Who cares about the Chinese yuan?

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Abstract

The rise of China in the world economy and in international trade has fueled expectations about the rise of the RMB as an international currency, particularly after the Chinese authorities have undertaken policy initiatives such as RMB settlement and RMB swap lines. In this paper, we measure one dimension of RMB internationalisation: the role of the RMB in the exchange rate regimes of other countries. Our ndings show a small role for the RMB in the exchange rate regime in Asia. However, the GDP-weighted coe cient of the CNY is roughly zero for the group of emerging markets and less developed countries, and for the world. While the RMB may become an important international currency in the future, until February 2011, the role of the RMB in exchange rate regimes of other countries was small.

Contents

1 Introduction

There are two mechanisms through which China's exchange rate policy can have spillovers upon the policy choices of other countries. First, countries which compete with China in export markets may be averse to appreciation beyond that permitted by China. Second, countries that are part of the Asian production network may have an incentive to eliminate bilateral exchange rate volatility against the RMB, to the extent that their firms are engaged in international transactions denominated in RMB. This second class of motivations has been highlighted in recent years, with Chinese initiatives on RMB settlement, RMB swap lines, etc., that aim to establish the RMB as an international currency.

In this paper, we ask three questions. First, is there a role for the RMB in the exchange rate regime in Asia? Second, is there a role for the RMB in the exchange rate in the rest of the world? Third, looking beyond statistical significance, how large are these effects?

This work is important in understanding the role of China in the world economy, the new phenomenon of RMB internationalisation, the evolution of exchange rate regimes among emerging markets and developing countries, and the Asian production network.

One additional dimension which motivates this work lies in the extent to which Chinese appreciation is important for global rebalancing. The Chinese current account surplus is 0.74 per cent of world GDP. Even if a substantial appreciation took place in China, it would have a relatively modest impact upon global aggregate demand. If, however, a Chinese appreciation would encourage or enable many other countries to also appreciate, then the overall impact upon global aggregate demand would be larger. To the extent that the RMB has come to play a role in global exchange rate regimes, the magnitude of the impact of RMB appreciation upon global aggregate demand is higher.

As with many other researchers in this field, in this paper, we use the exchange rate regression, where percentage changes in an exchange rate against a numeraire currency are regressed on changes in the dollar, the pound, the yen and the euro. We focus on the period from October 2005 to February 2011, a period in which there have been modest changes in the CNY/USD rate. A natural extension of this model would involve an additional CNY regressor. However, weekly changes in the CNY/CHF rate have a correlation coefficient of 0.988 against the USD/CHF rate. Hence, we construct an orthogonalised $d\log(CNY_o/CHF)$ time-series by extracting residuals from a

regression on $d\log(USD/CHF)$.

This regression suffers from the problem of structural change, either owing to changing policies on the part of authorities in a country, or owing to changes in external shocks. We draw on recent developments in the econometrics of structural change in the exchange rate regime in order to obtain a set of break dates of structural change. This permits estimation of the coefficient of the CNY_o in each sub-period.

In East Asia, we find three country-periods where there was a statistically significant CNY_o coefficient: Malaysia (from 2005 to 2007), Vietnam (after 2009) and Taiwan (all through). Barring these three country-periods, the remainder of East Asia has not exhibited a dependance upon China's exchange rate choices.

Looking beyond East Asia, the analysis of 123 currencies reveals 375 currency-periods. Of these, there are 85 significant CNY_o coefficients. These reveal an interesting picture of the footprint of Chinese exchange rate policy, including large developing countries (e.g. India), many countries in Africa, close allies (e.g. Pakistan) and even one OECD country (Israel). At the same time, many of these coefficients have subsided in recent years. The depiction of statistically significant CNY_o coefficients in February 2011 on a world map shows a very limited footprint, and a surprising lack of a role in the Asian production network.

We turn to the examination of the time-series of the GDP-weighted CNY_o coefficient. At the level of the world, we find a small value with slight statistical significance in 2006 and 2007. However, from early 2008 onwards, the null hypothesis of zero cannot be rejected. Similar results hold when analysing the group of emerging markets and developing countries: Here there is somewhat stronger statistical significance in 2006 and 2007. But here also, from early 2008 onwards, the null of zero cannot be rejected.

It is in Asia that the null hypothesis of zero can be rejected through most of the post-2005 experience, other than an interruption during the crisis. This yields a point estimate of 0.03 with a 95% confidence interval running from 0.01 to 0.07.

