Comments on Zeileis-Shah-Patnaik

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1. D*e facto* Exchange Rate Regimes in Asia

- Until 1998 *de jure* exchange rate classifications were compiled from national sources by the IMF in its *Annual Report on Exchange Arrangements and Exchange Restrictions*.

- Since 1998 in response to criticisms that there can be significant divergences between *de facto* and *de jure* policies the IMF has shifted to compiling unofficial policies of countries as determined by Fund staff.

- The data has since been applied retroactively to 1990. -- Bubula and Ötker-Robe (2002) which appears to be the intellectual basis for the IMF *de facto* regime.

IMF Classification as of July 2006

Country	As of July 2006
Bangladesh	Managed floating with no predetermined path.
Bhutan	Other conventional fixed peg arrangement (against a single currency).
Brunei Darussalam	Currency board arrangement.
Cambodia	Managed floating with no predetermined path.
China PRC	Other conventional fixed peg arrangements.
Hong Kong SAR	Currency board arrangement.
India	Managed floating with no predetermined path.
Indonesia	Independently floating.
Japan	Independently floating.
Korea	Independently floating.
Lao, P.D.R.	Managed floating with no predetermined path.
Malaysia	Managed floating with no predetermined path.
Myanmar	Managed floating with no predetermined path.
Nepal	Conventional pegged arrangement (against a single currency).
Pakistan	Other conventional fixed peg arrangements (against a single currency).
Philippines	Independently floating.
Singapore	Managed floating with no predetermined path.
Sri Lanka	Managed floating with no pre-determined path.
Thailand	Managed floating with no predetermined path.

Source: Cavoli and Rajan (2007)

- There is no discrepancy between the *de jure* and *de facto* regimes of Bhutan, Brunei, Hong Kong SAR and Nepal -- all operate fixed exchange rates to a single currency.

- India, Laos and Singapore are categorized as managed floaters, broadly consistent with their official pronouncements.

- Vietnam which used to be a managed floaters has more recently been classified as having a conventional fixed peg regime in contrast to its official pronouncement of maintaining a crawling peg and band around the US dollar.

Among the proclaimed independent floaters:

- Bangladesh, Sri Lanka and Thailand have been characterized as managed floaters (with no predetermined exchange rate path).
- Pakistan is defined as operating a conventional fixed peg arrangement (against a single currency).
- Korea and the Philippines are characterized as independent floaters, consistent with their official assertions.

- Contrary to the public pronouncement of the Chinese authorities that the regime is a based on a currency basket, the IMF classifies China under “other conventional fixed peg arrangements”.

- The Malaysian ringgit since its official depegging is defined as being a managed floater with no predetermined path.

2. How to Determine D*e facto* Regimes

- Apart from IMF, there are a handful of other major studies on categorizing exchange rate regimes based on relative degree of exchange rate variability:

  - Reinhart and Rogoff (2004).
  - Levy-Yeyati & Sturzenegger (2003, 2005).
  - Ghosh, Gulde & Wolf (2002).
  - Shambaugh (2004).
  - And others….

- Frankel & Wei (2007) note that correlations of various methodologies are fairly low.

- Another methodology *a la* Frankel & Wei (1994) is a simple standard linear regression model which estimate the degree of exchange rate co-movements of currencies vis-à-vis the USD, JPY, Euro and other major currencies.

- Cavoli & Rajan (2007) examine both F-W and EMP measures for Asia over time, i.e. how flexible and pegged to what (USD, Euro, JPY, NEER)?

- They emphasize importance of F-W regressions standard errors as indicative of management versus "degree of influence" (especially since R.H.S variable are not entirely uncorrelated).

- Frankel & Wei (2007) combine the two methodologies:

$$logH(t+s)-logH(t) = c + \sum w(j)\,[logX(j, t+s) - logX(j, t)] + \beta\,\{logEMP(t+s)-logEMP(t)\} + u_{t+s}$$

- The exchange rate flexibility index has its roots in Exchange Market Pressure (EMP) models and is given by the following:

  $Index = \Delta e / (\Delta e + \Delta f)$

- Δe is nominal exchange rate and Δf is change in net foreign assets.

- The closer the index is to one ($\Delta f \rightarrow 0$), the more flexible the exchange rate regime and the closer to zero ($\Delta e \rightarrow 0$), the more fixed the regime.

3. Innovation of Zeileis-Shah-Patnaik (ZSP)

- There still remain questions about regime stability, structural changes and break points, issues that this paper focuses on.

- ZSP offer a "data-driven assessment of the evolution of exchange rate regimes" to monitor exchange rate regimes dating breakpoints.

- In simplistic terms, the authors employ the F-W regression and analyze the changes in the error variance to determine if the exchange regime has been consistent over their sample period.

