shadow Banking?

Shadow Banking is an evolving concept:

2007/McCulley: *Shadow banking is the whole alphabet soup of levered up nonbank investment conduits, vehicles, and structures.*

2010/Acharya and Öncü: *A shadow bank is a nonbank financial institution that behaves like a bank, borrows short-term in rollover debt markets, leverages itself significantly, and lends and invests in longer-term in illiquid assets. Unlike banks, however, the shadow banks are much less regulated.*

2010/Adrian et al: *Shadow banks are financial intermediaries that conduct maturity, credit, and liquidity transformation without explicit access to central bank liquidity or public sector credit guarantees.*

What is Shadow Banking?

2011/Acharya: *In pursuit of short-run popularity, governments can encourage competition in the financial sector, provide downside guarantees, weaken risk controls, subsidize leverage through tax deductions, and direct lending to specific sectors for populist goals. This way, governments can effectively operate as "shadow banks" in the financial sector, exploiting intermediation activity for private objectives, the end result of which is often the fueling of credit booms and periods of intense economic activity but with a looming threat to financial stability.*

2012/Ghosh et al: *Shadow banking comprises a set of activities, markets, contracts, and institutions that operate partially (or fully) outside the traditional commercial banking sector, and, as such, are either lightly regulated or not regulated at all. The distinguishing feature of shadow banking is that it decomposes the process of credit intermediation into a sequence of discrete operations. A shadow banking system can be composed of a single entity that intermediates between end-suppliers and end-borrowers of funds, or it could involve multiple entities forming a chain.*

What is Shadow Banking?

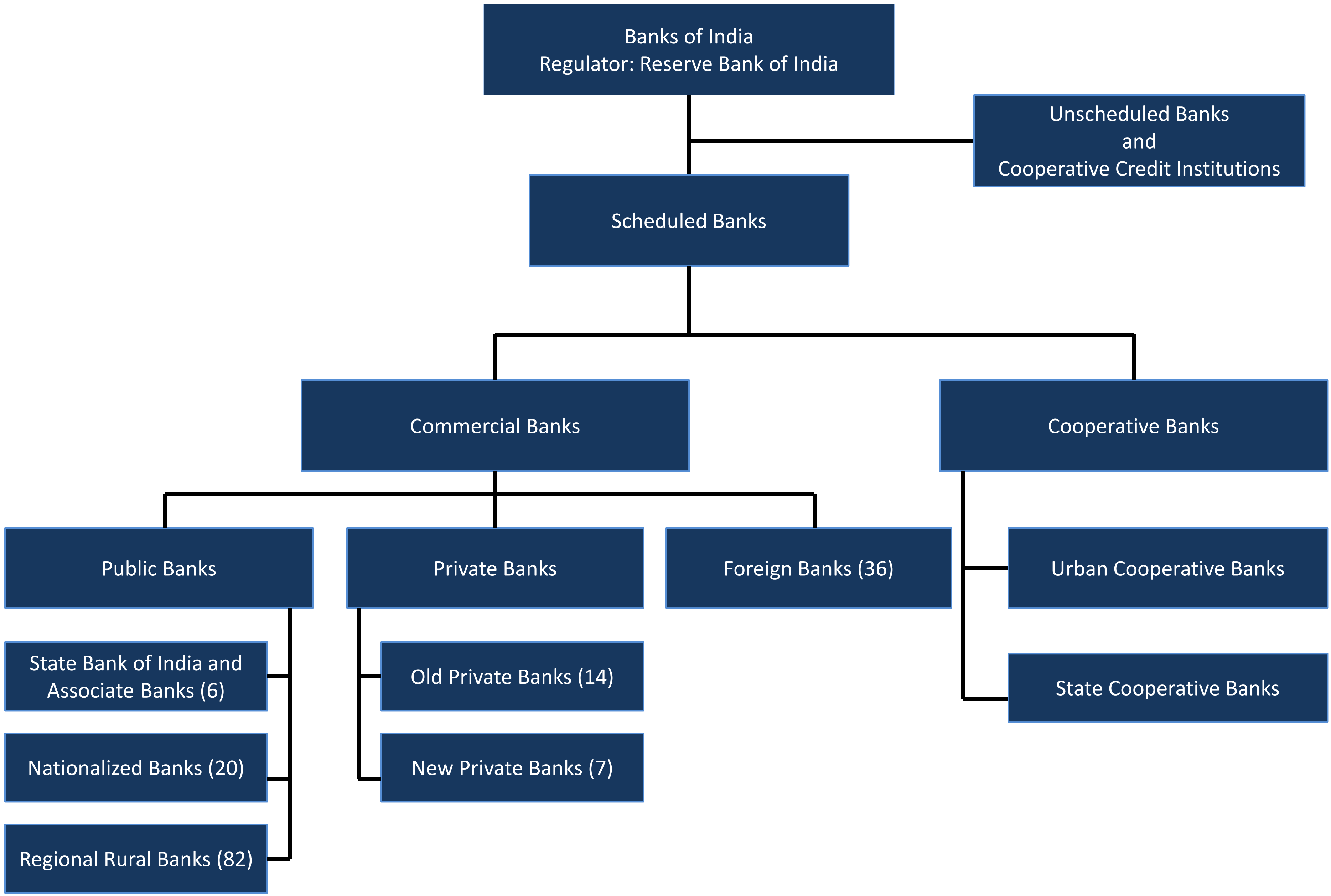
Key points:

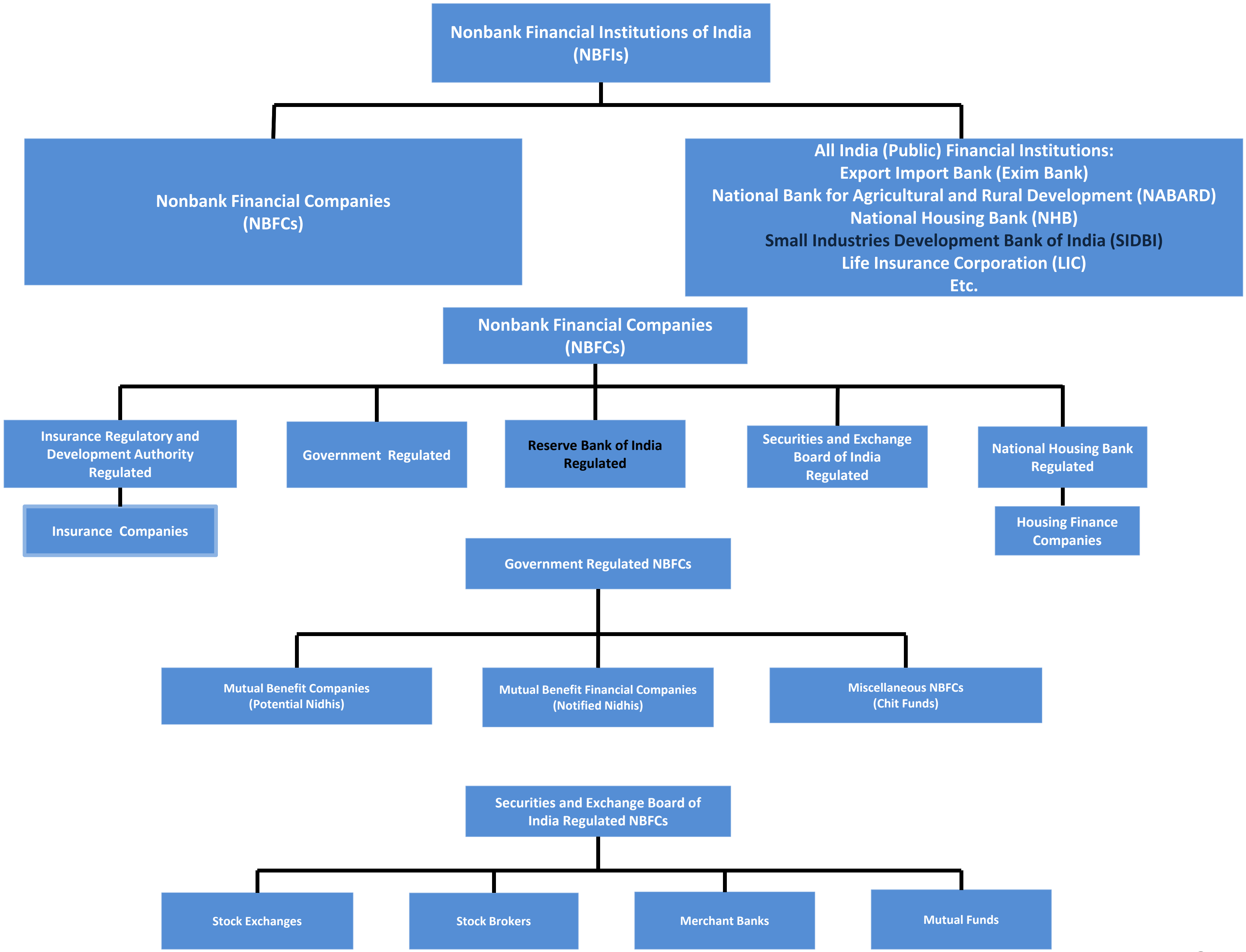
- Any shadow banking system conducts maturity, credit and liquidity transformation outside the traditional banking system. Thus, not only it may be less regulated than the traditional banking system or not regulated at all, but also <u>there is no explicit access to central bank liquidity or public sector credit guarantees</u>.

- Since any shadow banking system decomposes the process of credit intermediation into a sequence of discrete operations, <u>it can be a collection not only of single financial entities acting independently, but also of (and usually is) networks of multiple financial entities acting together or both: banks, formal and informal nonbank financial institutions, and even credit rating agencies, regulators and governments</u>.

