



**DO EXTERNAL POLITICAL PRESSURES AFFECT
THE RENMINBI EXCHANGE RATE?**

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Abstract

This paper investigates whether external political pressures calling for faster renminbi (RMB) appreciation have any statistically significant effect on both the daily returns and the conditional volatility of the RMB central parity rate. We construct various external pressure indicators according to the sources of foreign political pressures pertaining to the RMB exchange rate, with a special emphasis on the pressures originated in the United States. After controlling for the underlying domestic factors, we find that neither the overall foreign pressure indicator nor the US-specific pressure indicator has any significant influence on RMB's daily returns. However, there is strong evidence to suggest that external pressures, and especially those from US sources, have a statistically significant impact on the conditional volatility of the RMB exchange rate. In other words, even though external pressures do not seem to have systematic influence on the speed of the RMB appreciation, they do seem to influence the uncertainty in the daily changes of the RMB exchange rate.

JEL Code: F31, G10

Keywords: Renminbi exchange rate, Conditional volatility, Event studies, Macroeconomic news or surprises

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The views and analysis expressed in this paper are those of the authors, and do not necessarily represent the views of the Hong Kong Monetary Authority.

* The authors would like to thank Hans Genberg, Dong He, Lars Jonung, Robert Webb and seminar participants at the Hong Kong Monetary Authority for helpful comments and suggestions.

Executive Summary:

- *Since the July 2005 reform, the renminbi (RMB) exchange rate has been on a steady appreciation path against the US dollar. While the controlled exchange rate appreciation has gone through various phases of slow and fast appreciations, it remains unclear as to what specific underlying factors tend to influence the pace of the renminbi appreciation.*
- *Motivated by concerns for global economic imbalances, external pressures for faster and larger appreciation of the RMB have been persistent since the exchange rate reform.*
- *An interesting question thus arises naturally: Does foreign pressure affect the behaviour of the RMB exchange rate? This paper adopts event studies methodology and investigates whether foreign pressures have any statistically significant influence on not only the pace but also the conditional volatility (or the uncertainty) of the renminbi exchange rate against the US dollar.*
- *In order to quantify foreign pressures, we create an indicator variable based on a newly constructed dataset by collating news event related to the RMB exchange rate from important foreign political leaders and senior officials from various international organizations.*
- *We find that statements by officials in the US, EU or Japan do not seem to have a significant impact on daily returns of the CNY/USD exchange rate. However, foreign pressure does affect the daily conditional volatility of the CNY/USD rate significantly. Out of the underlying domestic factors, we find that the differential between one-month LIBOR and CHIBOR has a significant impact on the pace of the RMB appreciation.*
- *Our findings confirm the notion that foreign pressure is unlikely to yield any major changes in China's exchange rate policy, although they make the renminbi exchange rate more volatile. It appears that domestic policy concerns, rather than foreign pressures, are the driving factors behind China's renminbi exchange rate policy.*

I. INTRODUCTION

The Chinese currency renminbi or yuan (RMB or CNY) has been appreciating at a gradual pace against the US dollar (USD) since the exchange rate reform on 21 July 2005. Despite the renminbi exchange rate having gone through various phases of slightly fast or slow appreciations (Liu and Pauwels, 2007), it appears that the exchange rate reform so far has been based on the principles of “independent initiative, controllability, and gradual progress”.¹ The RMB appreciated by 3.4% in 2006 and a further 6.9% in 2007 against the USD. Overall, the CNY/USD exchange rate has appreciated by more than 10% by the end of 2007.

The switch of the RMB exchange rate from a previously pegged exchange rate system to a “managed float” with a reference to a basket of currencies offers a rare opportunity to study an exchange rate arrangement that is gaining greater importance in the world foreign exchange markets. Furthermore, RMB’s move to greater flexibility was taken place under the circumstances where the currency is not fully convertible; China’s capital controls are still in place; and China’s financial institutions are not yet liberalised. Partly because of these features, the price formation mechanism of the RMB is yet fully market driven. Meanwhile, considerable external pressures, mostly motivated by global economic imbalances, have been exerted on the Chinese authorities to allow for a more rapid rate of appreciation of the RMB.