- They are able to demarcate two phases for the CNY and four for the INR:

period	β_0	β_{USD}	β_{JPY}	β_{EUR}	β_{GBP}	β_{KRW}	β_{MYR}	σ
2005-07-26 – 2006-03-14	-0.004	0.923	0.003	-0.012	0.005	0.006	0.072	0.027
	(0.002)	(0.025)	(0.005)	(0.016)	(0.008)	(0.006)	(0.024)	
2006-03-15 – 2007-06-07	-0.015	0.921	-0.004	-0.023	-0.020	0.042	0.042	0.076
	(0.004)	(0.020)	(0.012)	(0.030)	(0.017)	(0.015)	(0.021)	

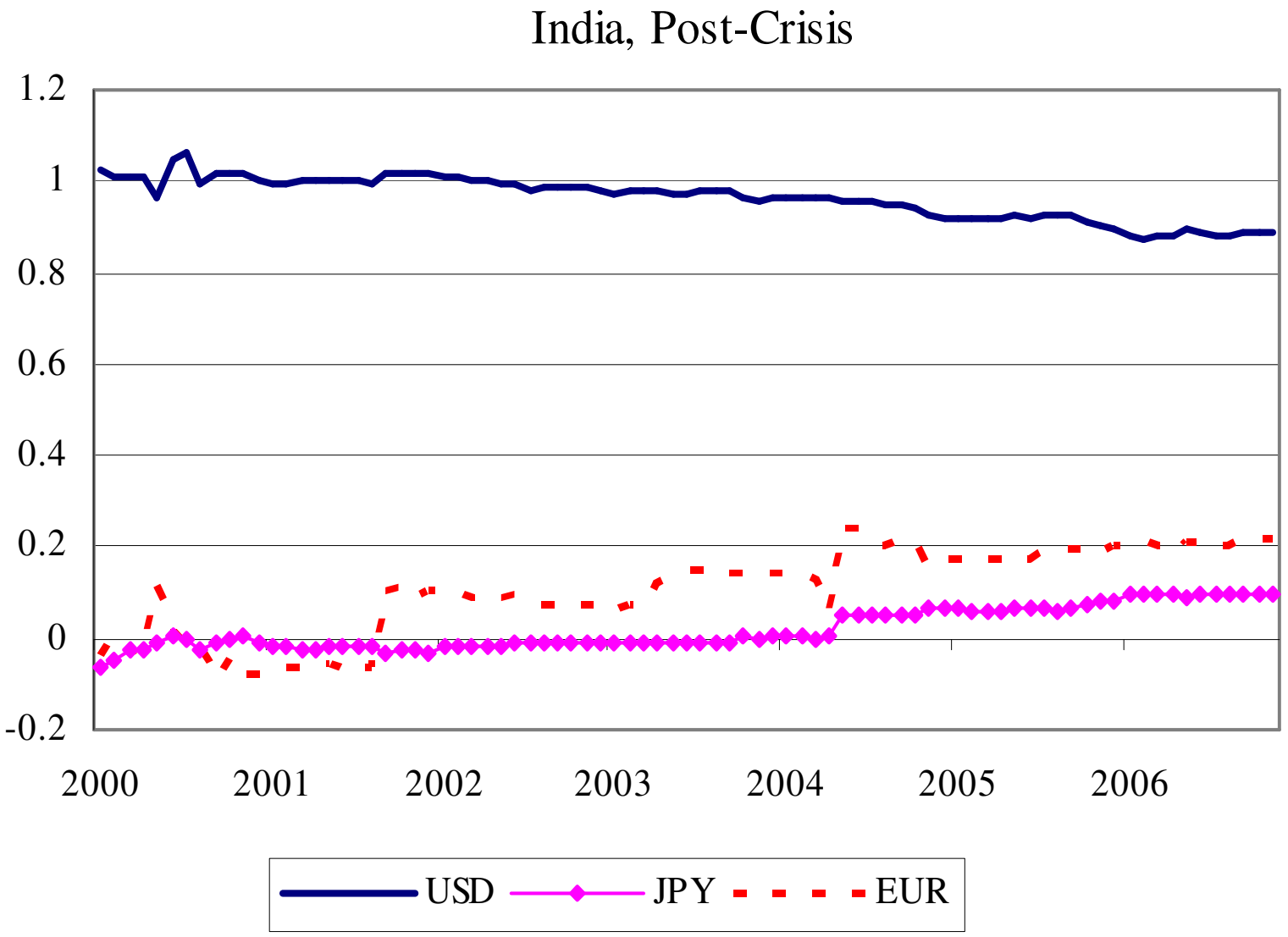
Table 1: Segmented CNY exchange rate regimes.