- Shadow banking system is typically highly levered. Further, while its assets are risky and illiquid, <u>its liabilities are prone to “bank runs”.</u>

A ROUGH MAP OF THE INDIAN CREDIT SYSTEM

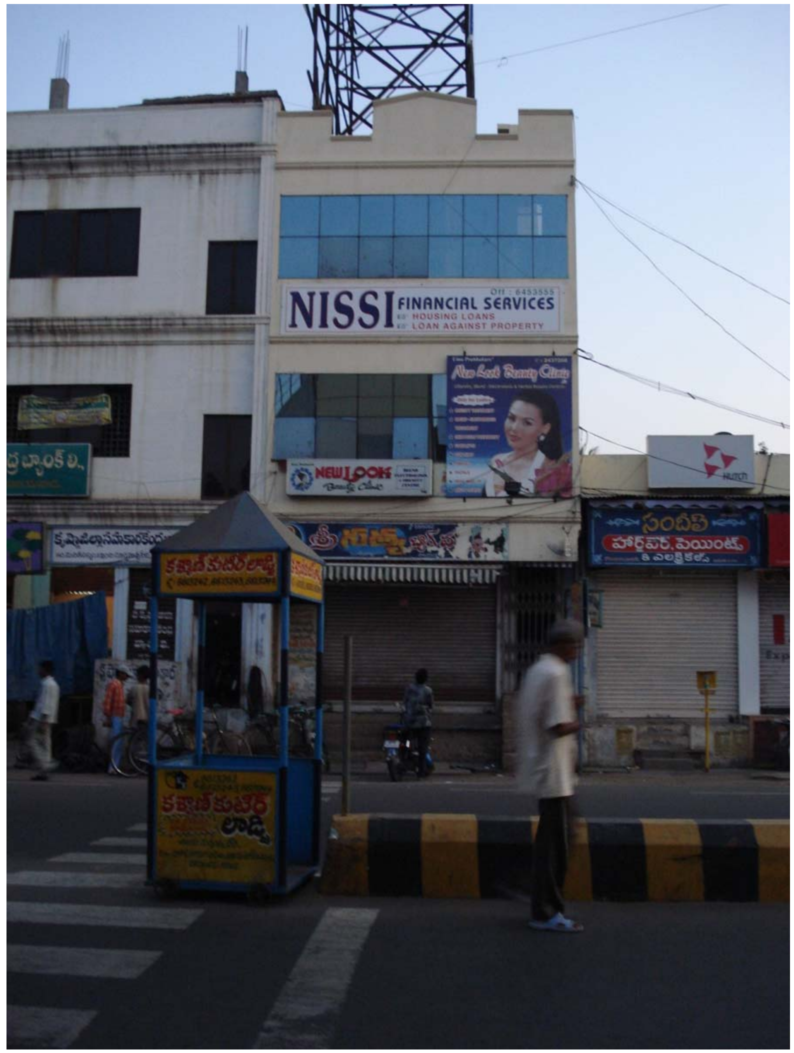

Banks of India
Regulator: Reserve Bank of India
Unscheduled Banks
and
Cooperative Credit Institutions
Scheduled Banks
Commercial Banks
Cooperative Banks
Public Banks
Private Banks
Foreign Banks (36)
Urban Cooperative Banks
State Bank of India and
Associate Banks (6)
Old Private Banks (14)
State Cooperative Banks
Nationalized Banks (20)
New Private Banks (7)
Regional Rural Banks (82)

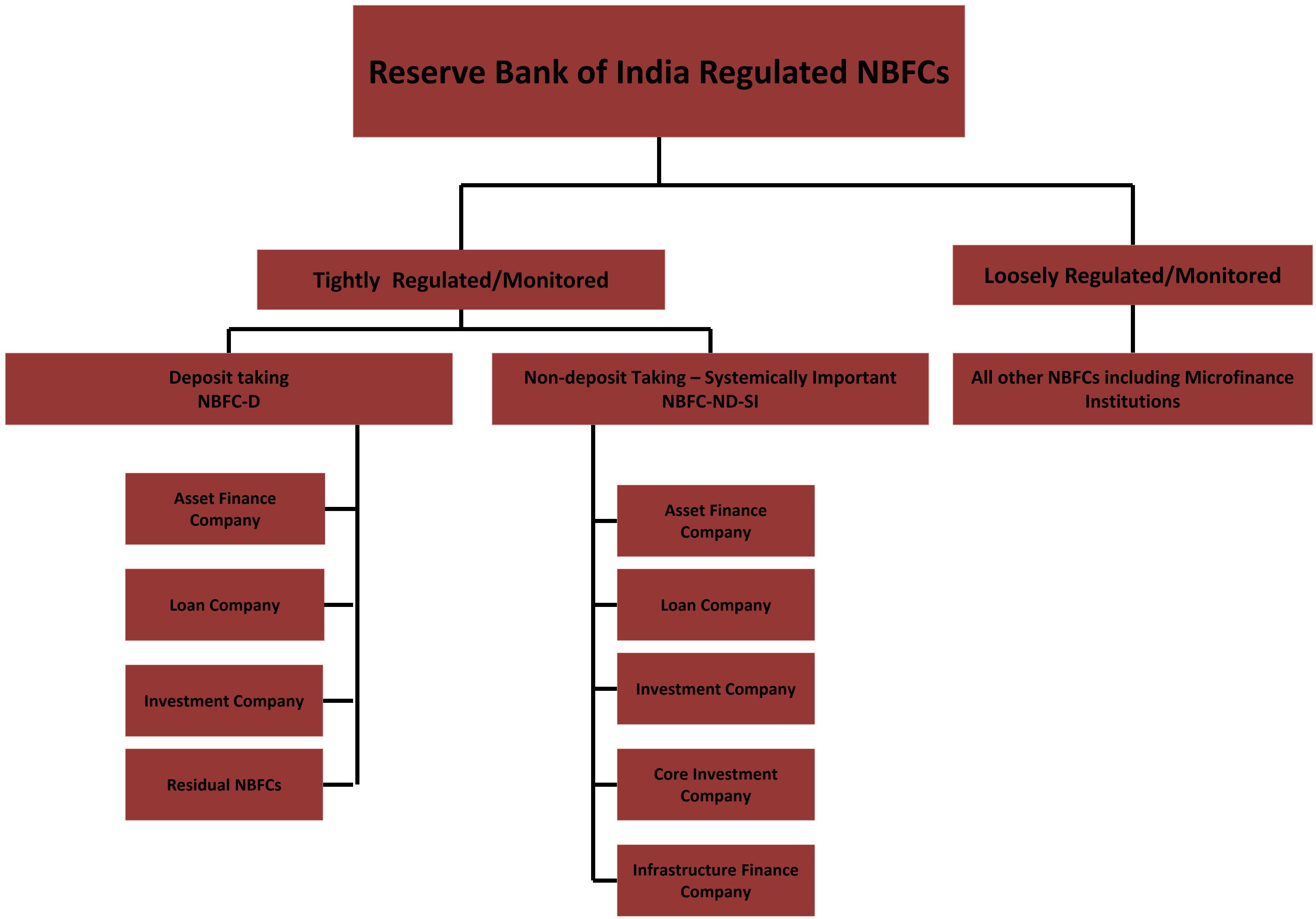

Nonbank Financial Institutions of India (NBFIs)
Nonbank Financial Companies (NBFCs)
All India (Public) Financial Institutions:
Export Import Bank (Exim Bank)
National Bank for Agricultural and Rural Development (NABARD)
National Housing Bank (NHB)
Small Industries Development Bank of India (SIDBI)
Life Insurance Corporation (LIC)
Etc.
Nonbank Financial Companies (NBFCs)
Insurance Regulatory and Development Authority Regulated
Government Regulated
Reserve Bank of India Regulated
Securities and Exchange Board of India Regulated
National Housing Bank Regulated
Insurance Companies
Housing Finance Companies
Government Regulated NBFCs
Mutual Benefit Companies (Potential Nidhis)
Mutual Benefit Financial Companies (Notified Nidhis)
Miscellaneous NBFCs (Chit Funds)
Securities and Exchange Board of India Regulated NBFCs
Stock Exchanges
Stock Brokers
Merchant Banks
Mutual Funds

Informal Financial Institutions of India

- **Registered**
  - General Financiers
  - Badla (stock trading) Financers
  - Commodity Trade Financiers
  - Vendor Financers
  - Pawn Brokers
  - Plantation Companies
  - Gold Loan Companies
  - Pyramid Schemes
- **Unregistered/Illegal**
  - General Financiers
  - Daily/Weekly/Monthly Financiers
  - Commodity Trade Financiers
  - Fast Moving Consumer Good Financiers
  - Pawn Brokers
  - Plantation Companies
  - Gold Savings Schemes
  - Pyramid Schemes
  - Chit Funds

An Indian Shadow Bank




Reserve Bank of India Regulated NBFCs
Tightly Regulated/Monitored
Loosely Regulated/Monitored
Deposit taking
NBFC-D
Non-deposit Taking – Systemically Important
NBFC-ND-SI
All other NBFCs including Microfinance Institutions
Asset Finance Company
Loan Company
Investment Company
Residual NBFCs
Asset Finance Company
Loan Company
Investment Company
Core Investment Company
Infrastructure Finance Company

Classification of NBFCs
Activity Based

- **Asset Finance Company** is a company:
  - carrying on as its principal business the financing physical assets supporting productive/economic activity: autos, tractors, material handling equipments, etc.
- **Loan Company** is a company:
  - carrying on as its principal business the providing of finance whether by making loans or advances or otherwise for any activity other than its own.
- **Investment Company** is a company:
  - carrying on as its principal business the acquisition of securities.
- **Core Investment Company** is an investment company whose:
  - 90% of Net Assets in equity shares, preferred shares, bonds or loans of a group of companies or
  - 60% of Net Assets in equity shares of a group of companies.
- **Infrastructure Finance Company** is a company which:
  - deploys at least 75 per cent of its total assets in infrastructure loans.

Classification of NBFCs
Organization Based

- **Standalone NBFCs;**
- **Bank and Financial Institution Sponsored NBFCs**:
  - according to the RBI, there are 28 currently:
    - 18 sponsored by foreign banks and financial institutions;
    - 10 sponsored by Indian banks.
- **Captive NBFCs**:
  - set up to put the parent company's products within the reach of consumers and to ensure that the company has a steady pool of buyers;
  - any major challenges confronting the parent could threaten the operations and asset values of the captive NBFC.
- **Multiple NBFCs**:
  - companies which have multiple NBFCs within their group;
  - example: Shriram Group;
  - their argument is that operational efficiencies arising out of specialization, dynastic reasons, tax planning are some of the reasons for multiple NBFCs.

From Deposit-taking to Non-deposit NBFCs

- Since RBI introduced prudential norms in 1998, the number and share of deposit-taking NBFCs has been shrinking

- The RBI introduction of non-deposit taking systemically important (SI) NBFCs in 2006 has been coincident with significant growth in this newer class of NBFCs

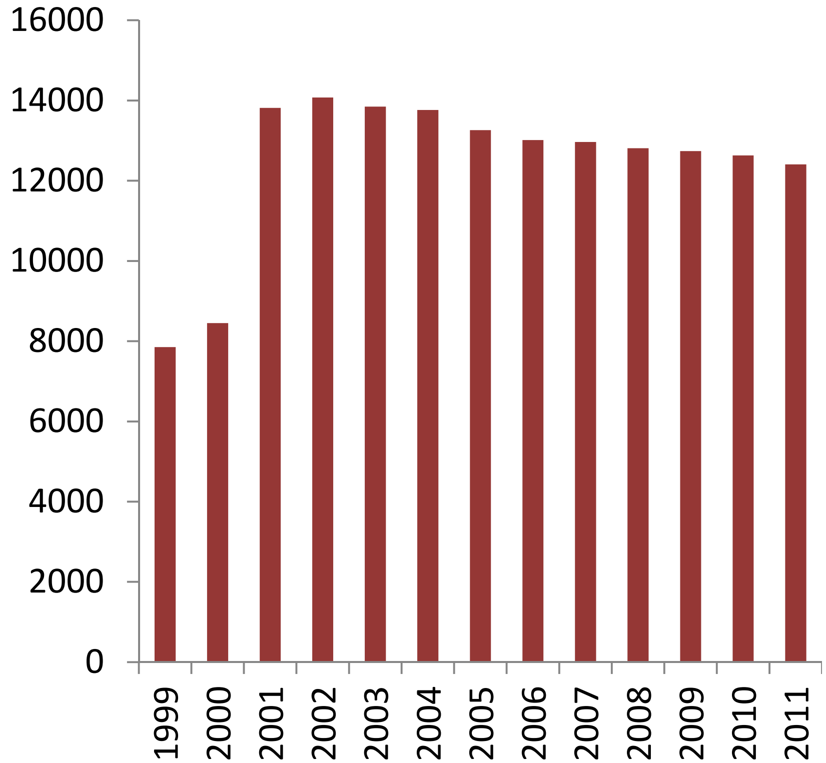
- As a combination of these two effects, the NBFC share of deposits has been shrinking steadily