These results suggest that while China has made enormous strides in terms of achieving a major role in international trade, in establishing RMB settlement mechanisms and in giving RMB swap lines to many countries, there is relatively limited evidence of the emergence of the RMB as an international currency in one key dimension: The role of the RMB in the exchange rate regime of other countries. In Asia, the null hypothesis of zero effect can

be rejected, but the point estimate for the GDP-weighted impact is small: roughly a 0.05 appreciation by the average Asian country for a 1 per cent appreciation in China.

These relationships could, of course, change in the future. However, as of February 2011, there is little evidence of a major role for the RMB in Asian or global exchange rate arrangements.

By this logic, the impact of Chinese appreciation upon global aggregate demand would be relatively limited. Chinese appreciation would impact upon the Chinese current account surplus, which is only 0.74 per cent of global GDP. It would have a relatively limited impact upon the exchange rates of other countries.

2 Motivation

With 30 years of high growth rates of imports and exports, China has emerged as a major part of international trade. In merchandise trade, China is the world's largest exporter and the second largest importer. Through this rise to prominence on the international stage, Chinese exchange rate policy has come to matter beyond China.

2.1 How might Chinese exchange rate policy matter to other countries?

In many less developed countries (LDCs) and emerging markets (EMs), governments have hindered exchange rate flexibility. One motivation for this 'fear of floating' lies in concerns about export competitiveness. To the extent that a country competes against Chinese exports, a Chinese appreciation would tend to improve export competitiveness, and reduce the resistance to flexibility. Through this mechanism, China's policy choices on the exchange rate could have effects beyond China. Pontines and Siregar (2010) point out the role of the Chinese Renminbi in the attempts in East and Southeast Asia to avoid appreciation.

A different mechanism through which cross-country spillovers of exchange rate policy could arise is rooted in the rise of complex production chains in Asia, centred in China. China is now the nerve centre of a complex and large

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Table 1 China's bilateral currency swap agreements

| | | In RMB billion | |
Country	Date	Time	Amount
Korea	12-Dec-2008	3 yrs	180
Hong Kong	20-Jan-2009	3 yrs	200
Malaysia	08-Feb-2009	3 yrs	80
Belarus	11-Mar-2009	3 yrs	20
Indonesia	23-Mar-2009	3 yrs	100
Argentina	30-Mar-2009	3 yrs	70
Iceland	10-Jun-2010	3 yrs	3.5
Singapore	24-Jul-2010	3 yrs	150

Source: Xinhuanet, ASEAN, HKMA.

production chain, where elements of economic activity take place across Asia (Branson and Healy, 2005; Zhang, 2008).

In recent years, the Chinese authorities have embarked on a set of policy initiatives which would result in a certain set of uses of the CNY as an international currency. This includes CNY settlement mechanisms with key countries in the Asian production network, currency swap arrangements with central banks (Table 1), etc. These initiatives may have influenced the extent to which contracts within the Asian production network are denominated in CNY.

Trade settlement agreements have been routed through banks. For CY 2010, Bank of China's total volume of yuan-denominated cross-border trade settlement reached about 510 billion yuan ($77.6 bn). Industrial and Commercial Bank of China reported 150 billion yuan in trade settlement business over the July 2009 to March 2011 period. A survey by HSBC reported that about 30% of cross-border trade of small and medium size companies in HK in 2010 was settled in yuan.[1]

To the extent that invoicing relationships in the Asian production chain is expressed in US dollars or other international currencies, exchange rate policy in China does not influence other Asian countries. However, if (say) a Malaysian producer sells into China with invoicing in Chinese Renminbi, then this creates an interest in stability of the MYR-CNY exchange rate on the part of this producer. If there is a sufficiently large mass of such producers, the Malaysian authorities may come to desire a reduction in the volatility of the MYR-CNY exchange rate.

This suggests that two kinds of motivations might encourage an LDC or an

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[1]Sources: http://goo.gl/CVZtd; http://goo.gl/bo1JU

EM to take heed of Chinese exchange rate policy: concerns about export competitiveness, and CNY-denominated international transactions either in the private or in the public sector.

To the extent that (say) the Malaysian authorities are concerned about export competitiveness, they are more likely to appreciate the MYR/USD exchange rate when the CNY/USD exchange rate has appreciated. And to the extent that the Malaysian authorities are concerned about achieving low volatility of the CNY/MYR exchange rate, they would adjust the MYR/USD exchange rate alongside changes in the CNY/USD exchange rate.

2.2 Research questions in measuring these relationships

From this perspective, it is interesting to examine exchange rate policy in Asia and internationally, aiming to measure the extent to which Chinese exchange rate policy has global ramifications. Specifically, in this paper, we ask three questions:

1. Does the exchange rate regime in East Asia involve a role for the CNY?

2. Which other currencies in the world care about the yuan?

3. How large are these effects?

While two kinds of motivations may shape the thinking of countries in taking heed of Chinese exchange rate policy, our goal is to measure the overall role of China in the exchange rate regime, in East Asia and elsewhere. We do not seek to disentangle the two factors.

