Multinational corporations and crisis transmission

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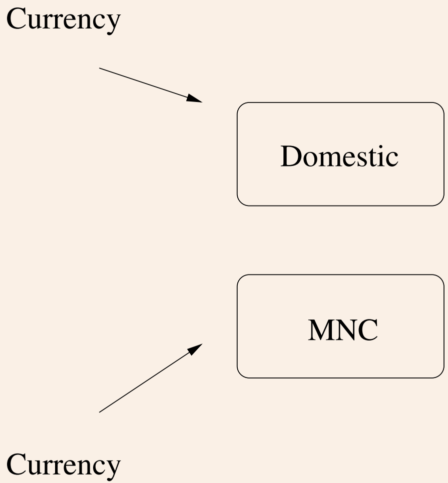
Domestic

MNC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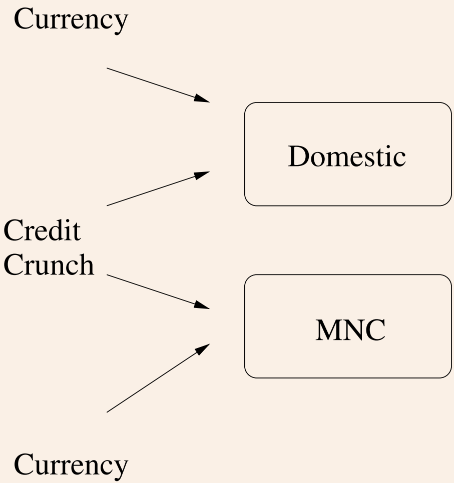
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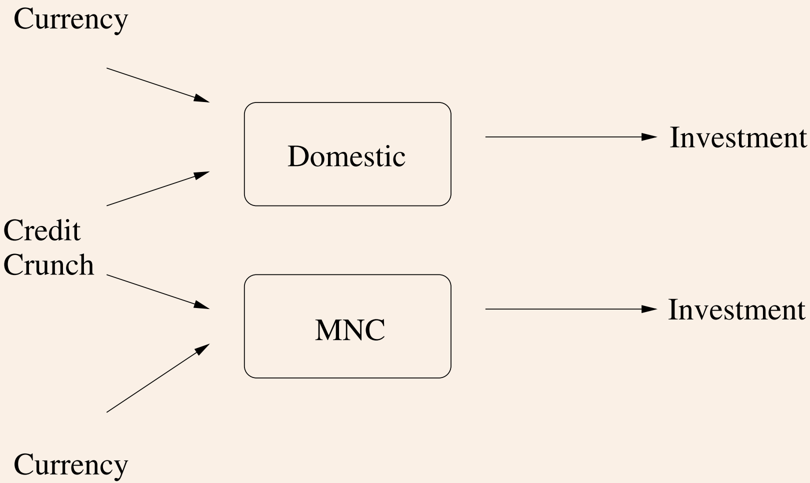
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MNCs and exposure

- MNCs are likely to have bigger exposure to the world economy
- But comparisons of exports between MNCs and non-MNCs are suspect, so measuring differences in international exposure is difficult.
- Recent literature: MNCs appear to carry reduced exchange rate exposure owing to operational hedging
- Global treasury operations, optimised debt structure, is likely to give exposure to the credit market in London / New York.

Investment by MNCs

- Traditional financing constraints literature: MNCs are less constrained than non-MNCs who are limited to the local economy.
- With more international exposure, the ex-ante returns of investment projects by MNCs are likely to be adversely affected by the downturn
- If MNCs have more exposure to the global credit market, this could generate an adverse impact on the balance sheet
- If MNC financing structures are rooted in the global credit market, this could yield financing constraints in the crisis period

Questions

- What role did multinational corporations play in crisis transmission into India in 2008?
- When faced with adverse shocks, did MNCs reduce investment, thus yielding 'open economy Bernanke-Gertler' effects?