Comparison between NBFC and Bank Sectors
Trillions of Rupees

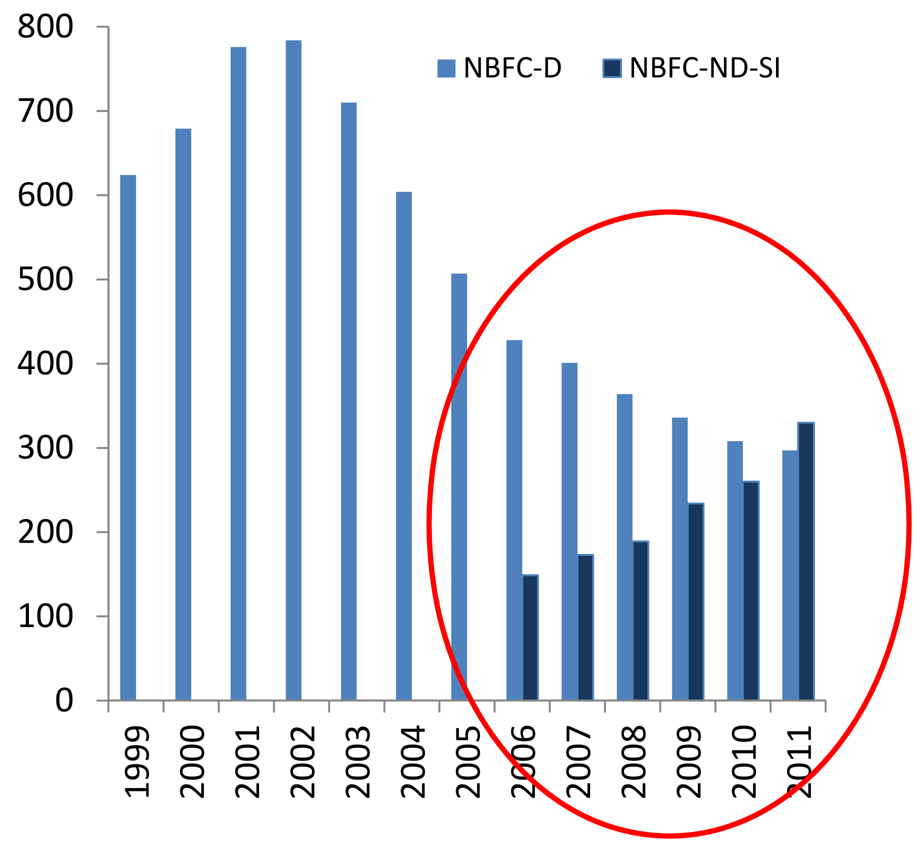
	FY06	FY10	FY11
Number of NBFCs	13,014	12,630	12,409
Bank Credit of all Scheduled Banks	15.728	33.377	40.608
NBFC Credit as percentage of Bank Credit	**10.77%**	**12.57%**	**13.20%**
Assets of all Scheduled Banks	25.315	52.58	61.47
NBFC Assets as percentage of Bank Assets	**13.06%**	**13.33%**	**13.78%**
Bank Deposits of all Scheduled Banks	21.858	46.352	53.552
NBFC Public Deposits as percentage of Bank Deposits	**1.05%**	**0.37%**	**0.22%**

NBFCs include NBFC-D, NBFC-ND-SI and RNBCs
Scheduled Banks include Commercial Banks and Cooperative Banks

Growth of the NBFC Sector

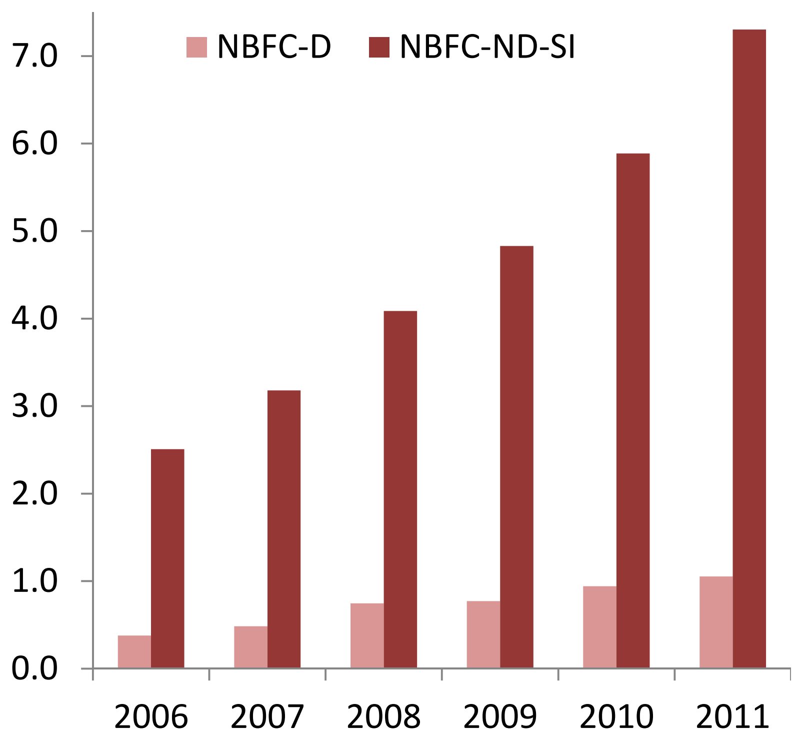


Number of All NBFCs

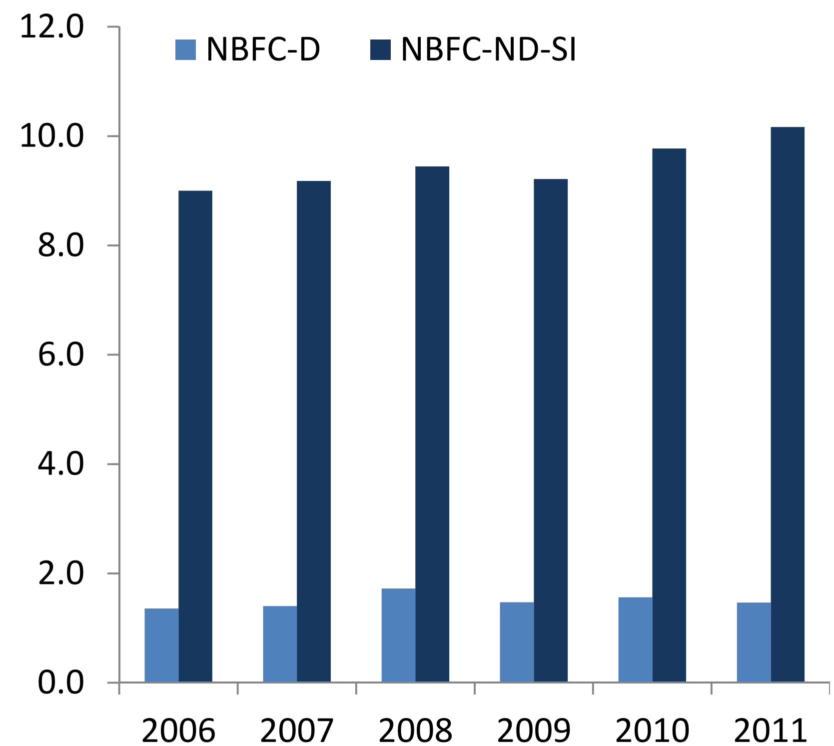


Number of NBFC-Ds and NBFC-ND-SIs

Growth of the NBFC Sector (Excluding RNBCs)



Assets in Trillions of Rupees



Assets as percentage of Assets of Banks

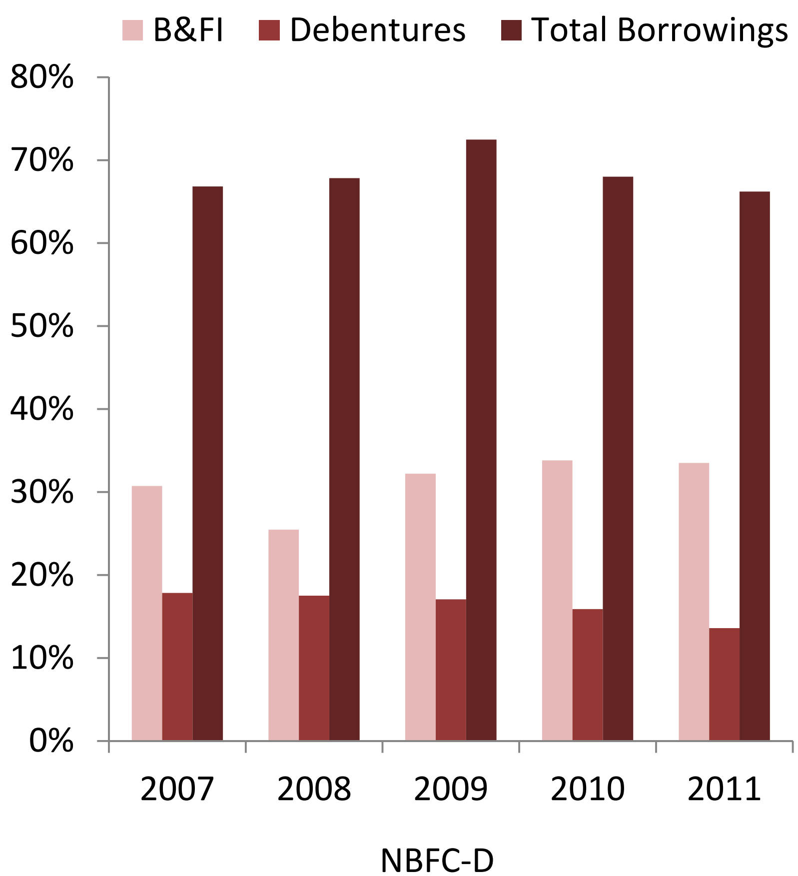
Consolidated Balance Sheet of NBFCs Trillions of Rupees