Our work is related to that of Ito (2010). While the goals of that paper are similar to this one, we offer new thinking on the estimation strategy.

2.3 Larger implications

An understanding of these questions is interesting from the viewpoint of understanding international currencies, Asian production networks, RMB internationalisation, and the role of China in the world economy. While there are many aspects to international currencies and RMB internationalisation, in this paper we concretely measure one dimension: the role of a country in the exchange rate regime of other countries.

Table 2 Current account surpluses: China and other parts of Asia

		(Per cent of World GDP)	
	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

In addition, the extent to which such phenomena are at work is of importance in the debate about global imbalances. Some economists and governments believe that a CNY appreciation would help increase global aggregate demand. There are two channels through which this would work. First, it would have a direct impact upon the Chinese current account surplus. In addition, to the extent that some other countries also appreciate in response to a Chinese appreciation, this would yield an additional impact.

Table 2 shows that in 2008, the Chinese current account surplus was 0.74 per cent of world GDP. However, the remainder of Asia had a current account surplus adding up to 0.85 per cent of world GDP. Appreciation in China would have a certain impact upon the Chinese current account surplus. However, if other Asian countries would also appreciate, in response to a Chinese appreciation, then the potential impact upon global aggregate demand is potentially larger. In this case, Chinese exchange rate policy is an important element of global macro-policy. If, alternatively, we find that other countries do not get greatly influenced by Chinese exchange rate regime choices, then the larger implications of Chinese policy reforms would be absent.

3 Methodology

Table 1 shows the time-series of the CNY/USD exchange rate. On 22 July 2005, the Chinese departed from the fixed-but-adjustable rate to the USD which had prevailed until then. Hence, in this analysis, we only focus on the data following this reform. Weekly percentage changes in the CNY/USD exchange rate prove to be near-zero until October 2005. Hence, the analysis of this paper starts in October and not July 2005. Over this period, we see a certain variability in the exchange rate, which can potentially support estimation of the spillovers on other currencies.

A natural starting point for this analysis is the exchange rate regression (Haldane and Hall, 1991; Frankel and Wei, 1994). In this approach, an inde-

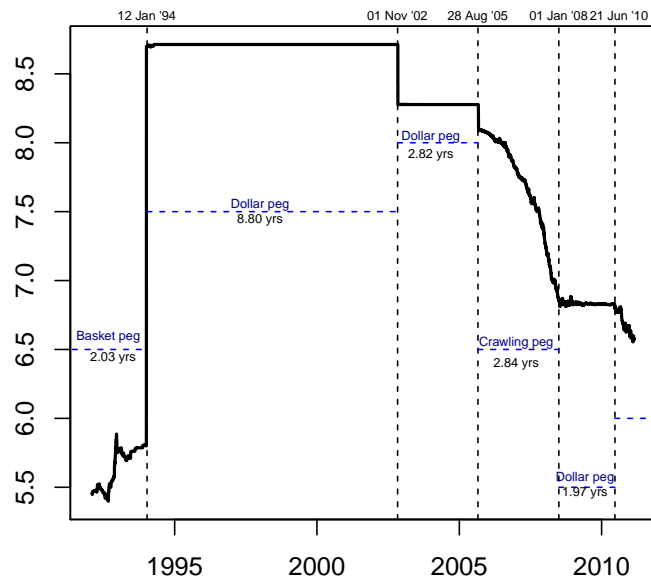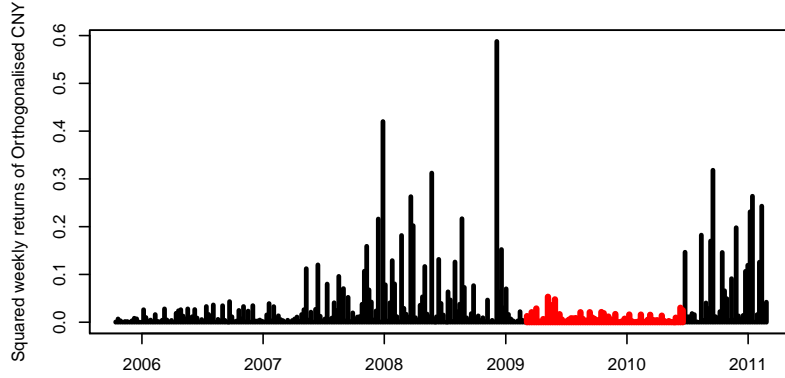**Figure 1** The Yuan exchange rate arrangement

Figure 2 Squared weekly orthogonalised Yuan returns

pendent currency, such as the Swiss Franc (CHF), is chosen as an arbitrary 'numeraire'. If estimation involving the Malaysian Ringgit is desired, the model estimated is:

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

This model can be extended to have an explanatory variable CNY/CHF, where a β_6 parameter would pickup the extent to which the Malaysian authorities respond to a unit change in the CNY/CHF exchange rate. This approach would suffer from a multicollinearity problem: the high correlation between the percentage changes in the USD/CHF and CNY/CHF exchange rates. As an example, from 2005 to 2010, weekly percentage changes in these two currencies had a correlation of 0.988.

