

Why India choked when Lehman broke

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- 3 Contagion when Lehman died
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Questions

Transmission of global financial shock to India

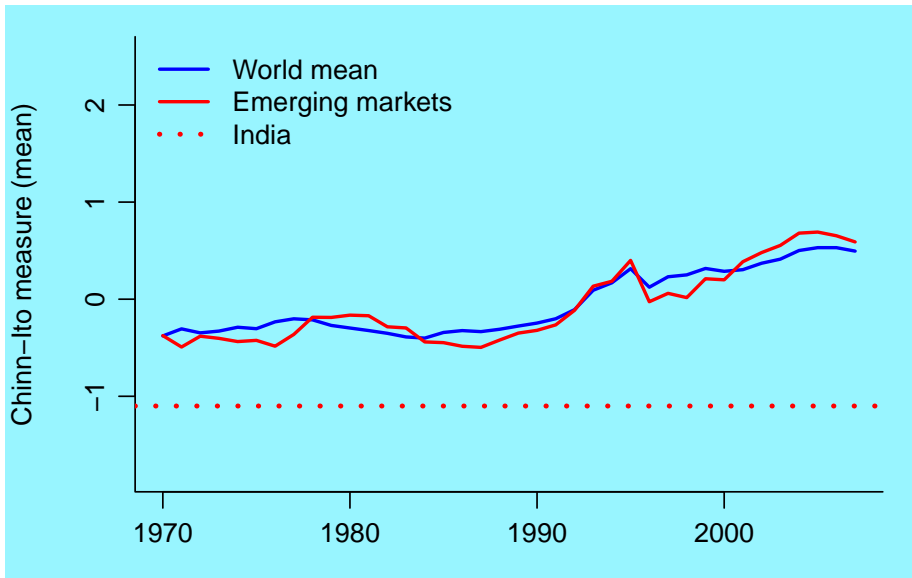
- Indian capital account not fully open.
- Yet, there was a rapid transmission of the global liquidity shock to Indian money markets.
- How did this happen?

Transmission of global financial shock to India

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- How did this happen?
- Our main argument: multinational corporations were a critical part of the story.

The setting: How open is India?

De jure convertibility: Chinn-Ito measure

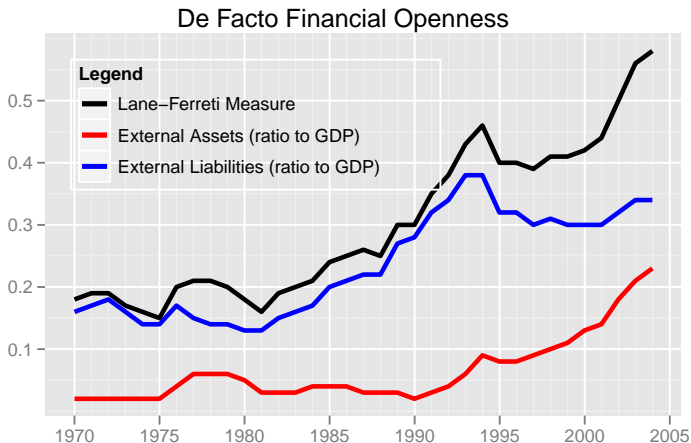


Measures of *de facto* openness

Lane and Milesi-Ferretti Measures the sum of external liabilities and external assets as a share of GDP.