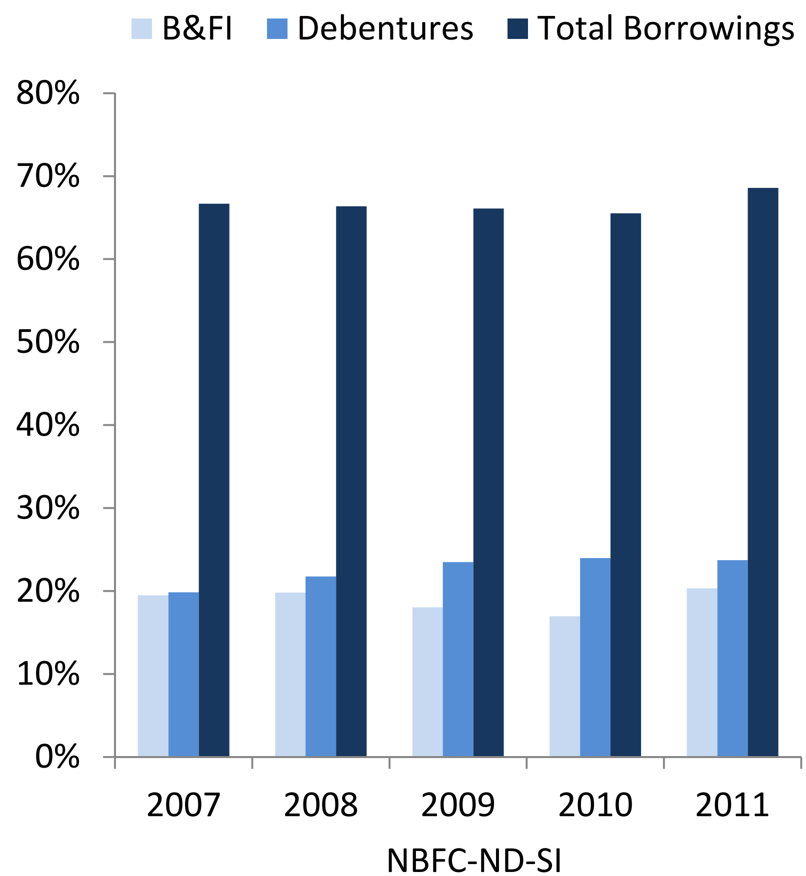
Consolidated Balance Sheet of NBFCs (Trillions of Rupees)

	2006	%2006	2010	%2010	2011	%2011
Liabilities						
Share Capital	**0.2215**	**6.70%**	**0.4328**	**6.17%**	**0.4722**	**5.57%**
Reserves & Surplus	**0.4774**	**14.44%**	**1.3931**	**19.88%**	**1.5868**	**18.73%**
Public Deposits	0.2284	6.91%	0.1735	2.48%	0.1196	1.41%
Borrowings	2.076	62.79%	4.4986	64.18%	5.7075	67.37%
B&FI Loans	0.6231	18.85%	1.3172	18.79%	1.8384	21.70%
Current liabilities	0.3027	9.16%	0.5114	7.30%	0.5863	6.92%
Total Liabilities	**3.306**	**100.00%**	**7.0094**	**100.00%**	**8.4725**	**100.00%**
Assets						
Loans and Advances	**1.6945**	**51.25%**	**4.1964**	**59.87%**	**5.3607**	**63.27%**
Bill Business	0.0005	0.01%	0.0005	0.01%	0.0009	0.01%
Hire Purchase Assets	0.4472	13.53%	0.4169	5.95%	0.5002	5.90%
Investments	**0.8163**	**24.69%**	**1.5218**	**21.71%**	**1.6413**	**19.37%**
Cash and Bank Balances	NA	NA	0.2586	3.69%	0.2988	3.53%
Other Current Assets	NA	NA	0.4057	5.79%	0.4244	5.01%
Other Assets	0.3476	10.51%	0.2097	2.99%	0.2462	2.91%
Total Assets	**3.306**	**100.00%**	**7.0094**	**100.00%**	**8.4725**	**100.00%**

NBFCs include NBFC-D, NBFC-ND-SI and RNBCs

Leverage of the NBFCs: Borrowings/Total Assets Bank & FI loans as large or larger than Debentures (Excluding RNBCs)





Given this motivation, the questions we ask are:

1. What role does lending to NBFCs play for banks?
   - Given the semi-urban focus of NBFCs, is it related to bank lending to priority sector and their ability to reach out semi-urban areas?
   - Which type of banks (state, private, foreign) lend to NBFCs?

2. What affects the ability of banks to lend to NBFCs?
   - Is it affected by stability of bank deposits?
   - In turn, does bank lending affect NBFC credit growth?

3. How did the deposit shift in the crisis of 2008 affect NBFCs?
   - In particular, did the shift to banks with stronger guarantees (SBI group) constrain the NBFC growth?

We use coarser NBFC and Bank Group types

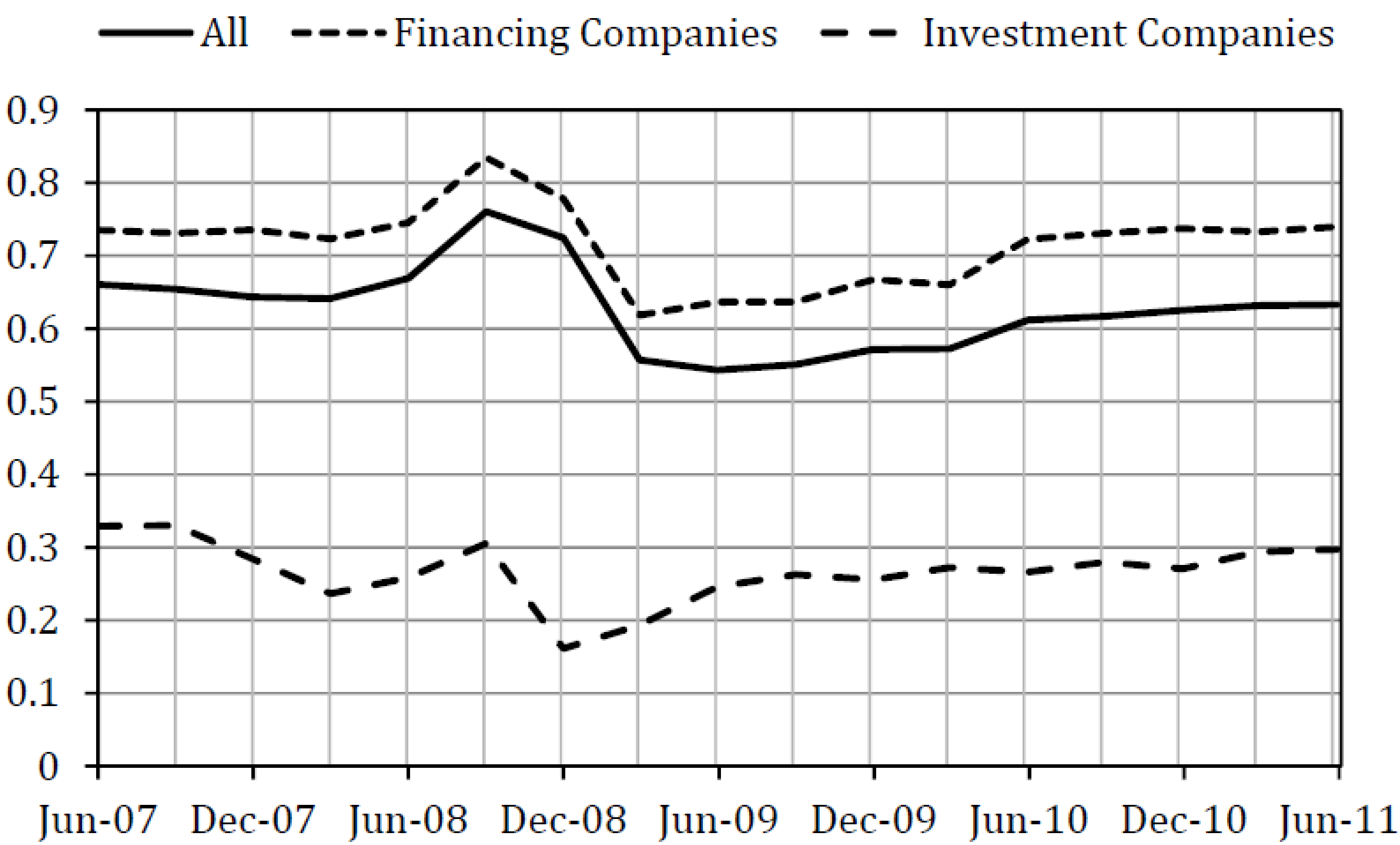
1. NBFC types:

- Investment Companies (borrow little from Banks and serve as “placebo”);
- Finance Companies (larger in assets, borrow more from Banks & FI).

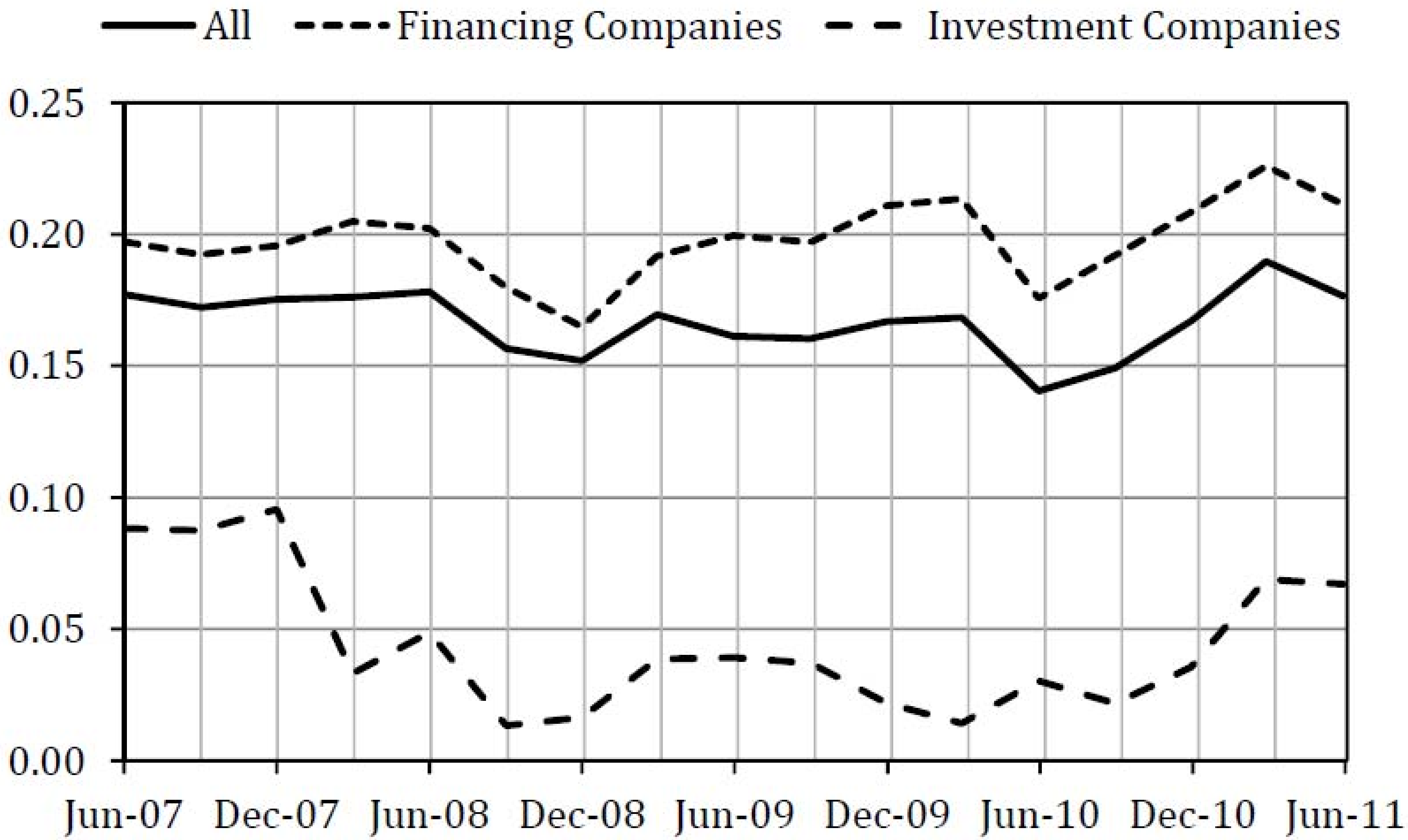
2. Bank group types:

- The SBI Group;
- Nationalized Banks;
- New Private Banks;
- Old Private Banks;
- Foreign Banks.

