

Who cares about the Chinese yuan?

Vimal Balasubramaniam Ila Patnaik Ajay Shah

National Institute of Public Finance and Policy

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Motivation

Motivation

- China's international trade is large
- Export competitiveness
- The great chain of production
- Renminbi invoicing and trade settlement has been introduced

Motivation: Renminbi and global imbalances

- Global aggregate demand could change with revaluation

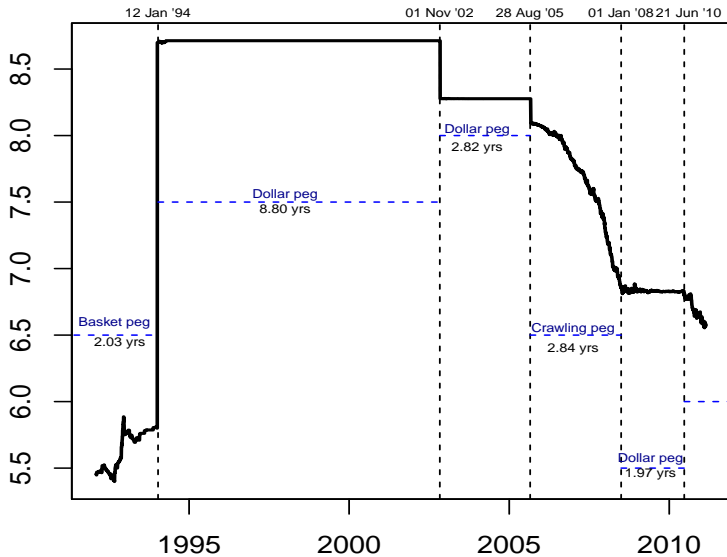
	<i>percent of world gdp</i>		
	China	Newly Industrialised Asia	Developing Asia
2001	0.05	0.15	0.12
2005	0.35	0.17	0.37
2008	0.74	0.14	0.71

Source: World Economic Outlook Database

Questions

- 1 Do East Asian currencies care about the renminbi?
- 2 Who else care about the renminbi?
- 3 How large is the renminbi's influence?

Methodology



The exchange rate regression

Example:

$$d \log \left(\frac{\text{MYR}}{\text{CHF}} \right) = \beta_1 + \beta_2 d \log \left(\frac{\text{USD}}{\text{CHF}} \right) + \beta_3 d \log \left(\frac{\text{GBP}}{\text{CHF}} \right) \\ + \beta_4 d \log \left(\frac{\text{JPY}}{\text{CHF}} \right) + \beta_5 d \log \left(\frac{\text{DEM}}{\text{CHF}} \right) + \epsilon$$

Difficulty with the renminbi

Example:

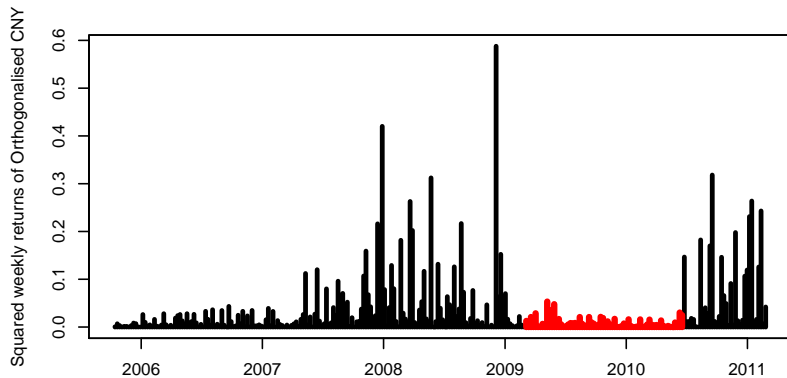
$$d \log \left(\frac{\text{MYR}}{\text{CHF}} \right) = \beta_1 + \beta_2 d \log \left(\frac{\text{USD}}{\text{CHF}} \right) + \beta_3 d \log \left(\frac{\text{GBP}}{\text{CHF}} \right) + \beta_4 d \log \left(\frac{\text{JPY}}{\text{CHF}} \right) \\ + \beta_5 d \log \left(\frac{\text{DEM}}{\text{CHF}} \right) + \beta_6 d \log \left(\frac{\text{CNY}}{\text{CHF}} \right) + \epsilon$$

Addressing multicollinearity

$$d \log \left(\frac{\text{CNY}}{\text{CHF}} \right) = \gamma_1 d \log \left(\frac{\text{USD}}{\text{CHF}} \right) + \epsilon$$

We term ϵ from this regression as $d \log \left(\frac{\text{CNY}_o}{\text{CHF}} \right)$.