period	β_0	β_{USD}	β_{JPY}	β_{DUR}	β_{GBP}	β_{KRW}	β_{MYR}	σ
1993-04-09 – 1995-03-03	-0.006	1.076	0.020	0.010	0.017	-0.082	-0.022	0.156
	(0.017)	(0.081)	(0.014)	(0.032)	(0.025)	(0.073)	(0.021)	
1995-03-10 – 1998-08-21	0.154	0.910	0.075	-0.019	0.043	0.070	-0.052	0.901
	(0.069)	(0.074)	(0.049)	(0.152)	(0.080)	(0.024)	(0.029)	
1998-08-28 – 2004-03-19	0.019	0.966	0.003	0.093	-0.004	0.022	0.012	0.274
	(0.016)	(0.035)	(0.011)	(0.034)	(0.021)	(0.017)	(0.029)	
2004-03-26 – 2007-06-08	-0.029	0.412	0.160	0.304	0.082	0.150	0.268	0.544
	(0.045)	(0.131)	(0.049)	(0.126)	(0.062)	(0.062)	(0.135)	

Table 2: Segmented INR exchange rate regimes.

Source: Zeileis, Shah and Patnaik

- Nice method – until now regime shifts have been culled mainly via simple methods like time-varying F-W estimates using Kalman Filter, rolling regression or recursive OLS.



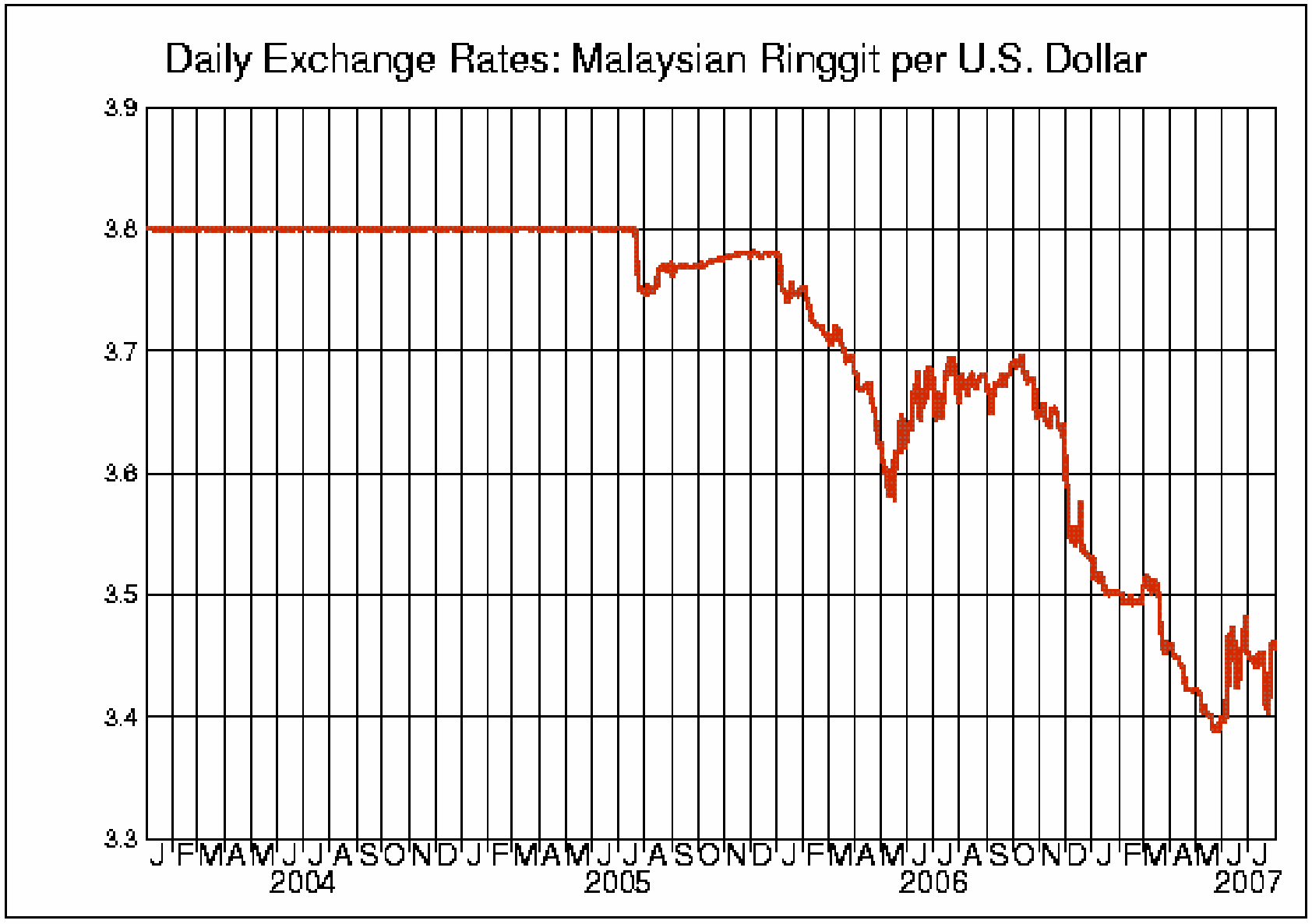
Source: Cavoli and Rajan (2007)