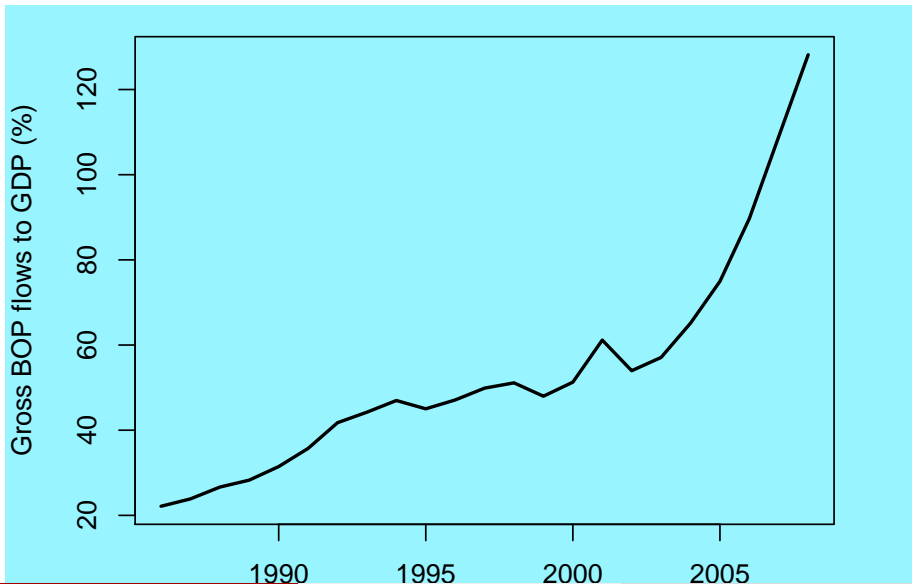
Gross flows Gross flows on the current and capital account as a share of GDP.

De facto openness: Lane Ferretti measure



Source: Lane and Milesi-Ferretti

De facto openness: Gross flows to GDP

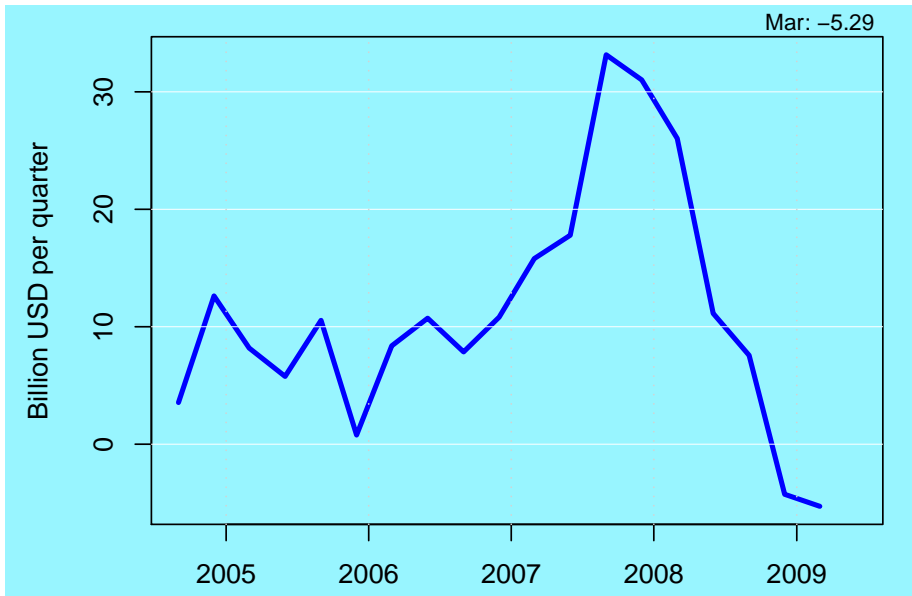


Summary: India's openness

- A remarkable degree of closedness, *de jure*
- A torrid pace of increase of measures of *de facto* openness
- Yet, all in all, relatively closed by world standards on a *de facto* basis also.