Orthogonalised Renminbi



Augmented exchange rate regression

Example:

$$\begin{aligned}d \log \left(\frac{\text{MYR}}{\text{CHF}} \right) = & \beta_1 + \beta_2 d \log \left(\frac{\text{USD}}{\text{CHF}} \right) + \beta_3 d \log \left(\frac{\text{GBP}}{\text{CHF}} \right) + \beta_4 d \log \left(\frac{\text{JPY}}{\text{CHF}} \right) \\ & + \beta_5 d \log \left(\frac{\text{DEM}}{\text{CHF}} \right) + \beta_6 d \log \left(\frac{\text{CNY}_o}{\text{CHF}} \right) + \epsilon\end{aligned}$$

Problem of structural change

- Role of currencies change over time
- The inferential framework used to study structural break as in Zeileis, Shah and Patnaik (2010).
- Extension of Perron-Bai (2003) methodology for identifying breaks in the OLS framework.

Example: Three cases

- 1 Known US dollar peg: Hong Kong
- 2 *De jure* CNY watcher: Malaysia
- 3 Large emerging market: India

Example: Hong Kong

Start date	End date	R^2	USD	...	CNY _o	Variance
2005-10-14	2009-03-20	1.00	1.00 (77.93)	...	-0.01 (-0.22)	0.00
2009-03-27	2009-12-11	1.00	0.99 (175.68)	...	-0.02 (-0.59)	0.00
2009-12-18	2011-02-11	1.00	1.01 (38.91)	...	0.00 (0.01)	0.00

Example: Ringgit with the Renminbi

Start Date	End Date	R^2	USD	...	CNY _o	Variance
2005-10-14	2007-06-01	0.89	1.23 (5.31)	...	1.13 (2.89)	0.13
2007-06-08	2011-01-14	0.71	1.01 (9.28)	...	0.22 (0.87)	0.56

Example: Indian rupee with the Renminbi

Start Date	End Date	R^2	USD	...	CNY _o	Variance
2005-10-14	2007-03-16	0.86	1.28 (4.30)	...	0.86 (1.67)	0.18
2007-03-23	2011-02-25	0.60	1.37 (9.33)	...	0.10 (0.27)	1.04

Summary of methodology

- 1 Orthogonalise Renminbi returns
- 2 Use orthogonalised renminbi as explanatory variable
- 3 Run the augmented exchange rate regression
- 4 Test the coefficient on orthogonalised renminbi for significance
- 5 We are concerned only with the positive values of the coefficient, i.e., a one-tailed test of significance.

Analysis of many currencies

- Apply this methodology to 132 currencies since October 2005
- Data mining bias

Results

Questions

1. Do East Asian currencies care about the renminbi?

Data mining bias?

- East Asia is: Malaysia, Indonesia, Philippines, South Korea, Taiwan, Hong Kong, Singapore, Thailand and Viet Nam.
- Total currency-periods: 22
- Number of significant Renminbi coefficients: 3
- $H_0 = 0$ rejected rate: 13% – exceeds the size of the test

To whom in East Asia does the renminbi matter?

Start Date	End Date	R^2	USD	CNY	Variance
<i>Malaysia</i>					
2005-10-14	2007-06-11	0.89	1.23 (5.31)	1.13 (9.28)	0.13
<i>Taiwan</i>					
2005-10-14	2011-02-11	0.83	1.03 (14.23)	0.45 (2.67)	0.26
<i>Vietnam</i>					
2006-11-24	2008-03-21	0.98	1.04 (14.97)	0.12 (1.45)	0.01

