Comments on Yeyati, Schmukler, Horen

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Summary of the paper

- For large liquid DRs, the arbitrage works well
- But this is easily disrupted either through illiquidity or capital controls.
- Can be a canary in the coal mine that detects disruptions.

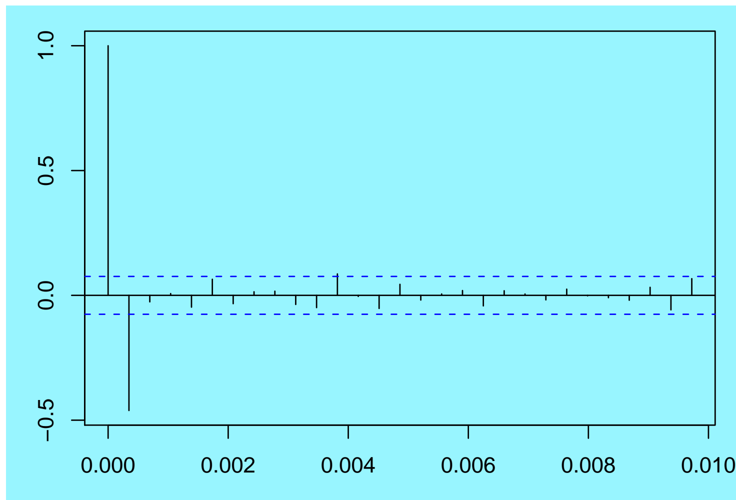
Part I

Difficulties of arbitrage

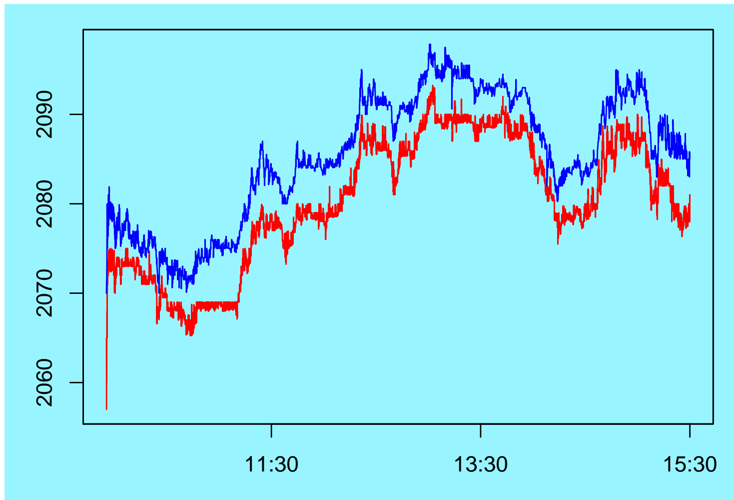
An example from purely domestic finance

- One day in the life of Infosys
- Equity spot and stock futures, both on NSE
- 3 May 2007
- The closest there is to a sound financial market in India.

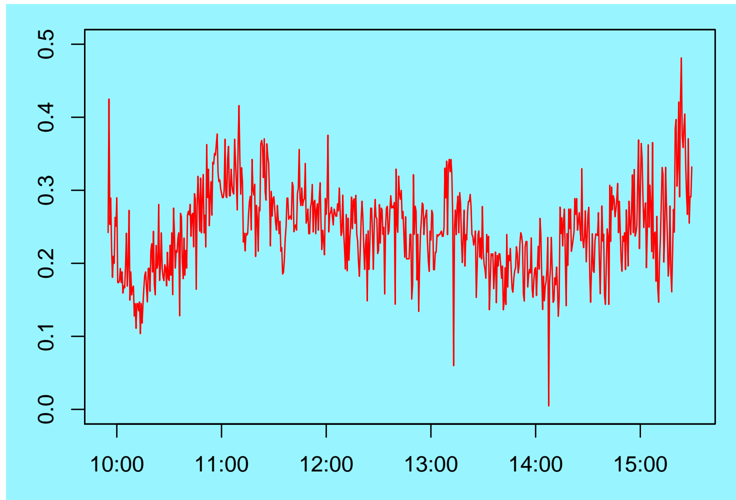
Autocorrelation function of spot-futures basis, discretised to observations every 30 seconds



But the basic futures pricing is all wrong



Substantial basis risk



Part II

India and DRs

India and DRs

- Warning: DRs are non-voting shares (?) and thus not exactly comparable.
- First flush of DR issuance - early 1990s - a response to crisis of settlement of 1993
- Once NSDL and NSE fell into place, this motivation subsided
- Illiquidity led to conversion of DRs into underlying shares that led to more illiquidity

Arbitrage when ADR/GDR is too cheap

1. A foreign investor who has a license to operate in India
2. Buys the DR
3. Presents it to custodian bank
4. Gets the shares
5. Sells them in India.

- Mispricing compared against frictions of above steps and uncertainty caused by delays.
- This reduces the size of the DR!