The question therefore naturally arises whether such pressures have actually brought about any tangible effects on the daily movements of the CNY/USD exchange rate. Specifically, we assess whether external political pressures have any statistically significant influence on the daily returns as well as on conditional volatility of the CNY/USD central parity rate (or the uncertainty in the daily changes in the RMB exchange rate conditional on past shocks), after controlling for domestic underlying factors such as monetary conditions, economic activity, and external imbalances.

External pressures refer to policy statements or announcements by foreign officials and international organizations demanding for faster appreciation

¹ From Premier Wen Jiabao’s speech at the Sixth ASEM Finance Ministers’ Meeting of the Asian-Europe Meeting (ASEM) in the Tianjin, China on 26 June, 2005 (http://www.gov.cn/english/2005-06/27/content_20385.htm)

of the RMB exchange rate. We quantify such pressures with indicator variables based on a newly constructed dataset. We build the database by collecting public statements about the Chinese exchange rate made by senior officials either from key economies in the world or various international organizations. For example, these statements may come from the President of the United States, Secretaries of the US Treasury and Department of Commerce, Chairman of the Federal Reserve System, influential US congressmen and senators, prime ministers and senior economic officials from the EU and the Japanese government, as well as head of important international organisations with focus on global economy such as the IMF and the OECD.

An event study methodology is applied to investigate the issue of our concerns. Indeed, there is growing body of literature that uses event studies with high frequency data to evaluate effects of central bank intervention in foreign exchange rate markets. Neely (2005) provides an excellent review of recent studies. While many event studies examine the efficacy of actual central bank interventions in foreign exchange markets (for example, Fatum and Hutchinson (2003a and 2003b), Ito and Yabu (2004), and Chaboud and Humpage (2005) to name a few recent studies), our study falls into the category of the event studies literature that examines whether news or central bank communications have any impact on the daily exchange rate movements. Fratzscher (2004), among others, assesses the effectiveness of central bank communication policies on the exchange rates of G-3 economies and finds that such policies are effective in influencing dollar-euro and yen-dollar in the desired directions on intervention days. With respect to the effect on exchange rate volatility, Fratzscher's results suggest that central bank communications tend to reduce market volatility, whereas actual interventions increase market volatility. On the other hand, Bonser-Neal and Tanner (1996) and Dominguez (1998) find that news report of Japanese government interventions tend to increase exchange rate volatility. In this paper, we are interested in examining whether external pressures calling for RMB appreciation have any statistically significant impact on both the daily returns and the conditional volatility of the RMB exchange rate.

The contributions of this paper to the existing literature are as follows: First, different from the existing foreign exchange interventions literature that mostly examines the effect of domestic interventions on domestic currencies, this paper investigates the effect of external political pressures from G-3 and international organizations on an exchange rate of a large emerging market economy that is gaining prominence in the global economy. Secondly, we construct

various indicators according to their sources to quantify the external pressures calling for faster RMB appreciation based on a new dataset that collates news events related to the RMB exchange rate issues since its reform in July 2005. Thirdly, we use a set of innovative macroeconomic control variables that allow us to better identify the effect of external pressures on the daily returns of the RMB exchange rate, which has always been an econometric difficulty in event studies. Specifically, we use the deviations of real-time data from market expectations or macroeconomic surprises to control for the underlying macroeconomic factors.

Our findings suggest that statements by officials in the US, EU or Japan do not seem to have a significant impact on daily returns of the CNY/USD exchange rate. However, foreign pressures do affect the daily conditional volatility of the CNY/USD rate significantly. Out of the underlying domestic factors, we find that interest differential between one-month LIBOR and CHIBOR has a significant impact on the pace of the RMB appreciation. Our findings confirm the notion that foreign pressure is unlikely to yield any major changes in China's exchange rate policy, although they make the renminbi exchange rate more volatile. It appears that domestic policy concerns, rather than foreign pressures, are the driving factors behind China's renminbi exchange rate policy.

The rest of the paper proceeds as follows. Section 2 motivates the paper by analysing the movements of the exchange rate around some important Sino-US meetings in the past two and half years. Section 3 explains how we construct various foreign pressure indicators and the new dataset. Section 4 specifies the empirical model. Section 5 presents the empirical results. Section 6 concludes.