- One could use recursive/rolling estimations with Andrews (*Econometrica*, 1993, pp.821-56) test of parameter instability which allows recursive Chow test to be conducted with an unknown break data (extended by Granger in *Econ Letters*, 1999, pp.13-16 to small samples).

- Query 1: MYR versus SGD for China? And for India KRW and MYR? – Role of MYR in general…

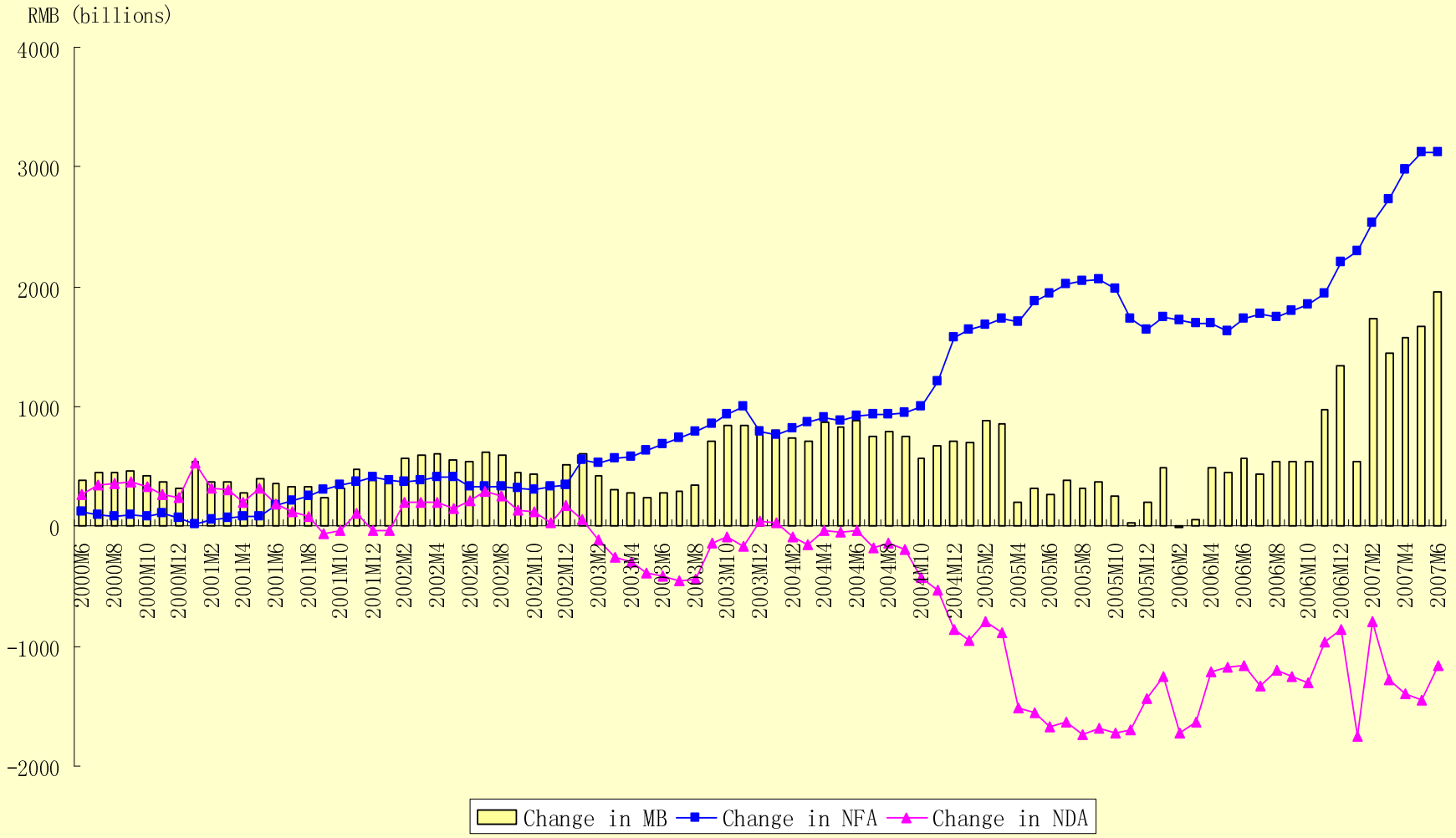
- Query 2: For India, a sharp drop in USD weight in fourth period and rise in DUR? Is this just degree of influence following relatively greater flexibility (given rise in volatility term) or actual pegging, and if so, is there a shift to NEER pegging?