ADR/GDR is too costly

- Example: Infosys ADR at NASDAQ had a premium of 200% in 2000.
- Now the arbitrage involves: Buying shares on the spot, converting them into DRs, and selling these on the offshore market
- Capital controls a la India come in the way
- Specific and limited CAL for two-way fungibility announced in February 2001, operationalised by RBI in February 2002.
- Only “reconversion” is permitted.
- Frictions work out to 100 to 150 bps.
- But from 2002 to 2004, ADR actually premia went up (http://tinyurl.com/2yoc9f)

Quibble with the paper

Page 2:

> *"To the extent that these controls are effective in limiting the ability to transfer funds (not securities) across borders..."*

ADR arbitrage against NSE is genuinely hard

- Zero overlap of time zones between New York and Bombay
- Other delays (e.g. custodian bank) caused by timezone problem
- The Indian currency market

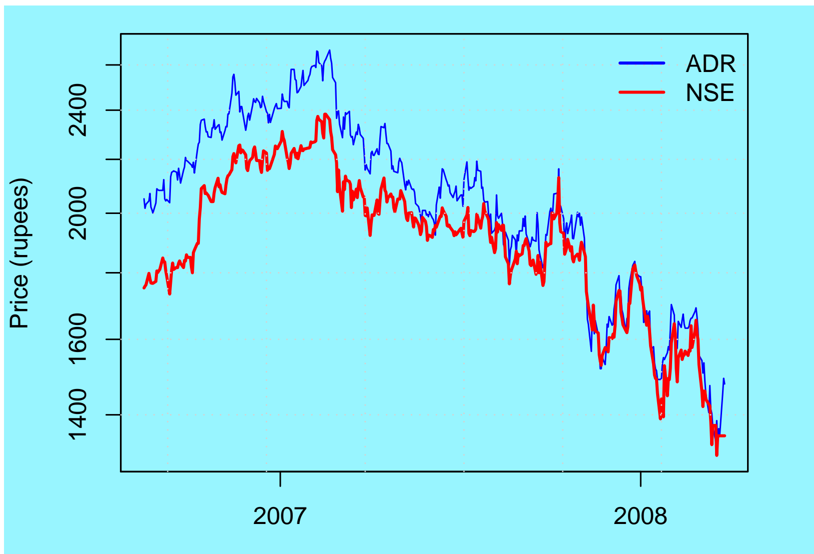
Recent period

- For foreign investors, NSE vs. NYSE is a feasible choice
- NSE incurs ‘securities transaction tax’; difficulties on FII licensing; difficulties with taxation – NYSE is clean on all three counts.
- A few ADRs have gained remarkable traction.
- The DR story is becoming important again.