Hence, we first orthogonalise the CNY/CHF exchange rate with respect to the USD/CHF exchange rate, in order to purge it of this high correlation. This is done using the regression:

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

The ϵ from this regression represents the autonomous movement of the CNY. We term this $d\log\left(\frac{\text{CNY}_o}{\text{CHF}}\right)$. This time-series is plotted in Figure 2. With this in hand, an augmented exchange rate regression can be considered:

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

This regression would yield estimates of $\hat{\beta}_6$, the impact of a unit change in the orthogonalised CNY upon the MYR/CHF exchange rate. Some countries may ignore the CNY, while other countries may have positive values for β_6. There is no economic logic in favour of a negative coefficient (i.e. a country which depreciates when the Chinese appreciate). Hence, there is a case for using a one-tailed test when judging the statistical significance of β_6.

This regression suffers from the problem of structural change. Countries are known to change their exchange rate regime, either in terms of shifting the weights β, or in terms of the flexibility which is parametrised in this model through σ_ϵ. In addition, changes in currency market *outcomes* can come about through changes in external shocks. As an example, tests of structure change in the exchange rate regression for Asian countries (Patnaik, Shah, Sethy, and Balasubramaniam, 2011) find there has been significant structural change in all countries. In order to address this problem, we draw on the the inferential strategy for measuring and classifying the exchange rate regime of Zeileis, Shah, and Patnaik (2010). This yields estimates of dates of structural change, which lead on to $\hat{\beta}_6$ within each sub-period.

In order to assess the usefulness of this strategy, and to obtain intuition into the methodology, we first examine three examples. The first example is that of the Hong Kong dollar, which is a hard peg to the USD. For this case, the estimation strategy should consistently yield $\hat{\beta}_6 \approx 0$. The second example is that of the Malaysian Rinngit. This is of interest because on 22 July 2005, when the Chinese announced a change in exchange rate policy, the Malaysians immediately followed suit. The third example is that of a large exporting nation which competes with China in labour-intensive exports: India. Here, exchange rate policy might have exhibited concerns about the CNY.

Hong Kong Hong Kong is a currency board, a hard peg to the USD. Hence, we expect the coefficient β_6 to always be near 0. Table 3 shows the results of our estimation strategy. It portrays two structural breaks,

Table 3 A pure peg to the US dollar: Hong Kong

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

Table 4 The role of the CNY in the Malaysian Ringgit

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

with small but statistically significant changes in the USD coefficient. Across all these three periods, the CNY_o coefficient is near zero.

Malaysia On 22 July 2005, when the Chinese announced a shift in their exchange rate regime, the Malaysian authorities followed suit. Our estimation strategy applied to Malaysia, yields results (Table 4) which are consistent with this. For the first period, which runs till 1 June 2007, the point estimate for β_6 is 1.13 and $H_0 : \beta_6 = 1$ cannot be rejected. In other words, for each 1% appreciation by the Chinese, the Malaysians appreciated by roughly the same amount.

However, this exchange rate regime was abandoned on 8 June 2007, where the Malaysian authorities simultaneously dropped the β_6 to zero, and increased flexibility, with the regression R^2 going down from 0.89 to 0.71.

This analysis thus shows that there were spillovers of Chinese exchange rate policy into Malaysia from 2005 till 2007, but not thereafter.

India India exports labour-intensive manufacturing, and it can be argued that the authorities should be concerned about export competitiveness. Our analysis reveals a period, until 16 March 2007, when there was a small β_6 coefficient with a point estimate of 0.86, and a t statistic of 1.67 which is significant using a one-tailed test.

On 23 March 2007, India had a structural break in the exchange rate regime, shifting towards greater flexibility. The regression R^2 went down from 0.86 to 0.60. As a part of this reform, the role of the CNY

Table 5 The Indian rupee

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

was extinguished.

These three case studies encourage us about the usefulness of this estimation strategy. It is then applied across 132 countries. For each country, a set of structural breaks are identified, and then a β_6 coefficient is identified within each of these sub-periods.