II. SINO-US MEETINGS: SOME PRELIMINARY OBSERVATIONS

In order to motivate the relevance of testing whether external pressures for larger and faster renminbi appreciation have any significant effect on daily changes in the CNY/USD exchange rate, we examine a series of 6 events where a US delegation and Chinese officials met to discuss exchange-rate and related issues. We analyse whether these so-called bilateral Sino-US meetings on trade and currency issues, including the Sino-US Strategic Economic Dialogue (SED), have any notable influence on both the weekly average changes in daily returns and the weekly standard deviation or volatility of the CNY/USD central parity rate before, during, and after a meeting week. These preliminary

observations help ascertain the need for carrying out further and more formal econometric analysis.

Table 1 presents average daily returns and standard deviations of the CNY/USD exchange rate over a 1-week window – before, during, or after a Sino-US economic meeting. Indeed, a notable pattern appears to stand out. On average, the renminbi appreciates faster during a meeting week than it does in a week before and a week after a bilateral meeting. For the meeting week, the average weekly appreciation is about 0.05%, compared to 0.003% and 0.007%, respectively, for the week before and the week after a bilateral meeting. On average, the RMB exchange rate against the US dollar during a meeting week appreciates almost 2.7 times faster than the sample average. In particular, the weeks of Secretary Paulson's first visit to China, the first, second, and third Sino-US Strategic Economic Dialogue (SED) all have generated relatively large weekly appreciations of the renminbi against the US dollar.

On average, the weekly standard deviation or the volatility appears to be the largest in the week before a bilateral meeting, while it is not much different for the week during the meeting and the week after. For example, the CNY/USD standard deviation was 0.132 for the week before a bilateral meeting and it was 0.84 and 0.89, respectively, for the week during and after a meeting. While the volatility is still larger for the week before a meeting, there was also a significant increase in terms of magnitude for the last three meetings presented in the table, namely, the second SED, Paulson's visit to China in July 2007, and the third SED. Indeed, other than the possible meeting effect, there could be an effect also from the widening of the trading band for the CNY/USD exchange rate from the previously allowed daily fluctuation of 0.3% to 0.5% on 18 May 2005.

These casual observations indicated that both the rate of appreciation and the volatility of the CNY/USD exchange rate appear to have reacted to Sino-US economic consultations. Specifically, it seems that the CNY/USD exchange rate generally experiences a faster appreciation during the week of the meeting, while the standard deviation is often larger in the week before a meeting than those during and after a meeting. Another interesting fact is that the average rate of appreciation of the week after a meeting often falls below to its sample mean, suggesting that the pace of the exchange rate appreciation often slows after a meeting. The volatility, on the other hand, returns to the level of its sample average.

While revealing, these observations need to be analysed more rigorously before we can draw any conclusions that foreign pressures have significant influence on the CNY/USD exchange rate. This preliminary evidence thus calls for a formal analysis, which we shall turn in the following sections.

Table 1: Mean and Standard Deviation of CNY/USD Daily Returns before, during, and after Sino-US Meetings on China's Exchange Rate Policy

	Meetings in 2006		Meetings in 2007				Average
	Paulson visits China	Paulson visits China (1st SED)	Paulson visits China	Wu visits USA (2nd SED)	Paulson visits China	Paulson visits China (3rd SED)	
Start date of meeting	19-Sep	13-Dec	7-Mar	22-May	28-Jul	12-Dec	
End date of meeting	22-Sep	15-Dec	8-Mar	25-May	1-Aug	13-Dec	
Preceding week							
Mean	-0.027	-0.017	0.012	-0.008	-0.004	0.026	-0.003
Standard Deviation	0.059	0.089	0.083	0.169	0.180	0.211	0.132
Week of meeting							
Mean	-0.068	-0.021	-0.004	-0.073	-0.004	-0.136	-0.051
Standard Deviation	0.034	0.095	0.065	0.087	0.124	0.101	0.084
Following week							
Mean	-0.025	0.001	-0.012	-0.007	0.004	-0.005	-0.007
Standard Deviation	0.089	0.065	0.061	0.039	0.124	0.156	0.089
Memorandum items							
Sample mean							-0.019
Sample standard deviation							0.084

Source: Reuters, Xinhua, US Treasury, CEIC, and staff estimates

This table shows the mean and standard deviation of the daily return on the CNY/USD central parity rate over one-week windows before, during and after the Sino-US meetings. The sample mean and standard deviation correspond to the period from 5/1/2006 to 28/12/2007. The start and end dates refer to the entire period of the governmental visits, not just the official meetings. For example, the second Strategic Economic Dialogue took place on the 22nd and 23rd of May, but the Chinese delegation stayed in the United States until the 25th.