Estimation strategy

- Using propensity score matching, for each MNC, try to find a closely matched partner that is a domestic firm
- Interpret this duo as a pair of twins who only differ in one respect: domestic versus multinational or not.
- Measure currency exposure
- Measure exposure to the global credit crisis
- Measure the change in fixed investment.

Part I

Matching process

Data description

- CMIE Prowess database of all large Indian firms with a balanced panel for 2007, 2008, 2009. Members of CMIE Cospi index.
- Focus on MNCs of 2008-09
- Three kinds of firms:

Type	Number
Not MNCs	1702
OFDI of below 5% of total assets	379
OFDI of above 5% of total assets	233

- Data cleaning: Go down to 146 Hi-MNC and 861 Domestic firms.

Propensity score matching

- Covariates: Fixed assets on 31 March 2008,
  log size and log size-squared,
  log fixed assets and squared,
  return on assets
  cashflow to sales ratio.
- Nearest neighbour method with a caliper of 25%
- Down to 115 firms with matched partners.

Matching balance (means)

	Before matching		After matching	
Variable	Treatment	Controls	Treatment	Controls
Log Fixed Assets	5.96	5.27	6.03	6.01
Log size	7.03	6.01	7.10	6.97
Cashflow margin	11.34	-0.73	7.33	14.66
Return on assets	7.68	1.88	3.33	5.23

Part II

Measurement of exposure

Measurement of exposures

Measure exposure using an augmented market model:

$$r_{jt} = \beta_0 + \beta_{1j} r_{Mt} + \beta_{2j} r_{Xt} + \beta_{3j} \Delta C_t + e_{jt}$$

where information from the stock market is used to uncover:

- β_{2j} Exposure of firm j to the change of the bilateral exchange rate, r_{Xt}
- β_{3j} Exposure of firm j to the change in a credit spread ΔC_t.

Part III

Exposures

MNC exposures are different

	MNC	Domestic
Currency:		
Mean	-1.99	-2.05
Median	-1.79	-1.83
Moody's Baa spread:		
Mean	-17.50	-16.10
Median	-15.90	-15.60

Model explaining exposure to Moody's Baa spread

	Coef	't'
Intercept	-10.089	-0.967
Log size	-0.307	-0.111
(Log size)^2	-0.025	-0.138
Leverage	0.291	1.181
Leverage^2	-0.006	-0.745
MNC dummy	-4.338	-3.728
σ_e	18.753	3.613

Part IV

Impact on investment

Focus on the change in the investment rate

- We have a panel dataset for three years: 2007, 2008, 2009
- Define two investment rates for each firm: I_{2008}/K_{2007} and I_{2009}/K_{2008}
- What was the change in the investment?
- Fat tails in the distribution of I/K

Change in investment

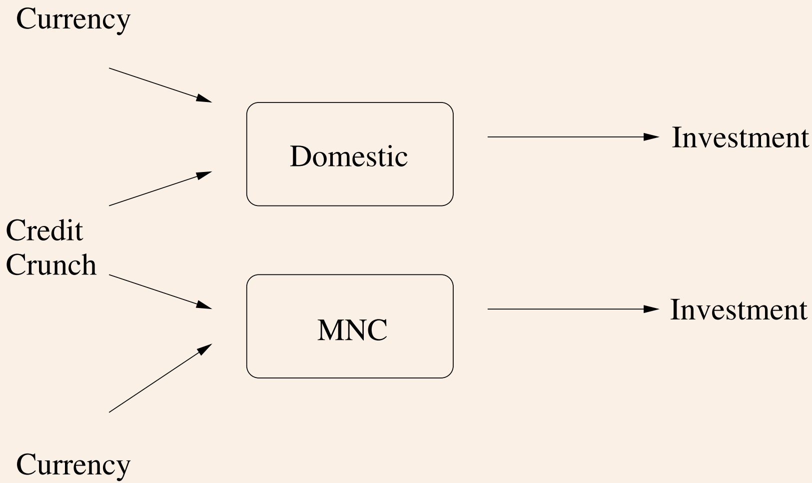
Group	Domestic	MNC	Difference
Small quartile	-5.34	-7.87	-2.53
Q2	4.72	-1.90	-6.62
Q3	3.02	0.54	-2.48
Big quartile	0.27	13.75	+13.48
Overall	0.76	11.34	+10.58