In examining this large set of results, seeking statistically significant values of β_6, there is a possibility of data-mining bias. Even if $H_0 : \beta_6 = 0$ were always true, if 100 tests are conducted, on average there would be five rejections at a 95% level of significance. Hence, the frequency of rejection should be compared against the size of the test in assessing whether the results merely reflect data mining.

4 Results

4.1 Do East Asian currencies care about the yuan?

For this analysis, we define East Asia as : Malaysia, Indonesia, Philippines, South Korea, Taiwan, Hong Kong, Singapore, Thailand and Viet Nam. When our estimation strategy is applied to these 9 countries, 23 currency-periods are identified. Of these, there are three situations where the CNY_o coefficient is significant using a 95% level of significance. This rejection rate of $H_0 : \beta_6 = 0$, of 13%, exceeds the size of the test.

The three situations where the CNY mattered are shown in Table 6. As described above, the Malaysian exchange rate regime involved a role for the CNY, but this ended in June 2007. In Vietnam's case, from 16 October 2009 onwards, there is a statistically significant β_6. Here also, the null hypothesis of $H_0 : \beta_6 = 1$ cannot be rejected, so we can say that the Vietnamese authorities appreciate by 1% for each 1 percentage point appreciation in China. Finally, the Taiwanese exchange rate regime has not had any structural break through this period, and the point estimate for β_6 is 0.45.

Table 6 To whom does the Yuan matter in East Asia?

	Start Date	End Date	R^2	USD	CNY	Variance
Malaysia						
	2005-10-14	2007-06-11	0.89	1.23	1.13	0.13
				(5.31)	(9.28)	
Taiwan						
	2005-10-14	2011-02-11	0.83	1.03	0.45	0.26
				(14.23)	(2.67)	
Vietnam						
	2009-10-16	2011-02-11	0.71	0.82	1.39	0.72
				(3.90)	(2.51)	

Table 7 Where, outside East Asia, did the Yuan ever matter (post-2005)?

|			
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		

Ordering these events in time, we see that in October 2005, Taiwan and Malaysia both cared about the CNY. In June 2007, the Malaysians stepped away from the CNY. In October 2009, the Vietnamese initiated a role for the CNY in their exchange rate regime. Thus, in February 2011, two of the nine countries of Asia had a role for the CNY in their exchange rate regime.

4.2 Which other currencies in the world care about the yuan?

We broaden this analysis beyond East Asia, to cover the remaining 132 currencies of the world. This analysis reveals 375 currency-periods. Of these, there are 85 significant coefficients for the CNY. This rejection rate, of 22.66%, well exceeds the size of the test.

Table 7 shows the countries outside East Asia where, in the post-2005 period, there was even one sub-period where the CNY coefficient was significant at a 95% level of significance. Detailed results for these currency-periods, where the CNY mattered, are presented in Appendix A. This reveals an interesting footprint of Chinese exchange rate policy, in some large developing countries (e.g. India), many countries in Africa, some close allies (e.g. Pakistan) and

Figure 3 The role of the CNY in the global exchange rate regime: February 2011
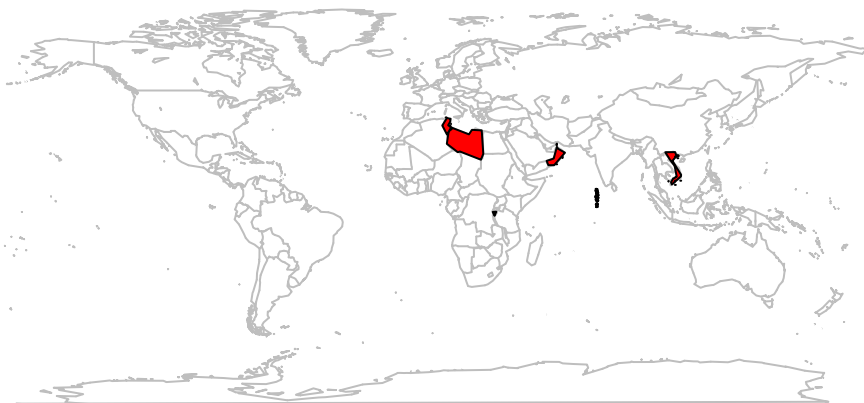
even one OECD country (Israel).

Figure 3 shows the countries where the CNY mattered in the exchange rate regime, as of February 2011. This shows a relatively small footprint. It also shows a relatively low overlap between the Asian production network and the group of countries where the CNY matters in the exchange rate arrangement.