Contagion when Lehman died

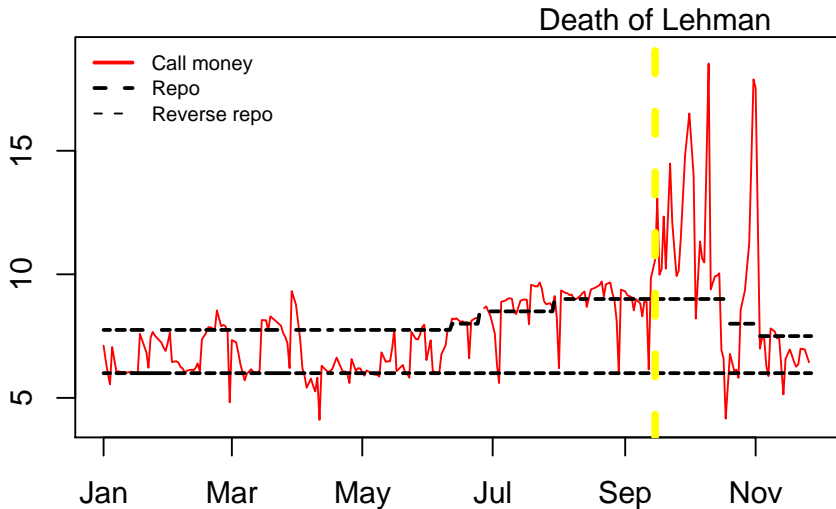
The context: a sudden stop



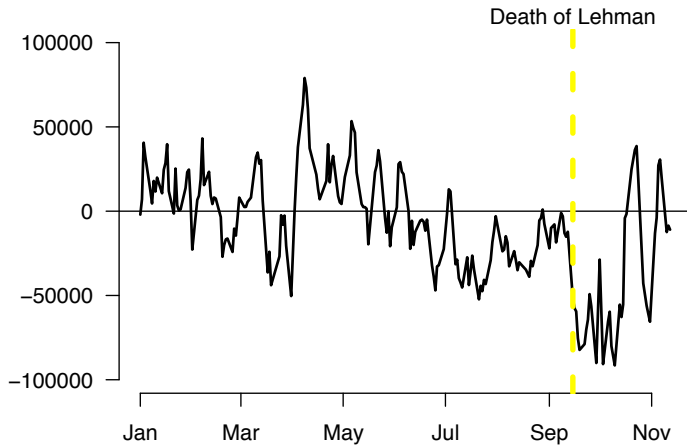
Turmoil in money market

Date	TED Spread	Call money rate	RBI repo (Bln. Rs.)
(Monday) 8 Sep	1.13	8.83	10.25
9 Sep	1.19	8.30	30.25
10 Sep	1.20	8.94	129.85
11 Sep	1.24	8.88	151.95
12 Sep	1.36	6.15	144.00
(Monday) 15 Sep	1.79	9.84	518.15
16 Sep	2.04	10.59	575.65
17 Sep	3.03	13.07	594.80

The call money rate vs. the RBI's "corridor"



Outstanding position of RBI LAF



Summary: There was rapid contagion

- Lehman died on the weekend of 13/14 September.
- On 15th (Monday), the Indian money market opened 5.5 hours before London.
- It was in turmoil before London opened.
- This is not what we might expect if we think India is mostly closed.

Proposed explanation

A proposed explanation

Our proposed explanation: the offshore operations of Indian MNCs played an important part in this story:

- Ordinarily, Indian firms are blocked from short-dated offshore borrowing by capital controls. External commercial borrowings are for a minimum of 3 years.
- Indian MNCs are able to beat this restriction; their offshore subsidiaries borrow on the money market in London.
- When the London money market choked, these firms faced dollar shortages in order to rollover.
- The parents borrowed in rupees and sent money out to the offshore subsidiaries in order to tide over the temporary glitch in the London money market.

How might one substantiate this?

- Strategy 1: Direct observation of data from inside MNCs.
Such data does not exist.
- Strategy 2: Gathering circumstantial evidence.