Credit Growth of Investment vs Finance NBFCs

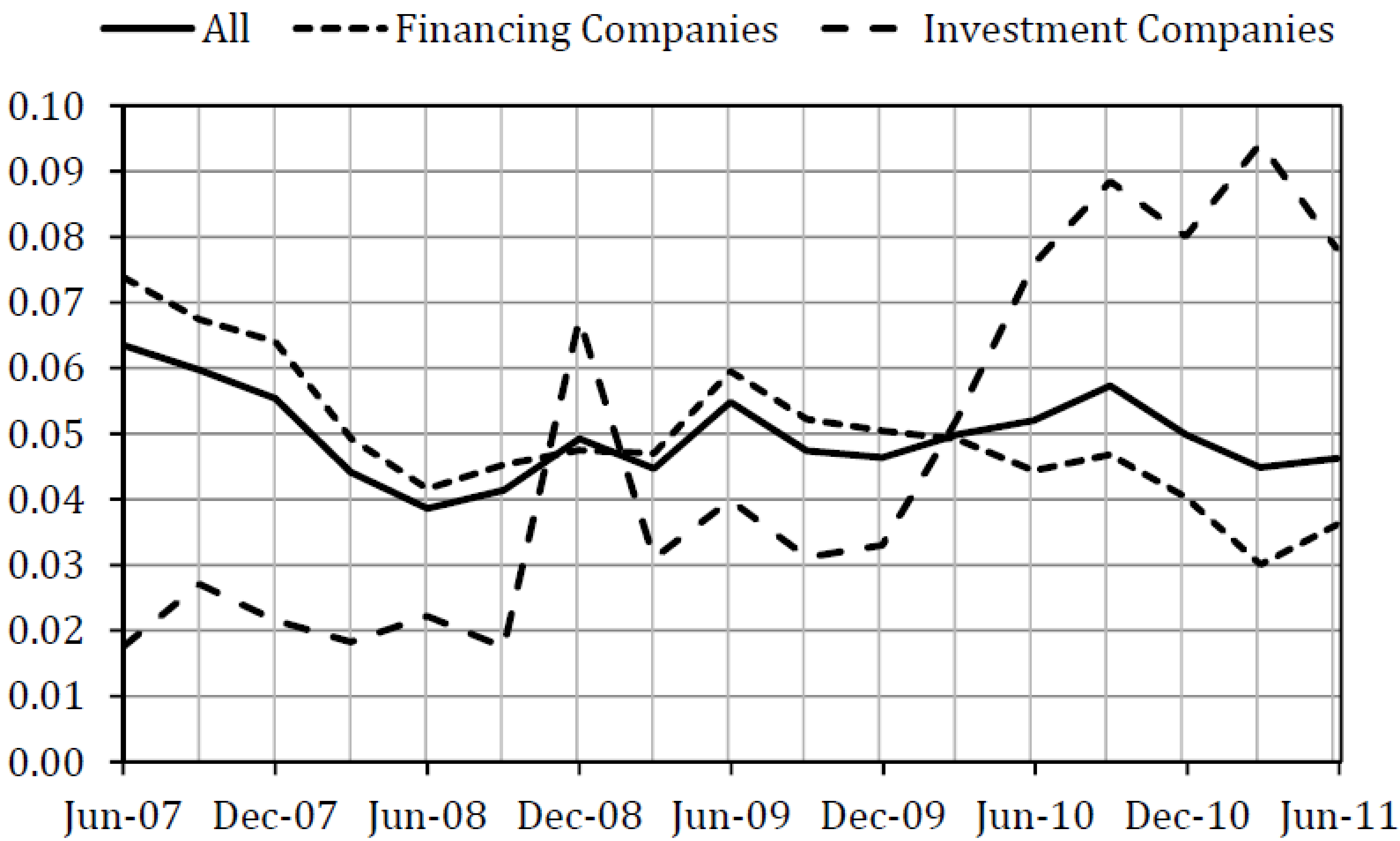


Bank & FI loans to Investment vs Finance NBFCs

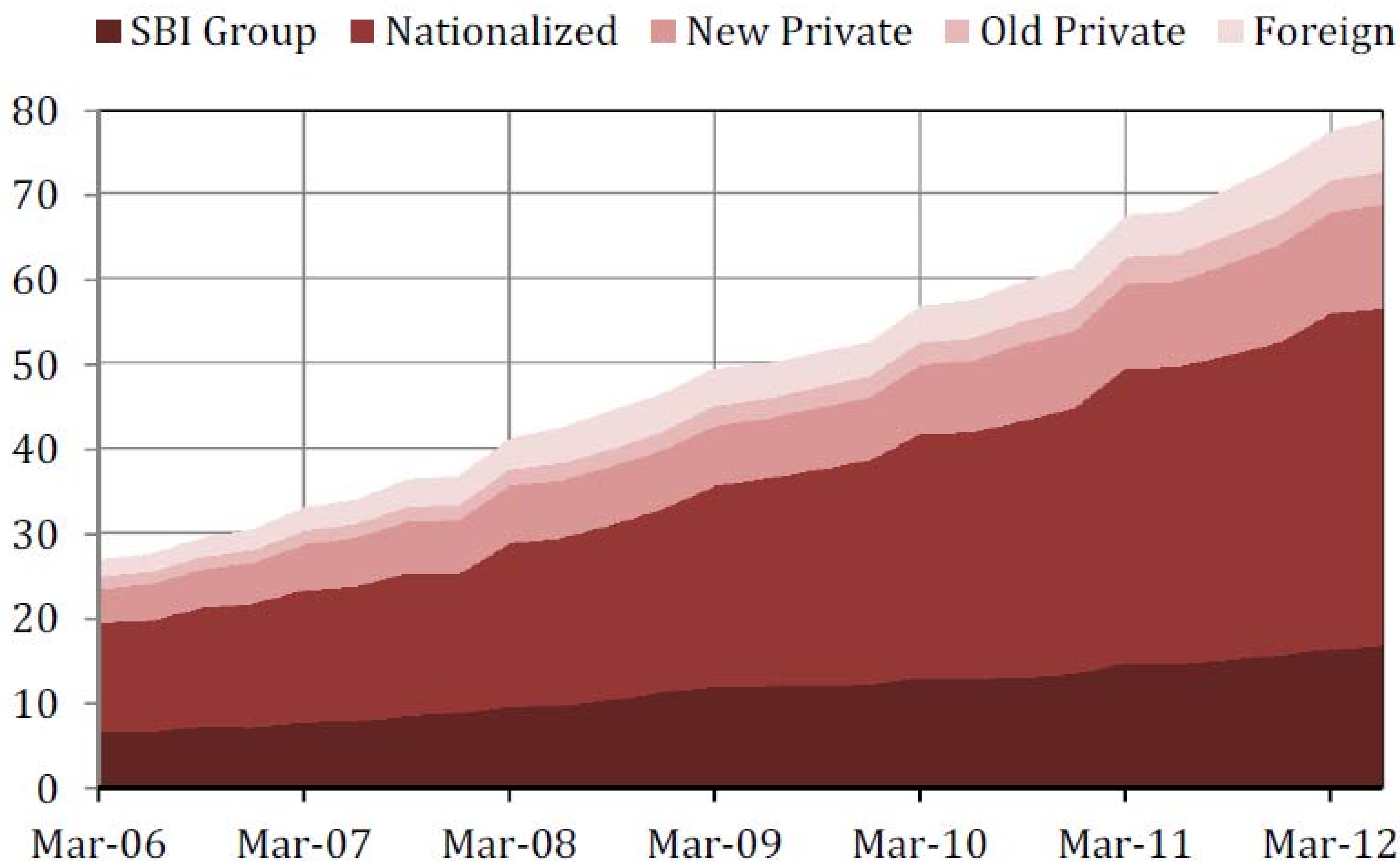


11.a) Bank Loans

Commercial Paper: Investment vs Finance NBFCs



Bank Groups by Assets (Trillions of rupees)



Five datasets (June qtr 2006 – June qtr 2011)

- NBFC-level balance sheet and non-performing asset data on systemically important non-deposit taking NBFCs
- Bank group-level balance sheet data on bank groups
- Bank group-level priority sector lending data on bank groups
- Bank group-level bank branch data on bank groups
- Economic data on Indian 3 month and 10 year yields, gross domestic product and wholesale price index.
- Sample inclusion criteria yield an imbalanced panel data set of 257 NBFCs and 2374 NBFC-quarters from an initial imbalanced panel data set of 383 NBFCs and 3629 NBFC-quarters

Specification

$$y_{it} = \alpha x_{it} + \beta z_t + u_i + e_{it}$$

- y_{it} is the NBFC specific dependent variable for the i^{th} NBFC in the t^{th} quarter,
- x_{it} is the vector of NBFC specific explanatory variables,
- z_t is the vector of bank group-wise and economic explanatory variables,
- u_i is the random effect variable for the i^{th} NBFC, and
- e_{it} is the error term.

- Both u_i and e_{it} are i.i.d. normal variables, except that for each NBFC i, they are correlated, and the correlation coefficient is constant.

- We employ the Simulated Maximum Likelihood Estimation (SMLE) approach and report the Observed Information Matrix standard errors.