- Suggest re-running regression on NEER with EMP *a la* Frankel & Wei (2007) to see if there is a genuine basket peg.



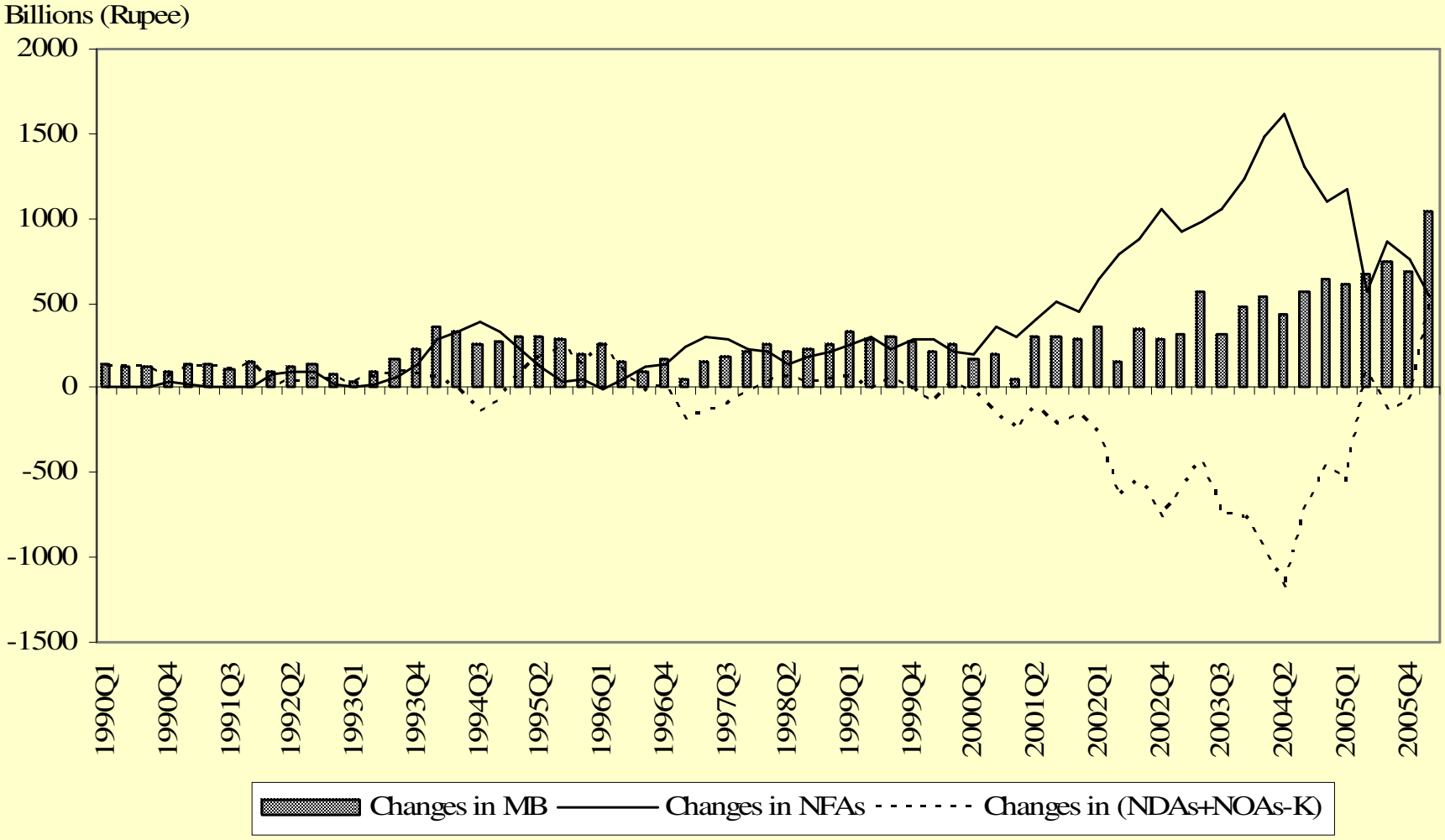
Pacific Exchange Rate services

NFA*, NDA* and MB in China, 2000:M6-2007:M6 (RMB Billions)