Strategy 2: Predictions that follow from this hypothesis

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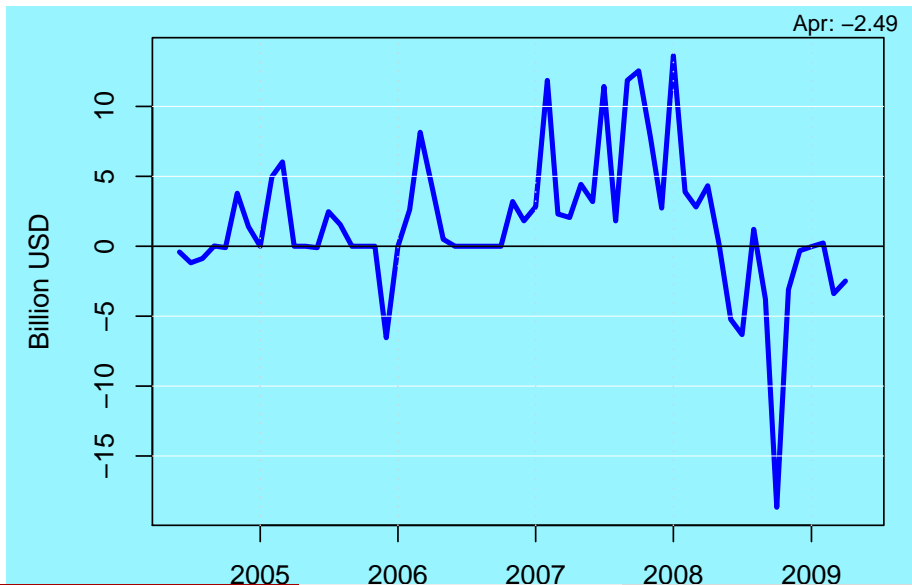
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- 3 *Stock market*: Stock prices should reveal exceptional exposure of Indian MNCs to offshore credit spreads.

Our hypothesis yields five predictions 1a, 1b, 2a, 2b, 3.

Empirical evidence

Pressure on the rupee: RBI intervention



1a) Capital left the country with pressure on the rupee Yes

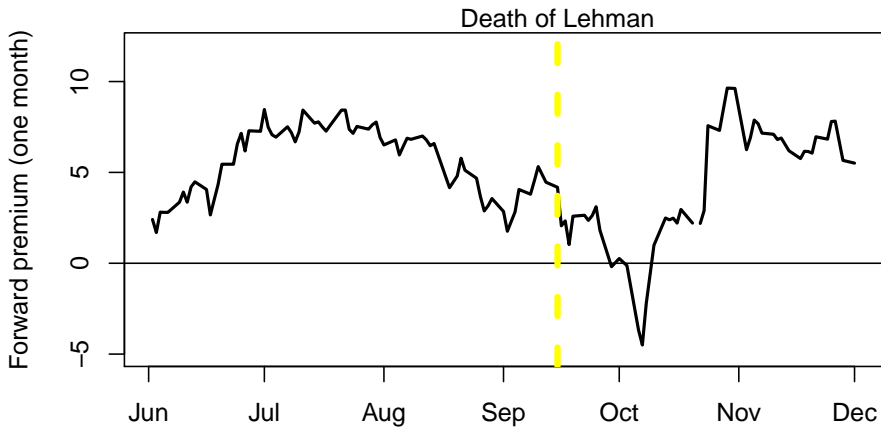
1b) MNCs bringing money back at forward dates: selling dollars

2a) High values for outbound FDI

2b) Not accompanied by M&A

3) Stock prices of Indian MNCs show exceptional sensitivity to the Moody's Baa spread

What happened with the forward premium



Forward premia *dropped!* This was no ordinary capital flight, where rapid INR depreciation takes place and INR weakness is expected at future dates.