4.3 What is the magnitude of the impact of the CNY?

In order to obtain a summary statement about the role of the CNY in international exchange rate arrangements, at each point in time, we compute the GDP-weighted average of the $\hat{\beta}_6$ for all countries. Bootstrap inference is used to construct the 95% confidence interval for this estimate.

These results are shown in Figure 4. They show a period from 2006 to 2008, where the overall average coefficient was teetering into significance. However, by early 2008, many structural breaks appear to have taken place in exchange rate regimes. From early 2008 onwards, the overall GDP-weighted average coefficient for CNY_o is indistinguishable from zero.

Given that the countries with the biggest GDPs in the world tend to have floating exchange rates, we turn to the set of emerging markets and LDCs.
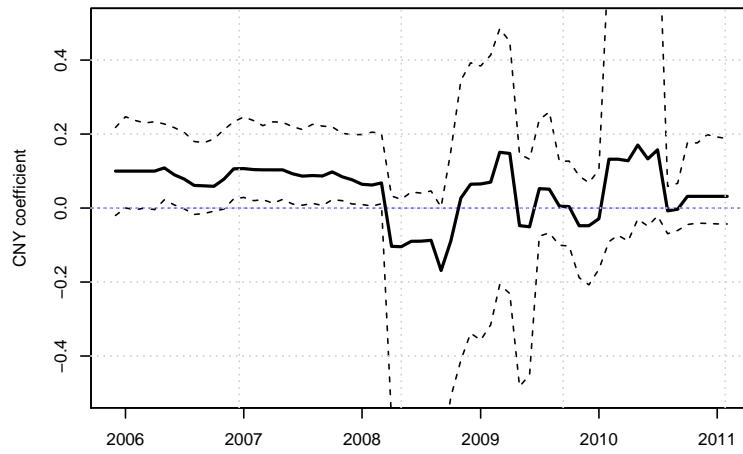
Figure 4 GDP-weighted CNY coefficient

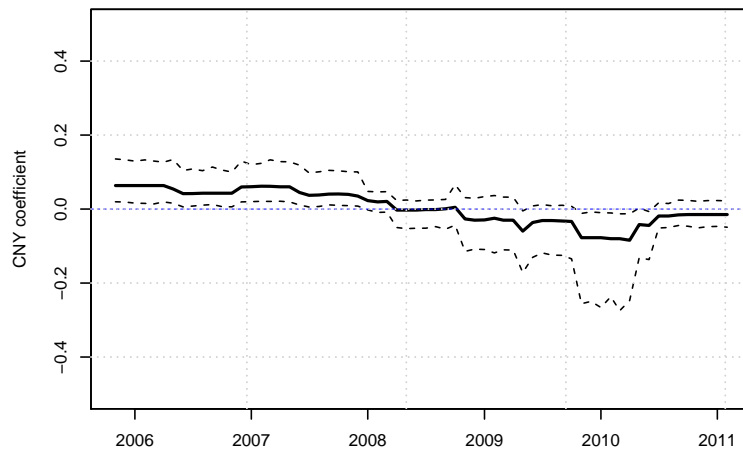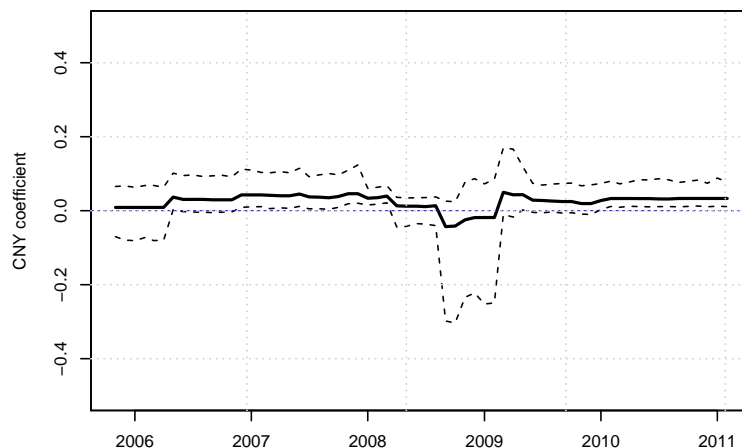**Figure 5** The CNY in EMs and LDCs

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Figure 6 The CNY in Asia

This analysis is shown in Figure 5. Here also, we see that from early 2006 till late 2007, there was statistical significance in the GDP-weighted CNY coefficient. But from early 2008 onwards, this has subsided.

Finally, Figure 5 focuses only on Asia. Here, it appears that from mid-2006 onwards, there has been statistical significance, other than a crisis interlude in which this was interrupted. At the same time, the developments on RMB internationalisation from 2009 onwards have not, as yet, led to a change in the role of the RMB in the Asian exchange rate regime.