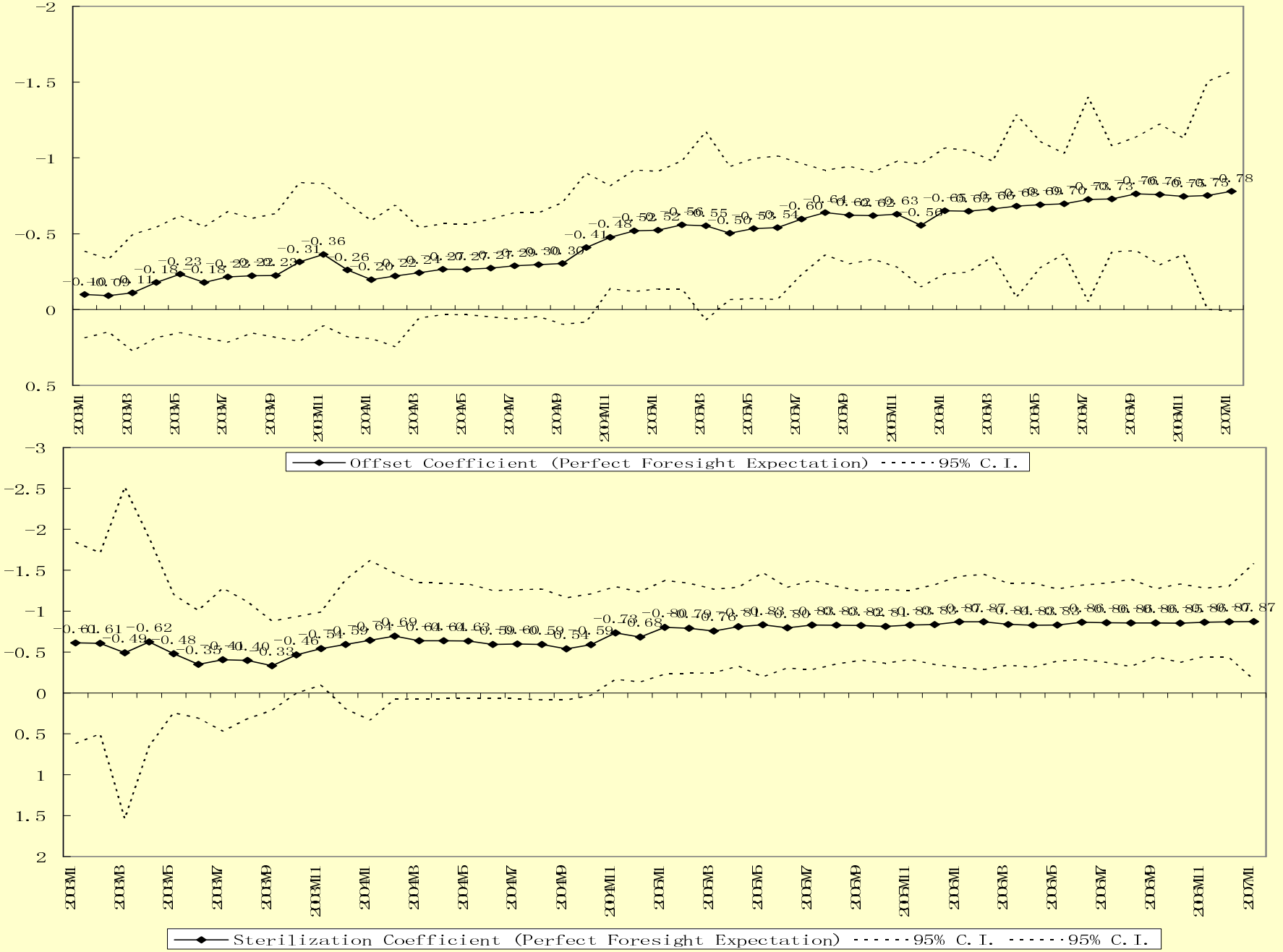
Source: Ouyang, Rajan and Willett (2007)

NFA*, NDA* and MB in India, 1990:q1-2005:q4 (Rs. Billions)