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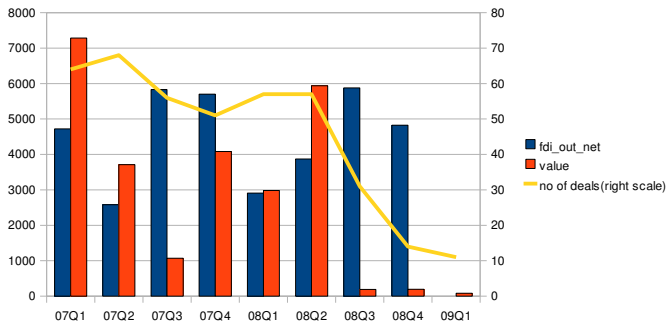
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Outbound FDI

	(Million USD per quarter)	
	Sep 2008	Dec 2008
Loans	3,561	1,733
Banking capital	2,131	-4,956
Investment	4,254	-5,000
FDI in India	8,782	6,684
FDI by India	-3,218	-5,864
Portfolio investment	-1,301	-5,787
Others	-2,094	4,540
Net capital inflows	7,852	-3,683

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M&A Activity had collapsed

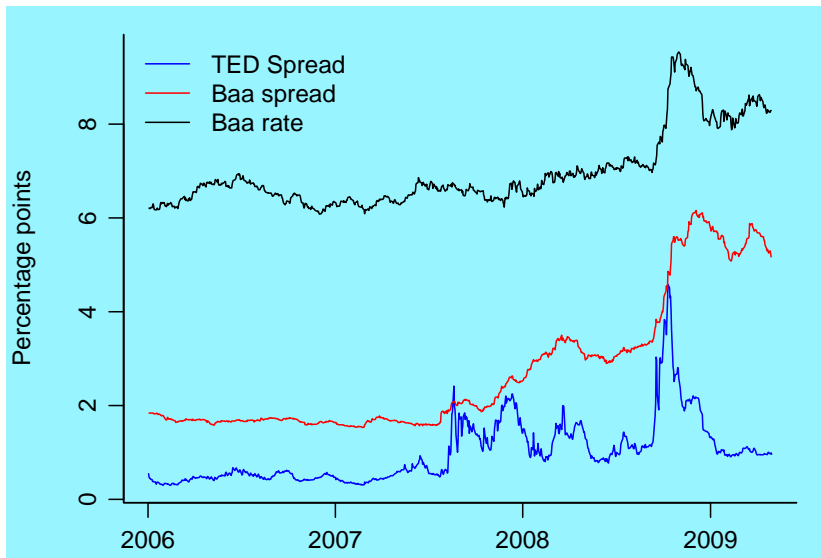


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The key idea of exposures measured from stock prices

- Offshore credit conditions for the best Indian firms are measured by the Moody's Baa spread.
- Pre-crisis: many Indian companies (MNC or not) were trying to obtain foreign borrowing.
- Our key idea: MNCs should have a bigger exposure to the Moody's Baa spread than non-MNCs.

The Moody's Baa spread



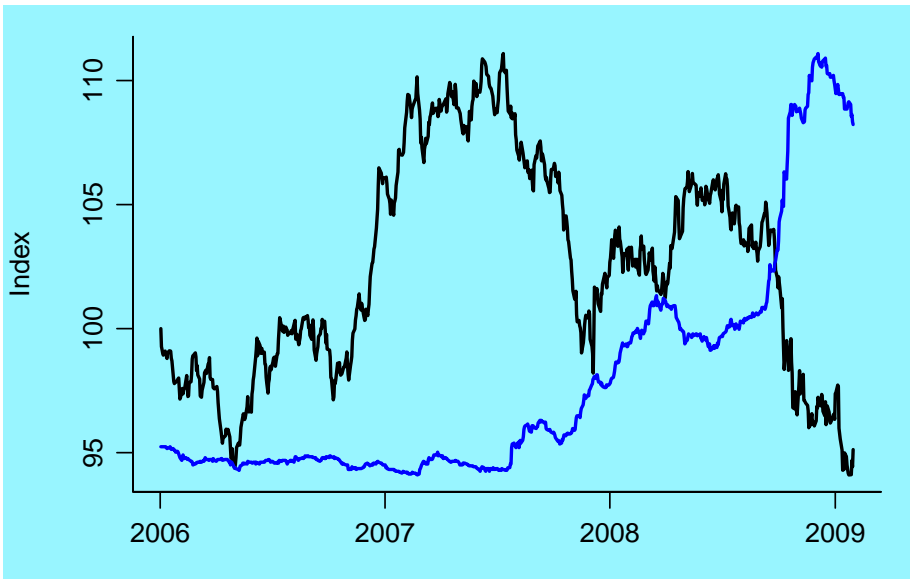
So why not just look at stock prices of MNCs?