2. Who else cares about the renminbi?

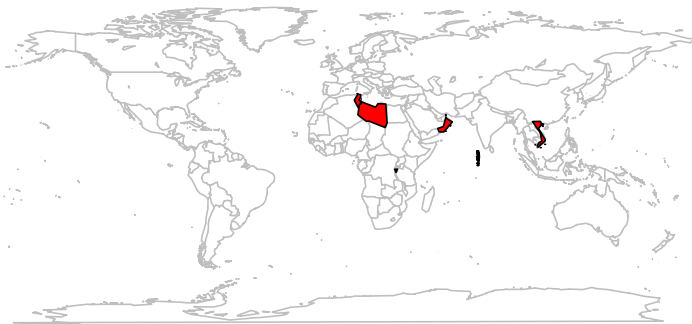
Results

- Rest of the world currencies: 132
- Total currency-periods: 375
- Number of significant Renminbi coefficients: 85
- $H_0 = 0$ rejected for 22.66% of currency-periods

Economies that **ever** tracked the renminbi

Angola	Argentina
Bosnia and Herzegovina	Burundi
Bolivia	Belarus
Algeria	Estonia
Eritrea	Fiji
Ethiopia	Gibraltar
Honduras	Israel
India	Kuwait
Libya	Madagascar
Macedonia	Maldives
Oman	Pakistan
Serbia	Saudi Arabia
Sierra Leone	Suriname
Seychelles	Sao Tome and Principe
Tunisia	Tanzania

Economies that track the renminbi

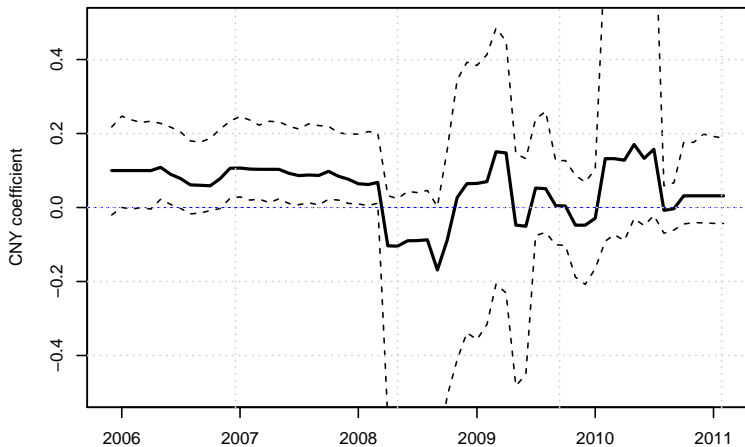


3. How large is the renminbi's influence ?

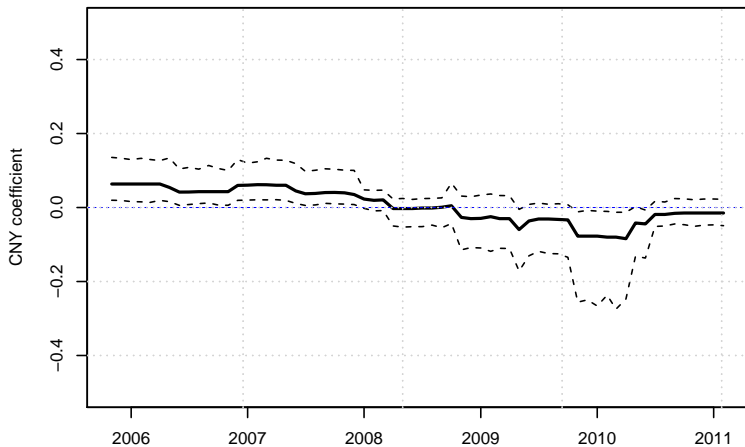
Renminbi's influence

- Is renminbi's influence economically significant?
- At each point in time we have a measure of renminbi's influence on each currency.
- We use the cross-sectional GDP-weighted mean as the location estimator
- We bootstrap this weighted mean to obtain 95% confidence intervals

GDP-weighted CNY coefficient: World



GDP-weighted CNY coefficient: EMs and LDCs



GDP-weighted CNY coefficient: Asia



Conclusion

- 1 Do East asian currencies care about the renminbi?
Taiwan is the only large country to whom the CNY matters
- 2 Who else care about the renminbi?
Since 2005, 30 currencies have tracked the renminbi at some point in time. Today, only 7 do so.
- 3 How large is the renminbi's influence?
Renminbi's influence is small since its journey as a crawling peg