5 Conclusion

The emergence of China as a very large economy, with a very high trade/GDP ratio, has led many observers to expect that the RMB will become a major international currency. In recent years, the Chinese authorities have undertaken significant moves on RMB internationalisation, with the establishment of payments mechanisms for RMB settlement, swap lines in RMB, and controlled convertibility with Hong Kong.

In this paper, we have utilised recent advances in measurement of the exchange rate regime in order to measure one dimension of RMB internationalisation: the role of the CNY in global exchange rate regimes. Our results are relatively modest. While the null hypothesis of zero can be rejected, the GDP-weighted coefficient of the orthogonalised CNY in Asia is small.

The GDP-weighted coefficient is roughly zero when computed at the level of LDCs and EMs and when computed for the entire world.

This suggests that the impact of Chinese appreciation upon global aggregate demand will be relatively small, since this will only act through the Chinese current account surplus. It is likely to have a limited impact upon the exchange rate policy choices of other countries.

The RMB may well become a major international currency in the future. However, as of February 2011, there was little evidence of RMB internationalisation in one dimension: the role of the RMB in the exchange rate regime of other countries.

A Who cared about the Chinese yuan?

Start Date	End Date	R^2	USD	CNY	Variance
Republic of Angola					
2006-11-24	2007-05-18	0.71	0.85	6.24	0.79
			(0.71)	(3.29)	
People's Democratic Republic of Algeria					
2008-10-17	2009-04-10	0.59	1.67	4.43	3.85
			(2.67)	(1.79)	
Argentine Republic					
2005-10-14	2008-09-05	0.90	0.98	0.33	0.18
			(7.20)	(1.68)	
2008-09-12	2009-04-10	0.84	1.28	2.63	0.97
			(4.59)	(2.31)	
Republic of Belarus					
2007-12-28	2008-11-14	1.00	1.01	0.11	0.01
			(36.12)	(2.12)	
Plurinational State of Bolivia					
2007-06-15	2009-06-12	0.97	1.10	0.35	0.10
			(16.82)	(2.41)	
Republic of Bosnia and Herzegovina					
2005-10-14	2008-08-08	0.61	1.15	0.78	0.56
			(4.53)	(2.17)	
Republic of Burundi					
2009-10-16	2011-02-25	0.96	1.00	0.45	0.08
			(14.85)	(2.51)	
Western African Franc					
2007-04-20	2007-12-07	1.00	1.97	0.05	0.00
			(97.14)	(2.00)	
2008-07-04	2009-01-30	0.92	1.87	0.80	0.13
			(15.27)	(2.42)	
2009-02-06	2011-02-25	0.99	1.96	0.20	0.01
			(95.53)	(3.33)	
Central African Republic					
2008-02-01	2009-01-30	0.93	1.97	0.45	0.10
			(23.27)	(2.36)	
Republic of Estonia					
2005-10-14	2010-01-08	0.96	2.00	0.11	0.02
			(71.06)	(1.82)	
Federal Democratic Republic of Ethiopia					
2009-01-09	2010-02-26	0.47	1.33	8.54	2.11
			(2.23)	(1.87)	
Republic of the Fiji Islands					
2005-10-14	2008-10-03	0.63	1.65	0.75	0.52
			(7.66)	(2.27)	
French Polynesia					
2005-10-14	2009-05-08	0.37	1.82	0.92	1.19

			(8.70)	(2.08)	
Republic of Honduras					
2009-02-06	2009-10-02	1.00	0.99	0.21	0.00
			(157.92)	(3.78)	
Republic of India					
2005-10-14	2007-03-16	0.86	1.28	0.86	0.18
			(4.30)	(1.67)	
State of Israel					
2005-10-14	2007-12-07	0.63	2.45	1.51	0.66
			(6.27)	(2.55)	
State of Kuwait					
2007-05-25	2008-10-03	0.96	1.02	0.28	0.07
			(9.99)	(1.86)	
2008-10-10	2009-04-03	0.92	1.03	1.45	0.39
			(5.43)	(1.90)	
Socialist People's Libyan Arab Jamahiriya					
2005-10-14	2011-02-25	0.71	1.31	0.45	0.62
			(12.00)	(1.72)	
The Former Yugoslav Republic of Macedonia					
2005-10-14	2008-07-04	0.62	1.43	0.69	0.40
			(6.51)	(2.21)	
Republic of Madagascar					
2005-10-14	2008-09-05	0.48	1.12	0.81	0.86
			(3.75)	(1.87)	
Republic of Maldives					
2007-06-01	2011-02-25	1.00	0.99	0.04	0.00
			(140.44)	(2.58)	
Sultanate of Oman					
2010-01-29	2011-02-25	1.00	1.00	0.04	0.00
			(211.64)	(3.01)	
Islamic Republic of Pakistan					
2007-12-28	2008-11-21	0.73	1.57	2.15	1.78
			(3.52)	(2.32)	
Democratic Republic of Sao Tome and Principe					
2008-02-15	2009-03-27	1.00	1.00	0.10	0.00
			(69.86)	(2.68)	
Kingdom of Saudi Arabia					
2008-09-26	2009-06-26	1.00	0.96	0.13	0.00
			(60.00)	(2.06)	
Republic of Serbia					
2005-10-14	2006-06-23	0.68	3.41	2.14	0.17
			(5.59)	(2.06)	
Republic of Seychelles					
2007-10-12	2008-08-08	1.00	1.04	0.14	0.01
			(23.25)	(2.12)	
Republic of Sierra Leone					
2005-10-14	2006-04-07	0.99	1.10	0.75	0.02
			(4.76)	(1.68)	