- 1 Individual stock prices contain substantial idiosyncratic risk. The signal (of the extent to which Indian MNCs are influenced by the Moody's Baa spread) would be weak when compared with the noise (of idiosyncratic stock price fluctuations).
- 2 It could be argued that MNCs are firms with significant international *trade* exposure.
- 3 It could be argued that MNCs tend to be large firms with more leverage. All large leveraged Indian firms are likely to have some borrowing abroad, and would be adversely affected when the Moody's Baa spread rises. Interpreting this as a consequence of outbound FDI would be incorrect.

Estimation strategy

- Match each MNC against a non-MNC exporting firm with similar size and leverage.
- Setup a portfolio which is long MNCs and short their partners.
- All other factors – Indian economy and politics, global trade exposure, etc. – are common to both.
- The question: Is this portfolio exceptionally sensitive to global credit conditions?

The $H_t^{I/DX}$ time-series



Regression of returns on $H_t^{I/DX}$ on change in the Moody's Baa spread

	Coefficient	Std. Error
Intercept	-0.02	0.02
Change in Baa spread	-1.5	0.43

Robustness checks

- Could it be that MNCs are just more internationally oriented (with more trade exposure) than the partner?
To address that, we focus on the non-MNC exporters, and break them into two groups: above-median exports and below-median exports. We do a similar matching exercise to construct a portfolio which is long hi-exports and short lo-exports. This is a control for pure trade exposure to the international economy.
The results are robust to this.
- Could it be that the stock market picks up these things with a lag?
We include ten days of lags. The results are robust to this.

1a) Capital left the country with pressure on the rupee	Yes
1b) MNCs bringing money back at forward dates: selling dollars	Yes
2a) High values for outbound FDI	Yes
2b) Not accompanied by M&A	Yes
3) Stock prices of Indian MNCs show exceptional sensitivity to the Moody's Baa spread	Yes

Conclusions

A persuasive story?

- Indian MNCs were bypassing capital controls, engaging in money market operations offshore.
- When Lehman died, the London money market choked; these subsidiaries were short of dollars.
- MNCs borrowed in India, converted to USD, took money outside.
- This gave money market tightness, selling pressure on spot dollar, buying pressure on forward dollar.
- An upsurge in 'outbound FDI' in BOP data – even though this was hardly a quarter in which either economic conditions or financing conditions were conducive to outbound FDI. And, it wasn't the usual M&A.
- On a daily basis, the Indian stock market shows a response of stock prices of MNCs to the Moody's Baa spread.

Immediate policy implications

- Ineffectiveness of capital controls against short-term borrowing
- New insights into the mechanism of contagion

Deeper policy implications

- We have long known that MNCs are central to globalisation
- MNCs appears to be important for both current account and capital account integration
- There is a literature on MNCs doing tax optimisation on a global scale
- We are seeing the consequences of MNCs doing finance on a global scale
- Our data focuses on Indian MNCs. Similar capital account activities might be taking place across the Indian border by foreign MNCs also: these are just not measured adequately.

Linkage to debates about capital controls

- A country desiring trade integration into the world has to embrace MNCs (both domestic and foreign)
- The removal of *capital account* restrictions against foreign MNCs in the early 1990s was a crucial part of India's success in exports from the late 1990s onwards.
- The easing of capital controls against *Indian* MNCs at the turn of the century has given us these interesting phenomena today
- No country will really wield capital controls against its own MNCs
- Emphasises the deep links between trade integration and capital account integration. It is hard to have the former but not the latter.

Thank you.