III. THE RMB EXCHANGE RATE REFORM AND THE DATA

Reform of the renminbi exchange rate system

On 21 July 2005, the People's Bank of China (PBC) announced a number of measures to reform the renminbi exchange rate regime.² On the same day, the currency was re-valued by 2.1% to CNY 8.11 per USD from 8.28. Initially the intra-day fluctuation of the RMB exchange rate against the US dollar was within a tightly controlled range of $\pm 0.3\%$. The band was subsequently widened to

² Details of this reform and previous key events of the Chinese exchange rate system are presented in Appendix A.

$\pm 0.5\%$ on 18 May 2007. Perhaps the significance of the July reform is that the peg to the USD was replaced by a “managed float” regime, with the exchange rate determined with reference to a basket of currencies. By means of these reforms, the Chinese monetary authority has gained a new policy tool to manage the economy.

Every day, the PBC sets a new reference trading rate, the central parity rate, for the RMB exchange rate against the US dollar. Before 4 January 2006, the central parity rate was announced by the PBC after the closing of the market on each trading day and the announced rate was then used for trading in the following business day. One problem with this procedure was that there was no information as to how the PBC determined the closing price, partly because the transactions were carried out using an automatic price matching system; the China Foreign Exchange Trading System (CFETS) was the sole counterparty to all market participants. This approach may not be conducive to the formation mechanism of a market-driven foreign exchange rate system (PBC, 2006).

From 4 January 2006, the setting of the central parity rate has been replaced by a new price mechanism. Three distinct features of the mechanism are worth to mention. First, over-the-counter (OTC) trading was introduced to the interbank foreign exchange market. The OTC system refers to transactions between pairs of accredited market participants via independent bilateral price inquiries and settlements. In the early days of the OTC operations, the automatic price matching system was maintained to facilitate credit authorisation for small and medium sized financial institutions. However, it is expected that the automatic price matching system will be eventually phased out. Secondly, on 4 January 2006, the PBC authorised the CFETS to announce the central parity rate of the RMB against the US dollar, the Euro, the Japanese yen, and the Hong Kong dollar at 9:15 am Beijing time of each business day, whereas prior to January 2006 it had been announced at the market close.

Thirdly, the price formation mechanism of the central parity rate was changed substantially. Before the opening of the market on each business day, the CFETS first inquires about prices from all market makers in the OTC system. Based on the information, the highest and lowest offers are excluded and a weighted average of the remaining prices is set as the central parity rate. The weights are determined by the CFETS according to the previous day’s transaction volumes of each remaining market maker. In addition, other indicators such as the quoted prices from the automatic price matching system may also be used as a reference. Once the central parity rate is determined against the US dollar,

the RMB exchange rate can be set against the euro, the yen, and the Hong Kong dollar based on the cross rates of these currencies with the US dollar at 9:00 am Beijing time in the international exchange rate market.

Indeed, the determination of the new central parity rate is quite different from the previous one. The mechanism of setting the new central parity rate is more market driven than the one used before 4 January 2006. It can be argued that a significant regime switch took place. So to avoid unnecessary complications, we use the daily central parity rate starting from 4 January 2006.

Defining external pressure

By collecting daily financial news pertaining to the renminbi exchange rate policy, the foreign pressure indicators are constructed following this simple rule:

$$I_t^f = \begin{cases} 1 & \text{if statements by officials} \\ 0 & \text{otherwise} \end{cases}$$

where I_t^f is a daily indicator function at time t from entity f . Specifically, $I_t^f = 1$ indicates there is a public statement calling for faster renminbi appreciation from a foreign entity or multiple foreign entities. If it is equal to 0, there is no event related to the RMB exchange rate. We also narrow the source of external pressures as referring to those public statements on Chinese exchange rate policy both from the United States and non-US entities such as the European Union, Japan, and major international organizations such as the IMF, the G7 group, and the OECD. We are thus able to construct 5 foreign pressure indices. We first build an overall external pressure index, which then can be subdivided into two indices, one for the US, one for the non-US, which includes news event on the RMB originating in the EU and Japan, and international organisations.³ Moreover, we subdivide the US pressure index further by creating one external pressure indicator for the official Sino-US meeting weeks as discussed in section II and another pressure indicator for those statements on the RMB exchange rate policy by US government officials and members of the US Congress. This is done because the US is the most common source of external pressures calling for faster appreciation of the renminbi