Specification (cont'd)

$$y_{it} = \alpha x_{it} + \beta z_t + u_i + e_{it}$$

- y_{it} is either

(1) the quarterly change in bank loans to the NBFC scaled by the previous quarter assets of the NBFC, or

(2) the quarterly change in total credit extended by the NBFC scaled by the previous quarter assets of the NBFC,

- x_{it} is the NBFC size, capitalization, liquidity and non-performing assets

- z_t is the yield curve slope, GDP growth and inflation

Table II

Result Ia: Bank Loans to NBFCs positively related to Bank Priority Sector Lending, except for SBI Group

Result Ib: NBFC Credit Growth is lower when Bank Priority Sector Lending is higher (substitution)

Panel B

Dependent Variable:	ΔBL/A				ΔTC/A			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
IC	0.013	0.018	0.012	0.011	0.057*	0.041	0.060*	0.059*
	(0.016)	(0.016)	(0.016)	(0.017)	(0.034)	(0.034)	(0.034)	(0.034)
FC	0.031*	0.047***	0.030*	0.031*	0.146***	0.128***	0.148***	0.148***
	(0.017)	(0.016)	(0.017)	(0.017)	(0.037)	(0.036)	(0.036)	(0.037)
IC*ΔPSLALL/PSLALL	-0.009				-0.114			
	(0.052)				(0.090)			
FC*ΔPSLALL/PSLALL	0.258***				-0.238*			
	(0.053)				(0.092)			
IC*ΔPSLSBI/PSLALL		0.091		0.137		0.017		0.227
		(0.176)		(0.190)		(0.307)		(0.332)
FC*ΔPSLSBI/PSLALL		0.222		-0.144		-0.217		0.116
		(0.180)		(0.193)		(0.314)		(0.340)
IC*ΔPSLOTH/PSLALL			-0.022	-0.040			-0.161	-0.191*
			(0.061)	(0.066)			(0.106)	(0.114)
FC*ΔPSLOTH/PSLALL			0.327***	0.345***			-0.300***	-0.315***
			(0.062)	(0.066)			(0.108)	(0.116)

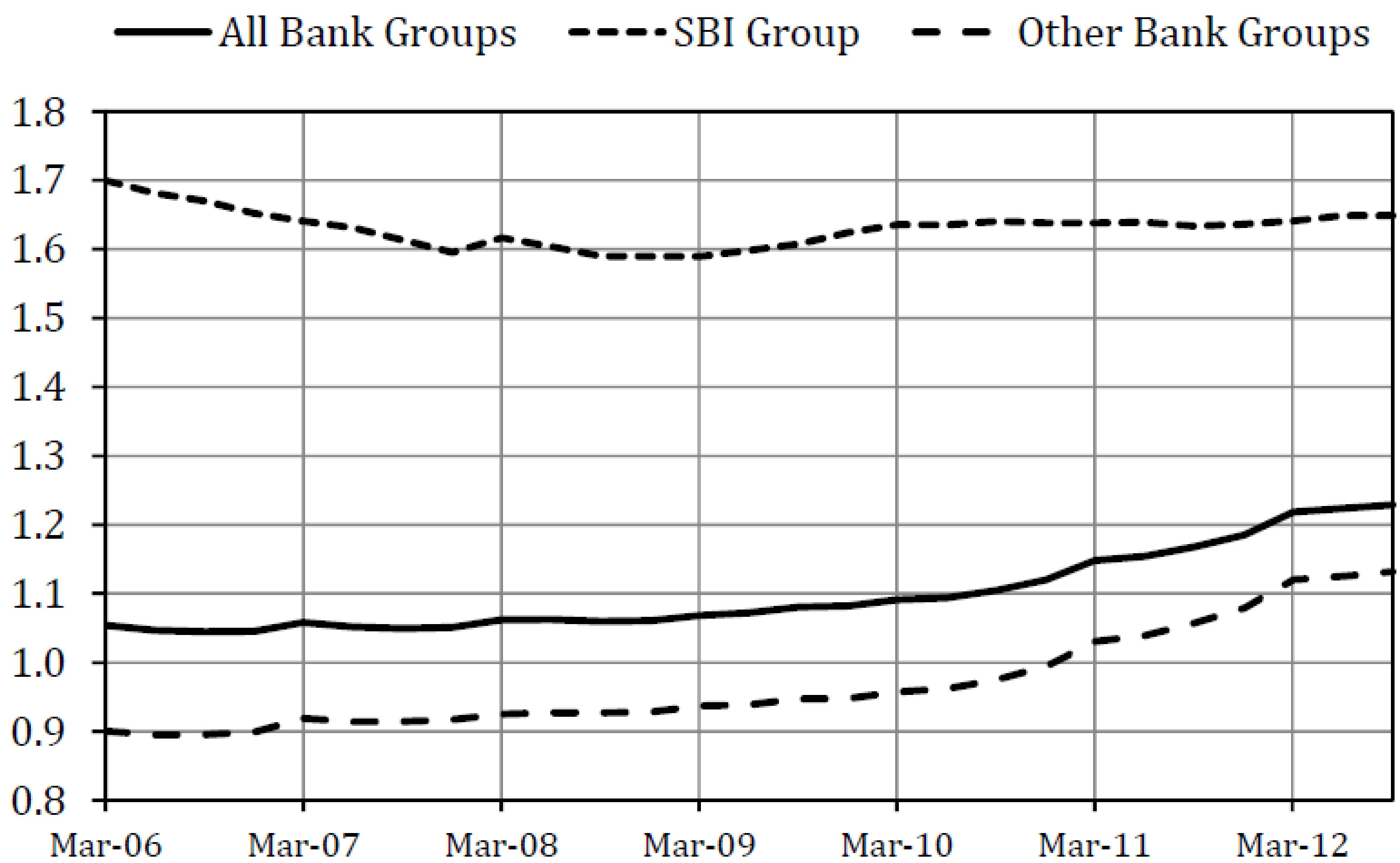
Table III

Result IIa: Bank Loans to NBFCs negatively related to Semi-urban to Metropolitan branching, except for SBI Group

Result IIb: NBFC Credit Growth is lower when Bank Semi-urban to Metropolitan branching is higher

	Panel B							
Dependent Variable:	ΔBL/A				ΔTC/A			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
IC	-.0290	0.343	-0.025	0.361	0.208	-0.457	0.171	-0.446
	(0.091)	(0.228)	(0.066)	(0.227)	(0.165)	(0.404)	(0.120)	(0.404)
FC	0.319***	0.423*	0.242***	0.368	0.747***	0.448	0.566***	0.359
	(0.0951)	(0.229)	(0.070)	(0.229)	(0.173)	(0.403)	(0.127)	(0.404)
IC*SU/M-ALL	0.040				-0.178			
	(0.841)				(0.153)			
FC*SU/M-ALL	-0.215***				-0.596***			
	(0.088)				(0.161)			
IC*SU/M-SBI		-0.212		-0.269*		0.309		0.430
		(0.145)		(0.151)		(0.256)		(0.268)
FC*SU/M-SBI		-0.243*		-0.092		-0.196		0.151
		(0.146)		(0.157)		(0.256)		(0.275)
IC*SU/M-OTH			0.042	0.080			-0.162	-0.223
			(0.069)	(0.072)			(0.125)	(0.131)
FC*SU/M-OTH			-0.204***	-0.196**			-0.486***	-0.502***
			(0.073)	(0.079)			(0.133)	(0.143)
Loglikelihood	2358.85	2356.34	2358.82	2360.42	909.35	903.66	909.28	910.58
Likelihood Ratio	72.02***	68.84***	71.89***	74.98***	154.35***	135.59***	154.18***	157.44***

Branching (Semi-urban to metropolitan) by Bank Group



2.a) SBI Group and Other Bank Groups

Bank-NBFC Transmission in the Crisis of Fall 2008

- A “shadow bank run” on the NBFCs, resulting from a “run” on

1. The private sector banks (transmitted to the NBFCs through bank loans)

2. The mutual funds (transmitted to the NBFCs through commercial paper).

- RBI Deputy Governor Usha Thorat described the situation as follows:

“*Especially the public sector bank deposits went up and the private sector bank deposits took a knock. So, the private sector banks were quite resource constrained. Also, the RBI facilities were mostly collateralized ones against government securities and private sector banks did not have sufficient securities above the statutory requirements to be able to take RBI liquidity – which meant they were constrained on liquidity at the same time that lending by banks to NBFCs decelerated.*

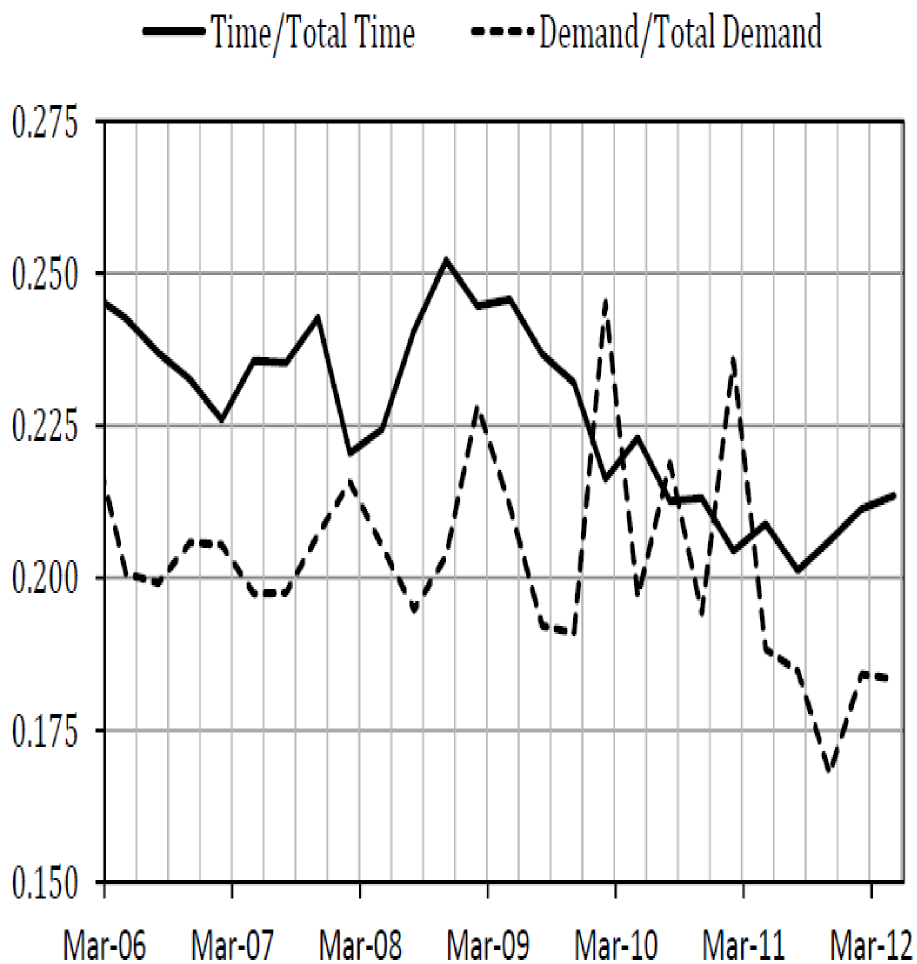
Bank-NBFC Transmission in the Crisis of Fall 2008

- RBI Deputy Governor Usha Thorat described the situation for NBFCs as:

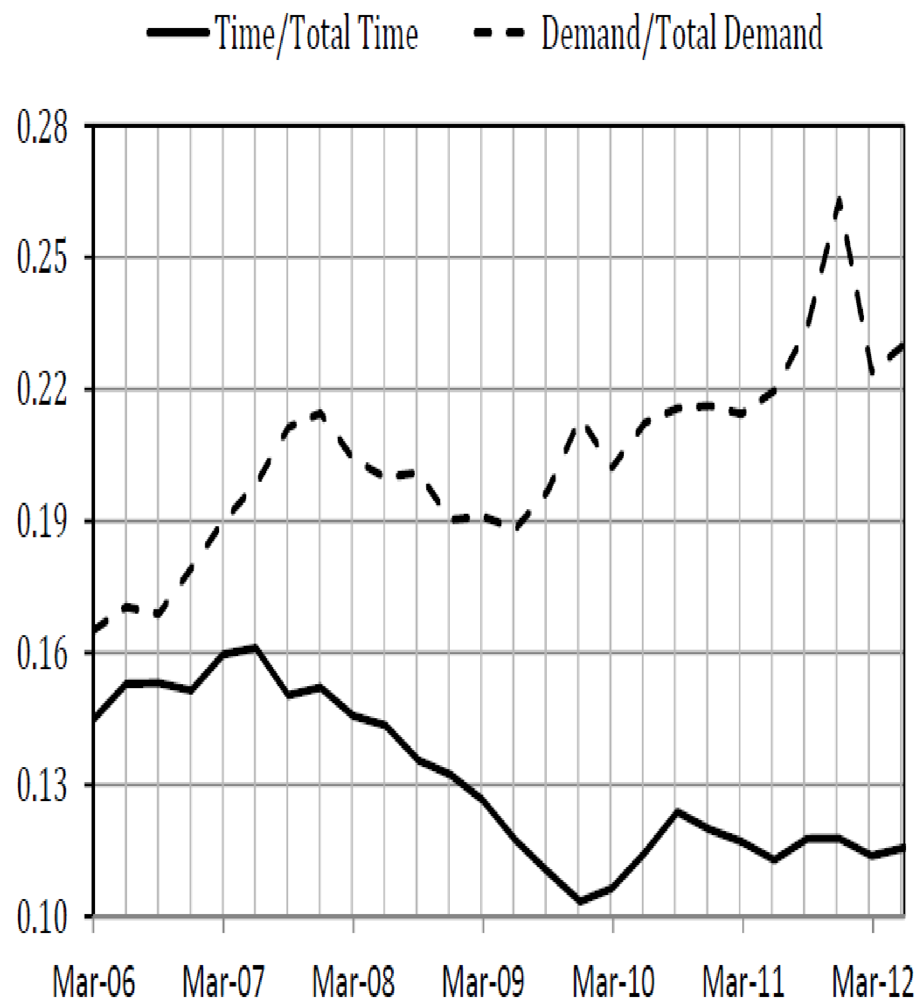
"In Aug 2008, some NBFCs faced a liquidity problem. Many of them were even doubtful whether their CPs would be rolled over. Some of them had to have liquidity infusion from their sponsors. Bank credit lines started choking. The mutual funds, which had invested in the NBFCs' short term paper, withdrew or started selling these. In fact, the vulnerability of this sector to liquidity risk got exposed. There was huge pressure on the RBI to open a liquidity window special for NBFCs.

The RBI Act prohibits lending to non-banks (except for some very few categories) and so we did open a window through banks. But banks were quite reluctant to use it as they had to take credit risk of NBFCs, which they started getting very wary about. When banks were unwilling to finance NBFCs, the RBI opened a special facility through a structured vehicle, which was already located in the IDBI."

Term Deposit Flight from Private to Public Banks



6.a) SBI Group



6.c) New Private Banks

Bank Credit skewed towards SBI Group

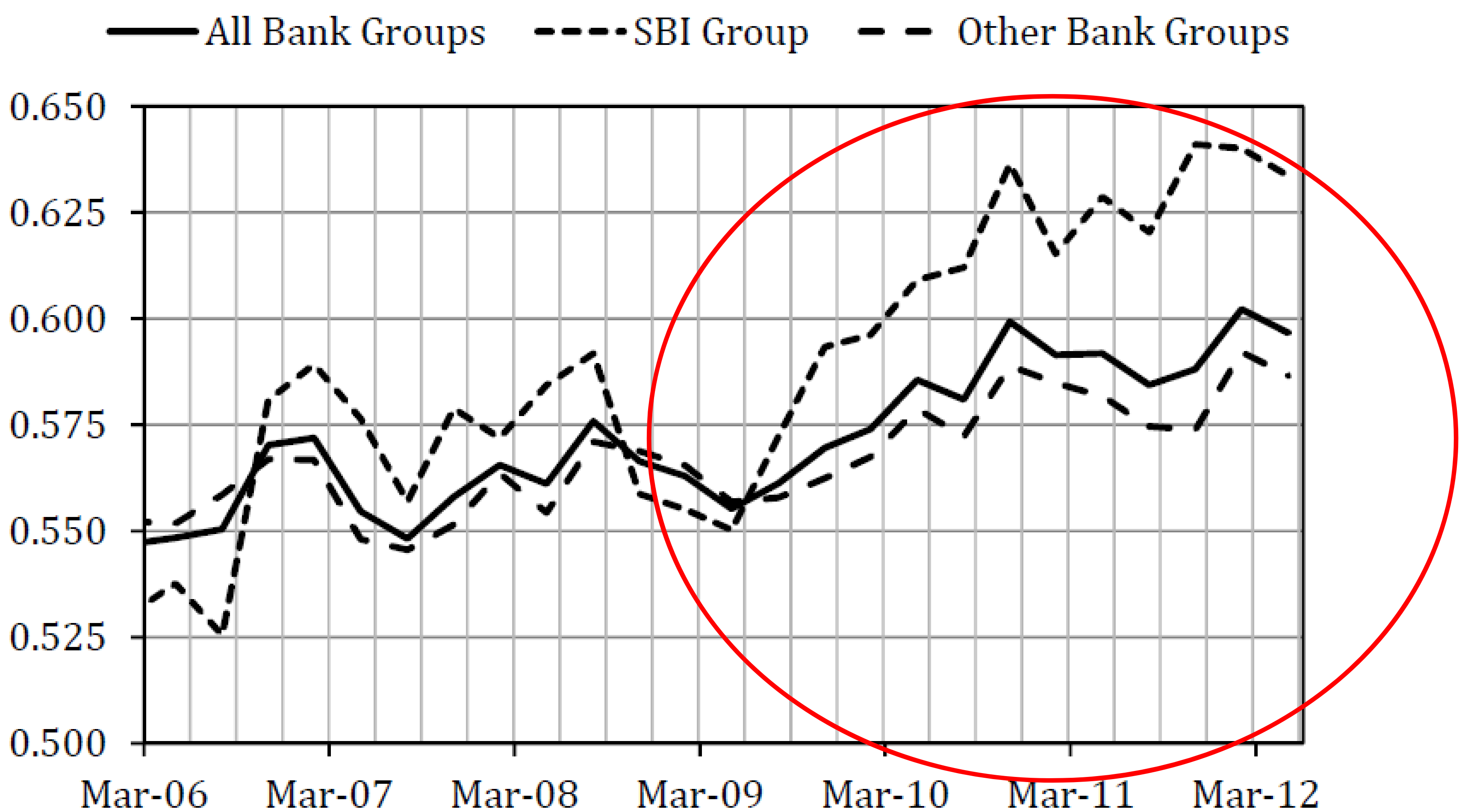
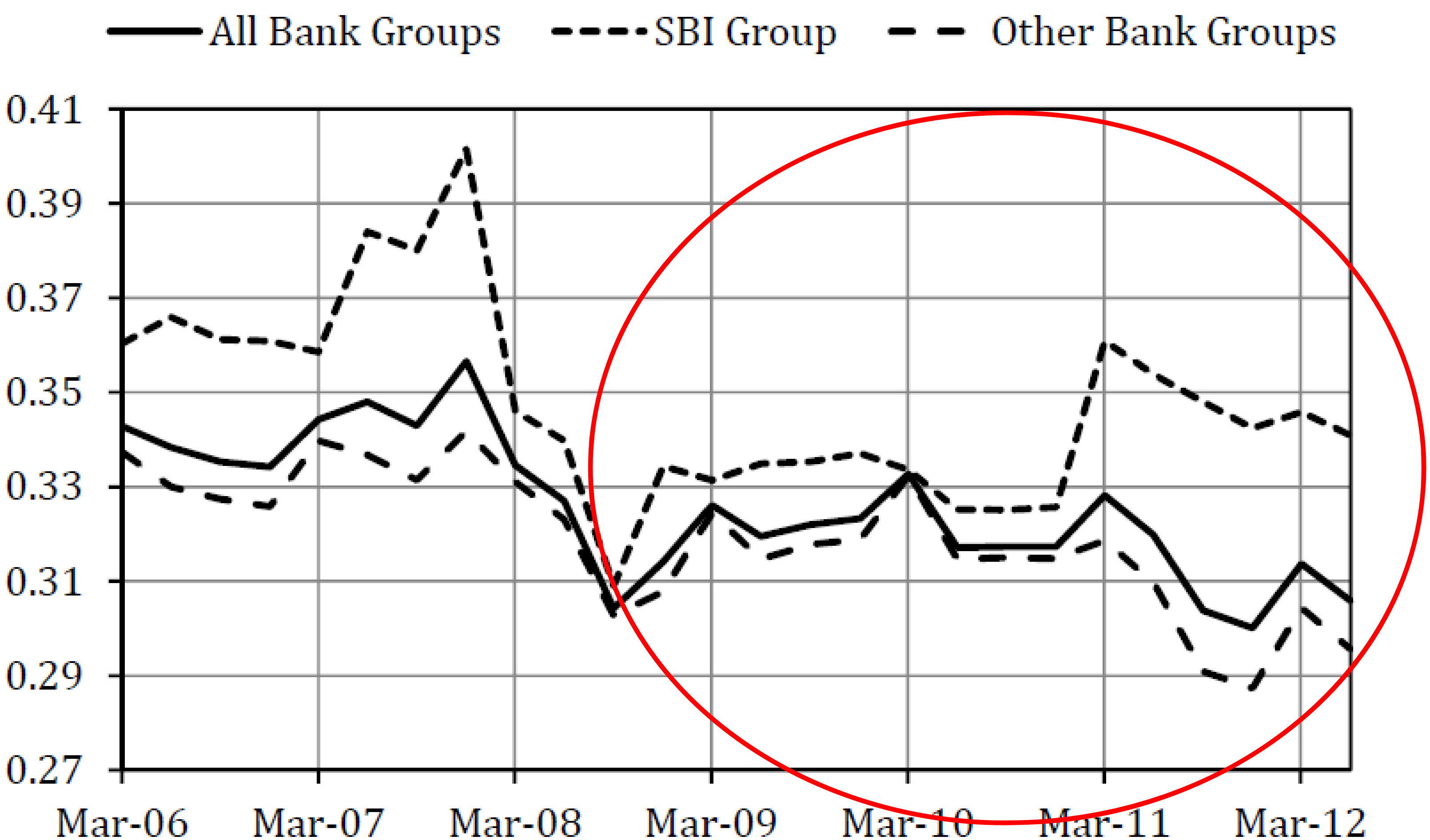