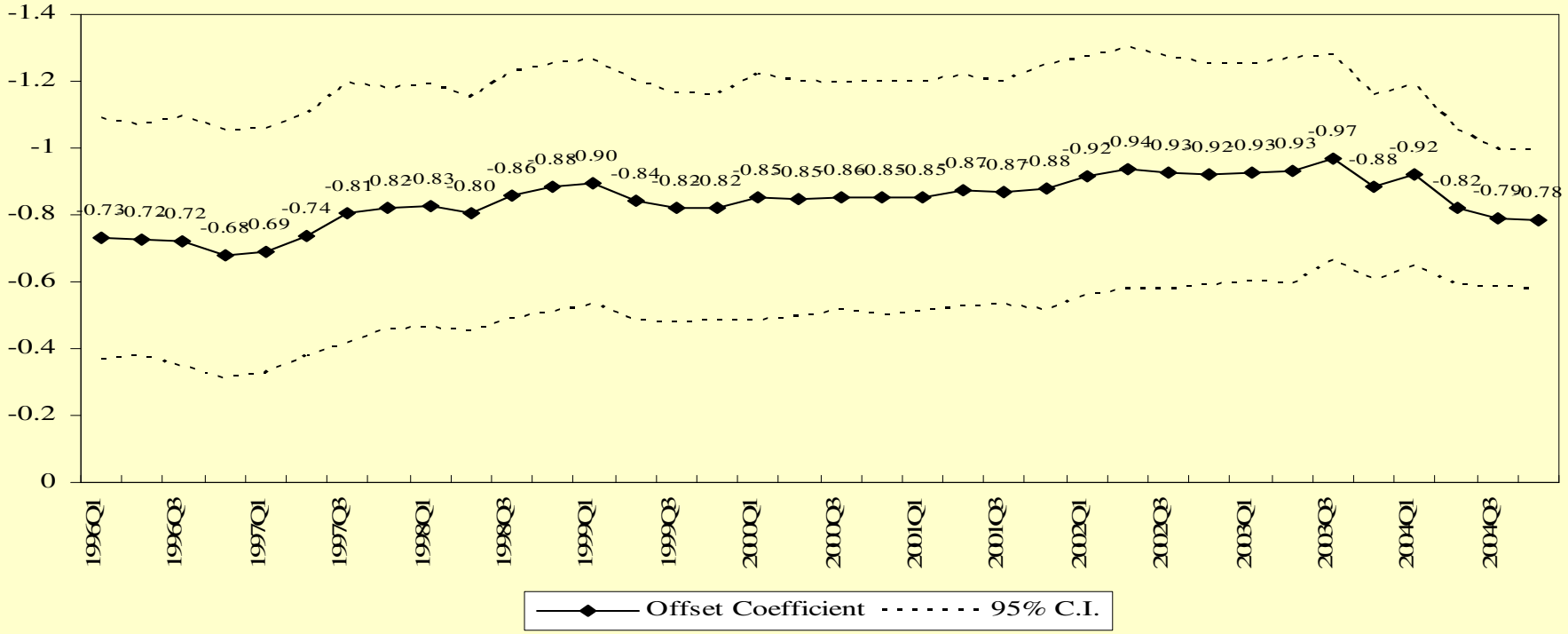
Source: Ouyang and Rajan (2007)

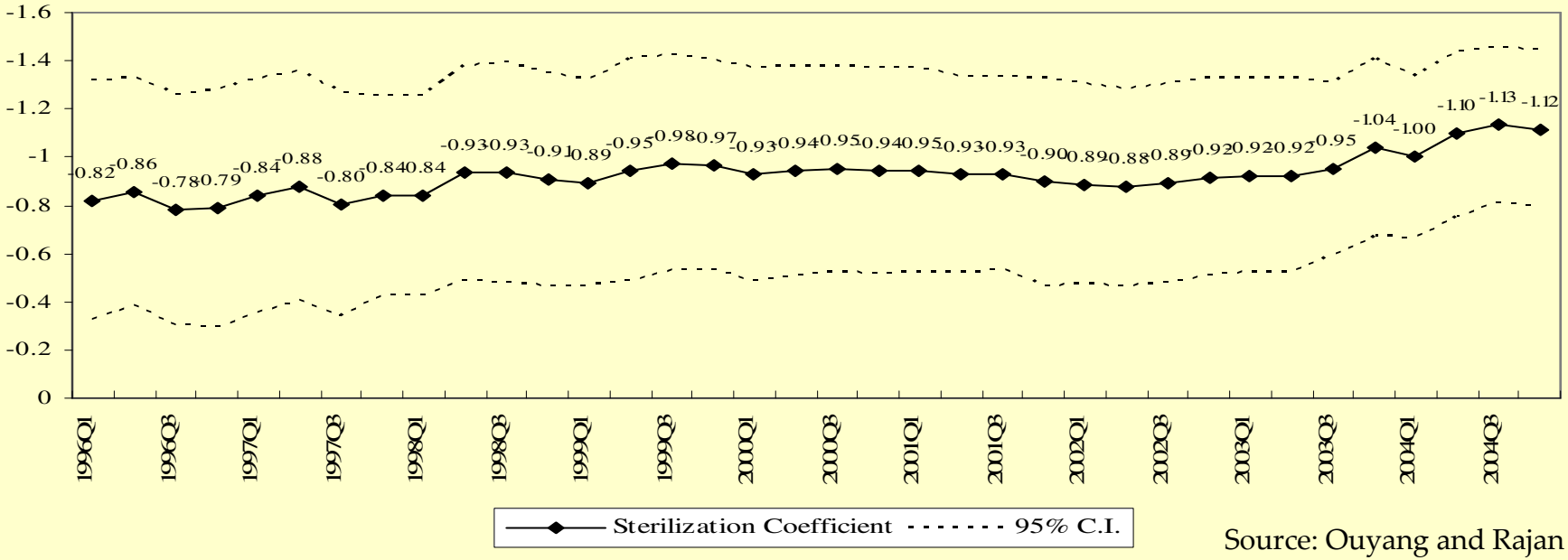
Results for China: Recursive Estimates



Source: Ouyang, Rajan and Willett (2007)