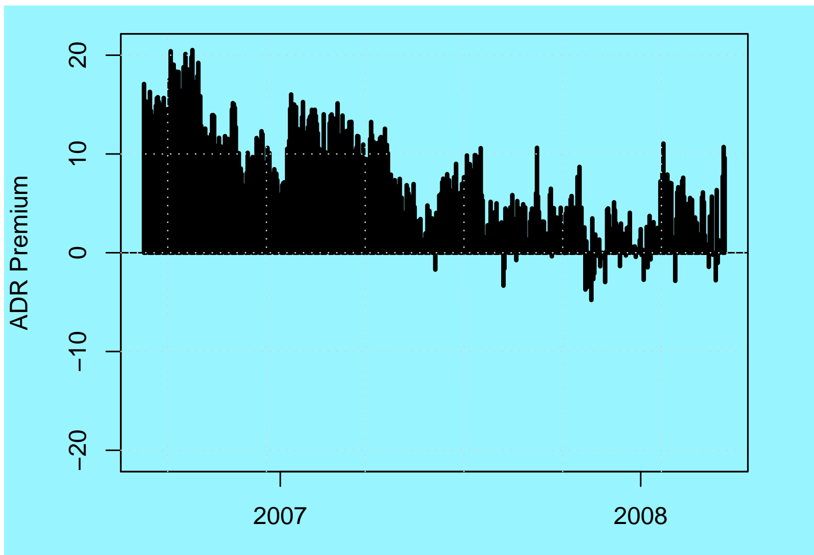
Part III

Example: The Infosys ADR

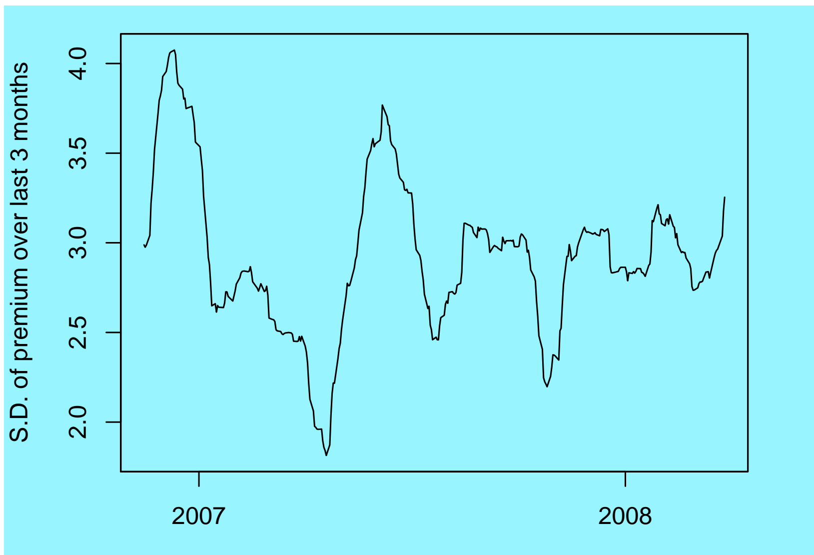
Pricing



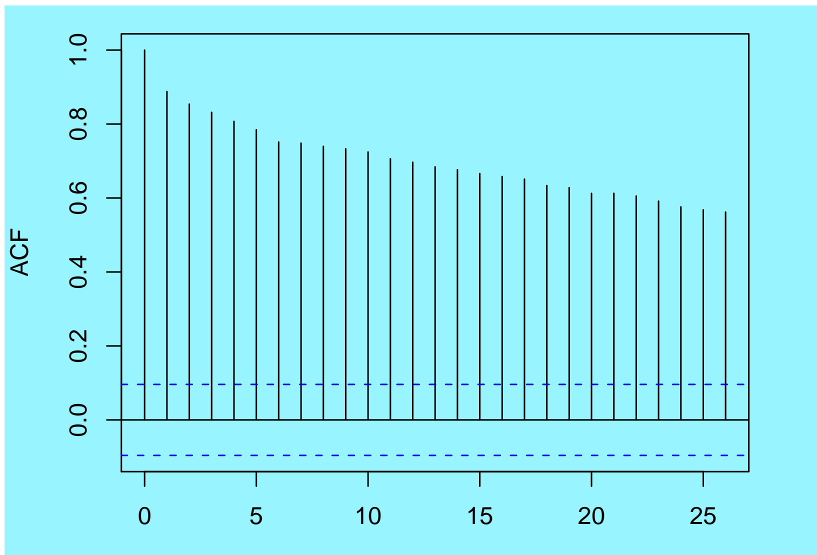
Premium



Vol of premium



ACF of premium



Makes you want to check stationarity!

Null of I(1): Augmented Dickey-Fuller test has a prob value of 0.06473

The Indian financial markets environment is hostile to arbitrage

- Extremely sophisticated players in a certain sense
- Tremendous constraints placed on them by the policy environment
- Barriers to algorithmic trading; ban on banks or bank credit; extremely weak debt and currency markets; silo system that prevents any one financial firm from straddling multiple markets, etc.

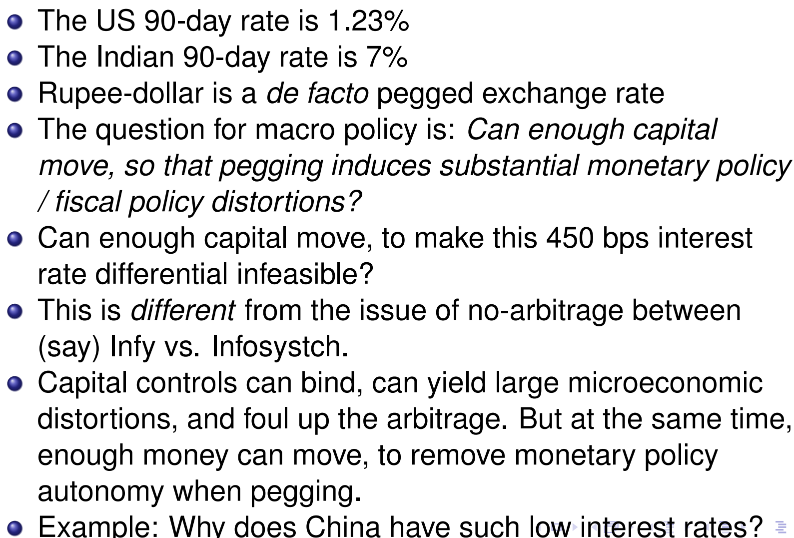
Part IV

Larger implications

Sources of DR mispricing

- Both domestic financial market imperfections, and capital controls, affect DR mispricing
- In particular, time zone and currency spot market are huge challenges.
- Observed mispricing is owing to both financial market imperfections and capital controls.

Locating this question within the discussion on *de facto* convertibility in macro policy



- The US 90-day rate is 1.23%
- The Indian 90-day rate is 7%
- Rupee-dollar is a *de facto* pegged exchange rate
- The question for macro policy is: *Can enough capital move, so that pegging induces substantial monetary policy / fiscal policy distortions?*
- Can enough capital move, to make this 450 bps interest rate differential infeasible?
- This is *different* from the issue of no-arbitrage between (say) Infy vs. Infosystch.
- Capital controls can bind, can yield large microeconomic distortions, and foul up the arbitrage. But at the same time, enough money can move, to remove monetary policy autonomy when pegging.
- Example: Why does China have such low interest rates?

Thank you.