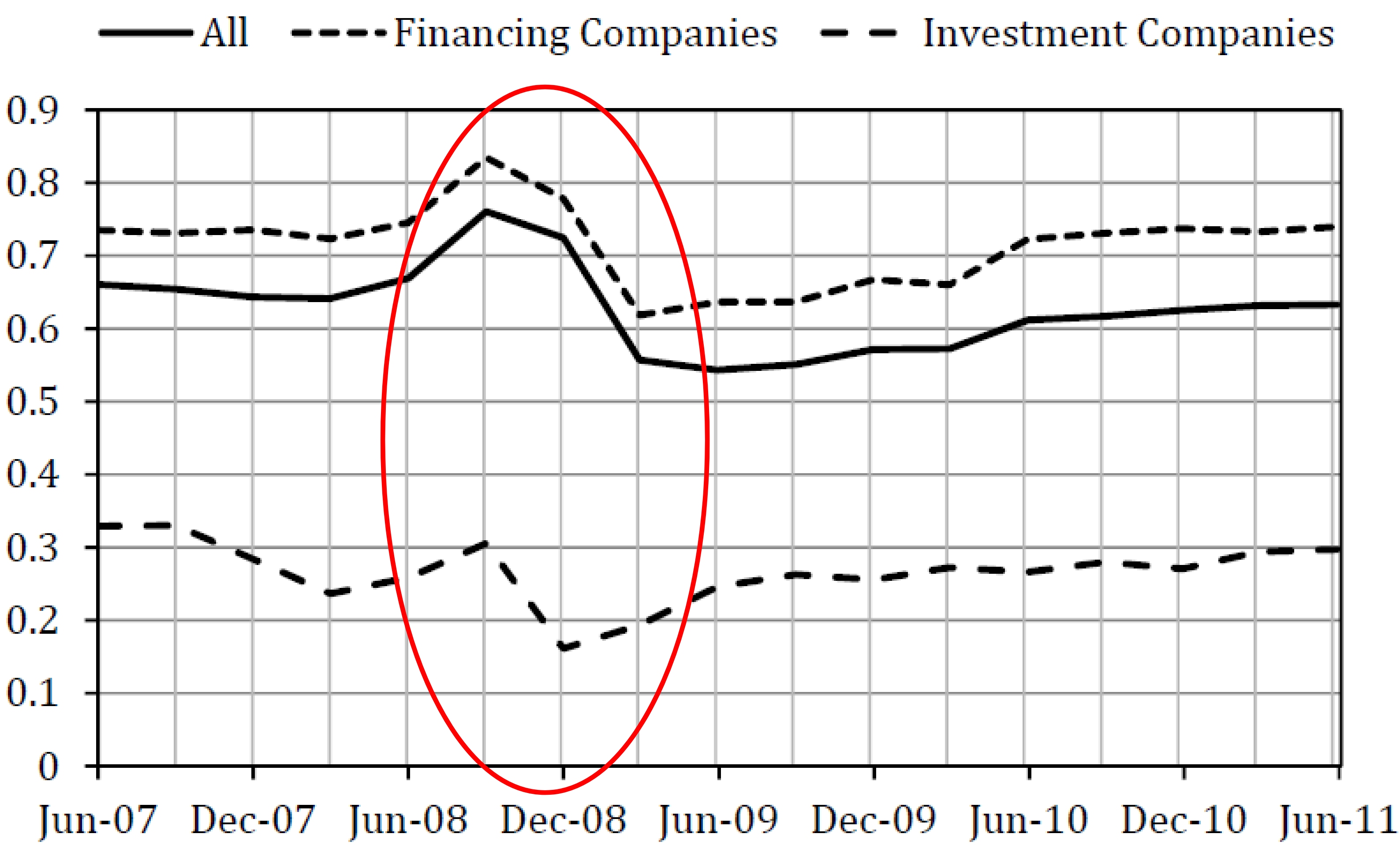
Figure 5: Bank Total Credit as percentage of Total Assets. Figure 5 plots the total

Priority Sector Lending also skewed to SBI Group

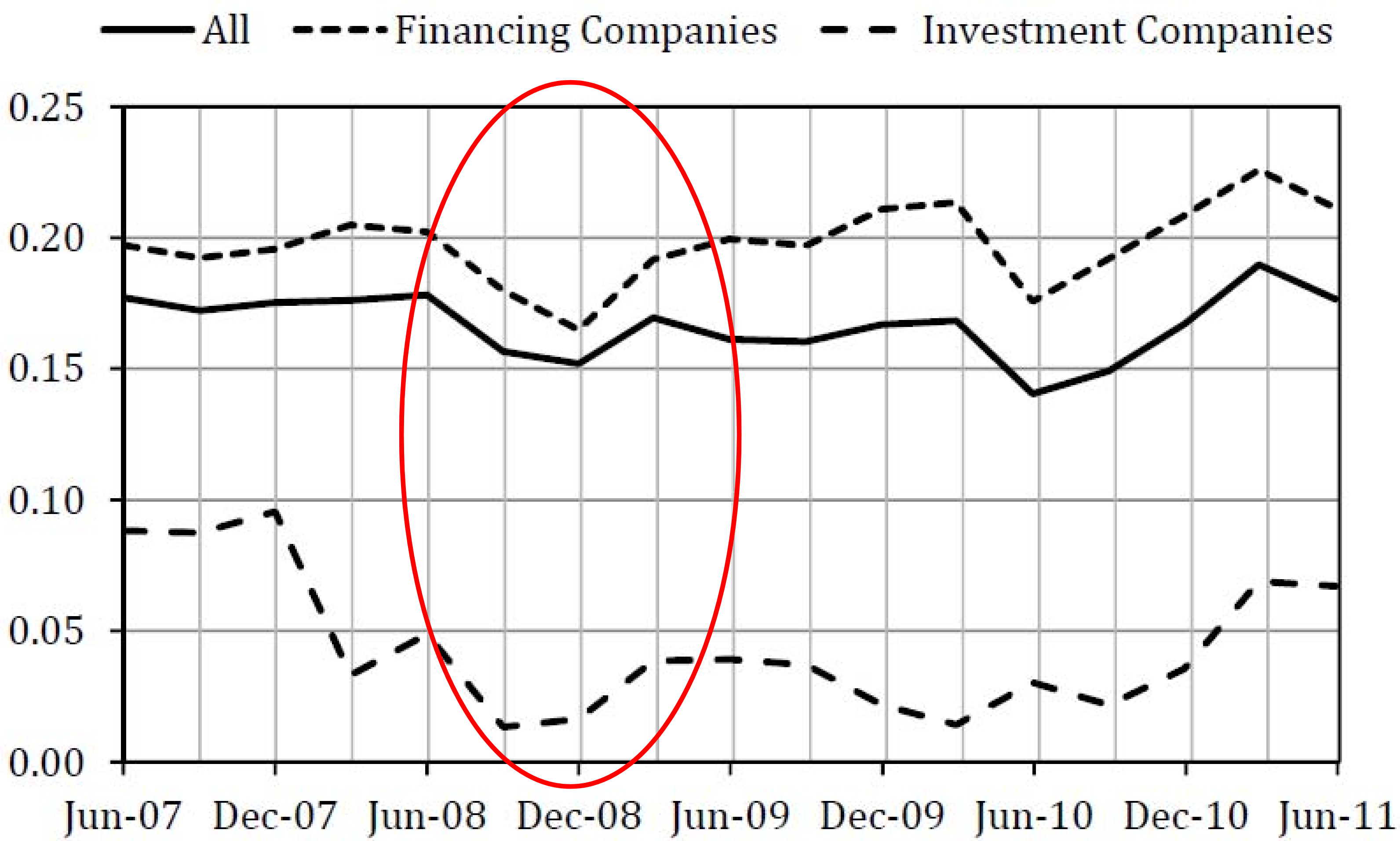


3.a) SBI Group and Other Bank Groups

Credit Growth of Investment vs Finance NBFCs



Bank & FI loans to Investment vs Finance NBFCs



11.a) Bank Loans

Table VII

Result IIIa: Bank Loans to NBFCs negatively related to
the Crisis (permanent effect) and
the Term to Total Deposits for the SBI Group

Result IIIb: NBFC Credit Growth is lower since
the Crisis (permanent effect) and
the Term to Total Deposits for non-SBI Group is higher
(<u>substitution</u>)

	Panel B							
Dependent Variable:	ΔBL/A				ΔTC/A			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
IC	0.052**	0.052**	0.048**	0.053**	0.106**	0.084**	0.118***	0.112***
	(0.022)	(0.020)	(0.022)	(0.022)	(0.042)	(0.038)	(0.041)	(0.042)
FC	0.106***	0.102***	0.088***	0.100***	0.233***	0.201***	0.247***	0.241***
	(0.023)	(0.020)	(0.022)	(0.023)	(0.043)	(0.040)	0.043	(0.044)
IC*CRISIS	-0.010	-0.007	-0.012	-0010	-0.017***	-0.019	-0.019	-0.019
	(0.008)	(0.008)	(0.008)	(0.008)	(0.015)	(0.014)	(0.015)	(0.015)
FC*CRISIS	-0.037***	-0.037***	-0.033***	-0.035***	-0.065	-0.064***	-0.068***	-0.068***
	(0.008)	(0.008)	(0.008)	(0.008)	(0.0149)	(0.015)	(0.015)	(0.015)
IC⍰ΔTDALL/TDALL	-0.048				-0.389			
	(0.165)				(0.289)			
FC⍰ΔTDALL/TDALL	-0.131				-0.546*			
	(0.166)				(0.291)			
IC⍰ΔTDSBI/TDSBI		0.015		0.004		0.187*		0.070
		(0.061)		(0.069)		(0.107)		(0.121)
FC⍰ΔTDSBI/TDSBI		-0.201***		-0.223***		0.194*		0.087
		(0.062)		(0.070)		(0.108)		(0.122)
IC⍰ΔTDOTH/TDOTH			-0.020	-0.159			-0.386*	-0.302
			(0.119)	(0.134)			(0.208)	(0.235)
FC⍰ΔTDOTH/TDOTH			0.132	0.043			-0.579***	-0.499**
			(0.121)	(0.136)			(0.211)	(0.237)
Loglikelihood	2364.36	2370.10	2364.76	2371.23	913.36	913.96	915.95	916.25
Likelihood Ratio	83.82***	95.86***	84.78***	98.28***	163.67***	165.51***	170.46***	171.30***

Summary of Results

- Bank lending to the non-deposit taking NBFCs
  - forms a significant proportion of these NBFC's liabilities.
  - fluctuates in line with bank allocation to priority lending sectors.
  - appears to be greater for banks that have lower branching in semi-urban areas relative to metropolitan areas.
- However, bank lending to these NBFCs is virtually non-existent for the largest state-owned bank, State Bank of India (SBI), and its affiliates, which have strong semi-urban branching.
- These bank-NBFC linkages are present for those NBFCs that do loans or asset financing and not for investment companies, and also affect the credit growth of these NBFCs.
- Starting with the financial crisis of Fall 2008, bank lending to these NBFCs experienced a permanent contraction that is related to the shift of term deposits towards SBI Group.

Conclusions

- The non-deposit taking NBFCs in India likely represent a completeness of credit allocation in non-metropolitan areas of the Indian economy by banks with less than fully-developed branching networks.
- This NBFC role has been potentially constrained by distortions in bank deposit base arising from a lack of level-playing field in the perceived government support of different banking groups.
- Since these NBFCs are relatively well-regulated on the capital front, it is primarily their linkage to the banking sector that stands out as a potential concern for systemic risk considerations.
- Furthermore, our results highlight that shadow banking in emerging markets may look quite different from that in developed economies.