Republic of Suriname					
2005-10-14	2006-04-07	0.99	1.10	0.75	0.02
			(4.76)	(1.68)	
Taiwan, Province of China					
2005-10-14	2011-02-25	0.83	1.05	0.45	0.27
			(14.57)	(2.64)	
United Republic of Tanzania					
2005-10-14	2007-10-05	0.56	0.27	2.06	0.94
			(0.50)	(2.49)	
Republic of Tunisia					
2008-10-10	2011-02-25	0.82	1.54	0.44	0.20
			(20.47)	(1.93)	
Socialist Republic of Viet Nam					
2009-10-16	2011-02-25	0.72	0.84	1.36	0.71
			(4.05)	(2.49)	

References

AZIS, I., AND N. PUTTANAPONG (2008): \A regional trend towards a basket peg system," *International Journal of Trade and Global Markets*, 1(2), 144{162.

BRANSON, W., AND C. HEALY (2005): \Monetary and Exchange Rate Policy Coordination in ASEAN," *NBER Working Paper*.

CHEN, H., AND W. PENG (2007): \The potential of the renminbi as an international currency," *China Economic Issues*, 7.

CHEUNG, Y., M. CHINN, AND E. FUJII (2009): *China's current account and exchange rate*. March.

COLAVECCHIO, R., AND M. FUNKE (2009): \Volatility dependence across Asia-Paci c onshore and o shore currency forwards markets," *Journal of Asian Economics*, 20(2), 174{196.

FIDRMUC, J. (2010): \Time-Varying Exchange Rate Basket in China from 2005 to 2009," *Comparative Economic Studies*.

FRANKEL, J. (2009): \New estimation of China's exchange rate regime," *Pacific Economic Review*, 14(3), 346{360.

FRANKEL, J., AND S.-J. WEI (1994): \Yen bloc or dollar bloc? Exchange rate policies of the East Asian countries," in *Macroeconomic linkage: Savings, exchange rates and capital flows*, ed. by T. Ito, and A. Krueger. University of Chicago Press.

GIRARDIN, E. (2011): \A De Facto Asian-Currency Unit Bloc in East Asia: It Has Been There but We Did Not Look for It," .

HALDANE, A. G., AND S. G. HALL (1991): \Sterling's relationship with the dollar and the deutschemark: 1976-89," *The Economic Journal*, 101, 436{443.

ITO, T. (2008): *Debating China's Exchange Rate Policy*chap. In uence of the renminbi on Exchange rate policies of other Asian currencies. Peterson Institute.

ITO, T. (2010): \China as Number One: How about the Renminbi?," *Asian Economic Policy Review*, 5(2), 249{276.

MA, G., AND R. MCCAULEY (2010): \The evolving renminbi regime and implications for Asian currency stability," *Journal of the Japanese and International Economies*.

PATNAIK, I., A. SHAH, A. SETHY, AND V. BALASUBRAMANIAM (2011): \The exchange rate regime in Asia: From crisis to crisis," *International Review of Economics and Finance*, 20(1), 32{43.

PONTINES, V., AND R. SIREGAR (2010): \Fear of Appreciation in East and Southeast Asia: The Role of the Chinese Renminbi," .

SHU, C., N. CHOW, AND J. CHAN (2007): \Impact of the Renminbi Exchange Rate on Asian Currencies," *China Economic Issues*, 3.

ZEILEIS, A., A. SHAH, AND I. PATNAIK (2010): \Testing, Monitoring, and Dating Structural Changes in Exchange Rate Regimes," *Computational Statistics & Data Analysis*.

ZHANG, Z. (2008): \Can Demand from China Shield East Asian Economies from Global Slowdown?," .