Results for India: Recursive Estimates

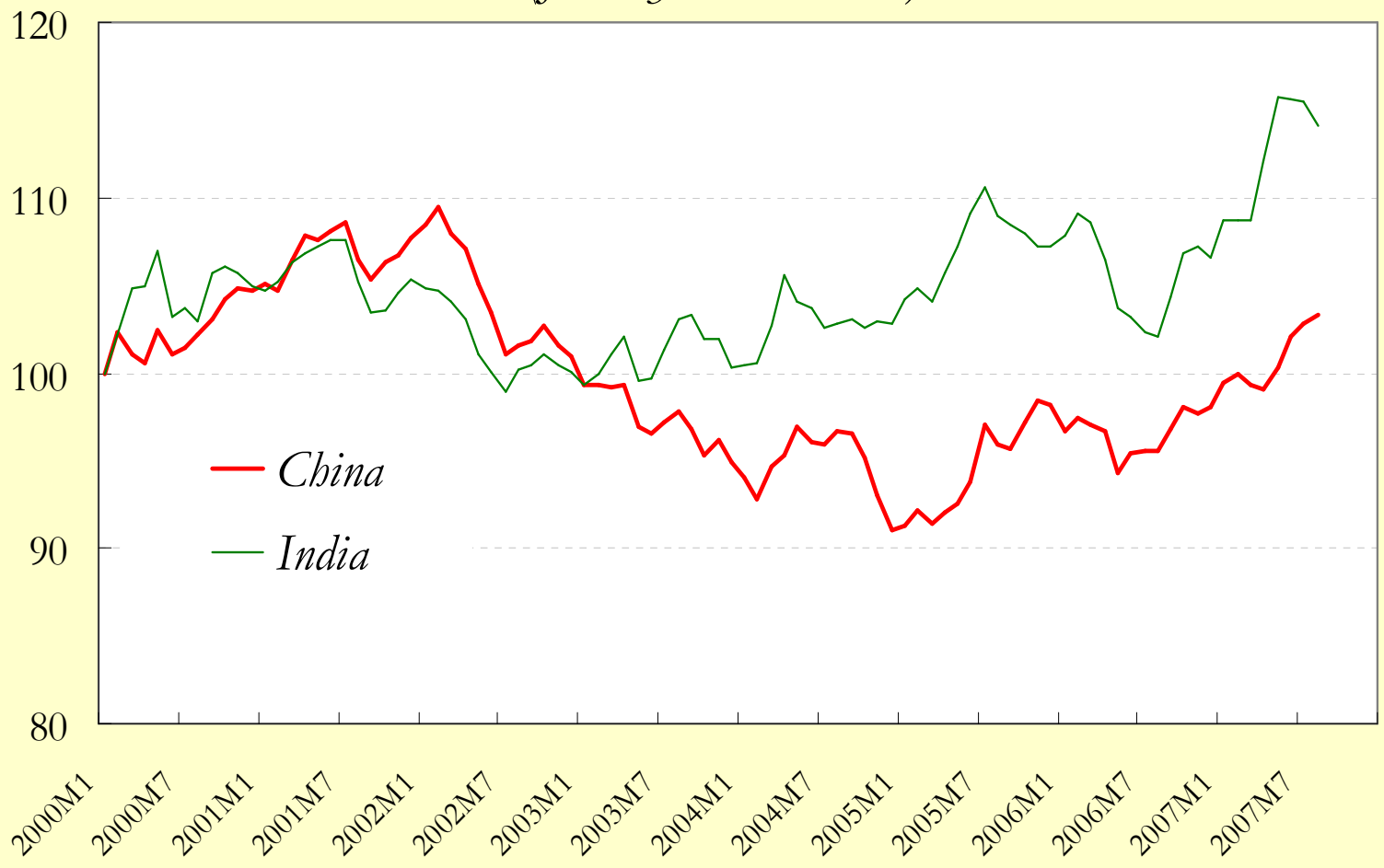




Source: Ouyang and Rajan (2007)

China and India Real Effective Exchange Rate

(January 2000 = 100)



Source: IMF Information Notice System.

Thank you!