‘Indian capital control liberalisation: Estimates from NDF markets’ by Hutchison, Kendall, Pasricha, Singh

Discussion

Ajay Shah
Matthieu Stigler
NIPFP

October 1, 2008
The question

- How different is the NDF-implied yield from the onshore interest rate?
- Standard finance intuition of arbitrage:
  - There is a no-arbitrage band
  - When the price hits the walls, it gets pushed back into the band.
- Indian capital controls reduce the effectiveness of this arbitrage
What might we expect?

- It is difficult for banks to do NDF-arbitrage
- Indian firms doing international trade through a web of partner firms/subsidiaries
- Rise of outbound FDI by Indian firms
- Movement towards *de facto* convertibility
- The arbitrage should get better through time
Growth of current account

Billion USD per quarter, log scale

2004 2005 2006 2007 2008

Gross inflow
Gross outflow
Impediments to getting a fix on this

Hurdles in measurement:

- It is hard to know what is an interest rate in India
- It is hard to know what is the NDF rate
- Both markets: illiquidity and non-transparency
- Timezone difference between NDF trading and IST.
Econometrics part

\[ \delta_t = \begin{cases} 
\kappa_n + \rho_n(\delta_{t-1} - \kappa_n) + \varepsilon_t & \text{if } z_{t-1} \leq \kappa_n \\
\delta_{t-1} + \varepsilon_t & \text{if } \kappa_n < z_{t-1} < K\kappa_p \\
\kappa_p + \rho_p(\delta_{t-1} - \kappa_p) + \varepsilon_t & \text{if } z_{t-1} \geq \kappa_p 
\end{cases} \]

Points to be discussed

- Structural break, unit root test and cointegration
- Inference
- Model specification
- Miscellaneous
1. Structural break
   - Structural breaks tests made but not mentioned?
   - Multiple break tests needed. (Bai and Perron 1998)

2. Unit roots
   - Choice of the test ADF (1985): low power
   - If structural break is suspected, adequate unit root needed.

3. Cointegration
   - MIBOR and NDF are I(1) and their differential I(0)?
     - Cointegration!
     - Threshold cointegration. Why don’t use to a threshold VECM?
Inference

No inference is made on the threshold parameters!

1. Are there really threshold effects?
   - Tsay (1989)
   - Hansen (1999): cited... but no used!

2. Are these thresholds really asymmetric? really different between the periods?
   - Hansen 1997, 2000
   - Gonzalo and Wolf 2005
   - Seo and Linton 2006
The model used is:

\[ \delta_t = \begin{cases} 
\mu_n + \rho_n \delta_{t-1} + \varepsilon_t & \text{if } z_{t-1} \leq \kappa_n \\
\delta_{t-1} + \varepsilon_t & \text{if } \kappa_n < z_{t-1} < K \kappa_p \\
\mu_p + \rho_p \delta_{t-1} + \varepsilon_t & \text{if } z_{t-1} \geq \kappa_p 
\end{cases} \]

- Why constrain arbitrage to correct into the band? Balke et Fomby (1997):
  - BAND-TAR: \( \mu_i = \kappa_i \) back to the band
  - EQUILIBRIUM-TAR: \( \mu_i = 0 \) back to the equilibrium.

- Is there really a random walk in the inner band? Test needed.
Error on standard error on page 25 (negative)
No mention of any diagnostic test on the regressions
Indicate percentage of observations in each regime!