Through regressions

	OLS	Robust regression
Intercept	10.256	6.653
	(4.59)	(7.94)
I_{2008}/K_{2007}	0.118	0.277
	(1.90)	(11.94)
MNC dummy	12.382	2.663
	(4.14)	(2.37)
R^2	0.0902	

Conclusion

- How did the global crisis propagate to India?
- One element of the story: Indian MNCs
- MNCs had significantly bigger exposure to the Moody's Baa spread
- For all but the top quartile firms, MNCs had bigger exposure and their investment declined when compared with the control
- But for the top quartile firms, MNCs expanded investment in the crisis much more than the control.
  Differences in financing constraints?
- Owing to the domination of the top quartile in the overall picture, all in all, Indian MNCs contributed to stability.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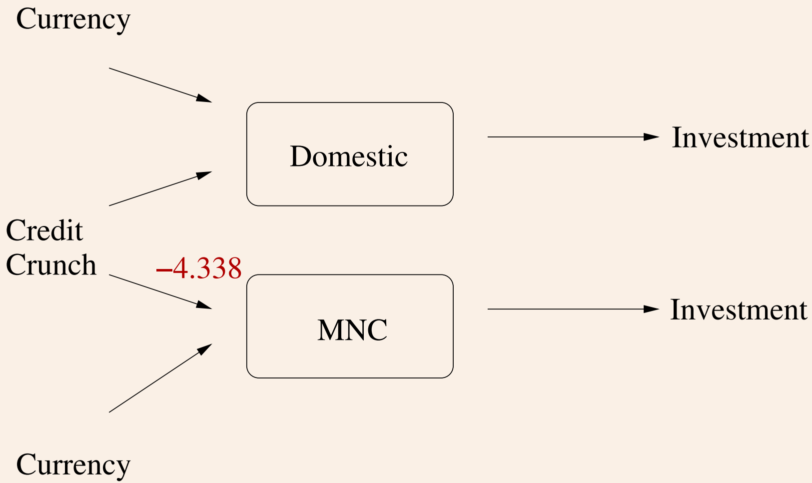
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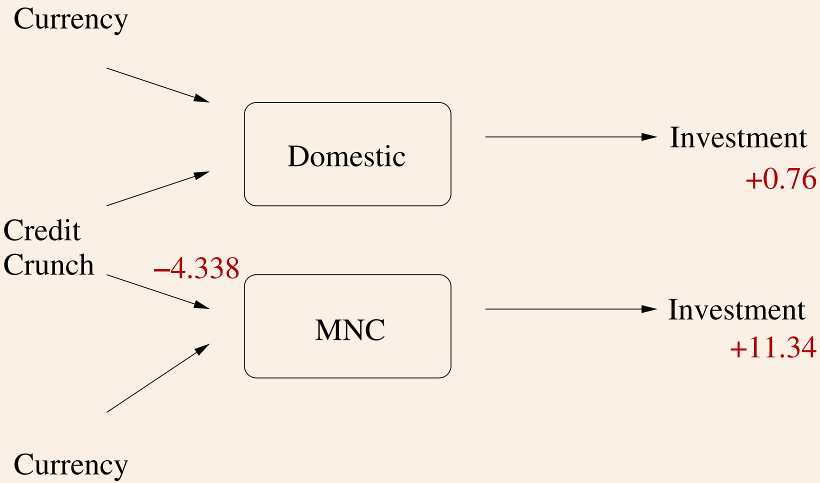
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Thank you.