³ The non-US variable combines the pressures coming from the EU (and its member countries), Japan and international organisations for reasons that these entities each have too limited numbers of data points on its own.

exchange rate, and the reaction in China to pressures originating in the United States might differ from the reaction to those originating elsewhere.

Coding external pressure

The foreign pressure indicators are constructed by collating daily news headlines concerning the renminbi exchange rate from the Reuters news database for the period between 22 July 2005 and 31 December 2007.⁴ When selecting daily news from the Reuters database, we require that it include keywords such as RMB appreciation and RMB exchange rate flexibility. Strictly speaking, currency appreciation and flexibility (i.e. the degree of movement of the exchange rate as permitted by the currency system) are two distinct economic concepts. However, we classify any comments containing the phrase “flexibility” as carrying the same meaning as a faster or larger appreciation because of the backdrop of persistent international pressures for a faster renminbi appreciation during our sample period. In some cases, there are multiple comments calling for faster RMB appreciation from more than one source of foreign entities. Although this constitutes different entries for some specific indicators concerned, the multiple comments are coded as one entry in the overall foreign pressure indicator. This rule also applies to the case when pressures are coming from different sources, for example, the Sino-US meetings, the US government, and the Congress.

The US pressure indicator includes statements not only from the executive branch of the US government but also from Congress, including hearings or proposed bills pertaining to the Chinese RMB exchange rate. The information for this index is gathered from the Library of Congress website. We then search for all bills that contain the keywords “currency” and “exchange rate” in their titles or summaries that were introduced during our sample period, *i.e.* between the 109th (2005—2006) and 110th (2007—2008) Congresses. When selecting the relevant bills pertaining to the RMB exchange rate, we include the bills on the RMB explicitly, for example bills demanding the US government to take actions against China for manipulating its currency, and the bills related to the RMB exchange rate, for example, bills requiring the Congress to clarify the conditions under which a currency may be considered to be “misaligned”. All the bills we select fall between these two categories and we exclude the bills that are specifically targeted on other currencies such as the Japanese yen. We quantify all these bills equally so as to avoid judging the political strength of each bill arbitrarily.

⁴ For reasons explained earlier, we conduct the analysis using the sample starting from 4 January 2006.

In order to track whether there are some differences before, during, and after a bilateral meeting between China and the US on renminbi-related issues as illustrated in Section II, we also create a Sino-US meeting week indicator. The Sino-US meetings indicator takes the value of “1” when an official meeting took place between Henry Paulson, US Treasury Secretary, and Wu Yi, Vice-Premier of China.⁵ This pressure indicator thus allows us to test formally whether the results presented in table 1 hold or not. A complete list of these indicators and their sources is presented in Appendix C.

Domestic control variables

Our framework testing whether foreign pressures have any influence on the RMB exchange rate also requires us to control for the effect of various domestic underlying factors such as the state of monetary conditions, economic activity, and external imbalances. Because the foreign exchange rate market is forward looking, anticipated effects from these domestic underlying factors should not have much influence on daily exchange rate movements. Only unanticipated effects or surprises from these domestic factors should. To control for the effect owing to monetary conditions, we use the loan growth and M2 growth surprises, in addition to the interest rate differential between the US and China. The interest rate differential data is calculated using the daily money market interest rates in the United States (one-month LIBOR) and in Mainland China (one-month CHIBOR), collected from CEIC. The interest rate differential attempts to reflect the interest rate parity condition.⁶ To control for the effect of economic activities, we use the surprises from CPI inflation, growth in fixed asset investment, and growth in industrial production. The effect of external balances on the RMB exchange is accounted for by surprises in the monthly changes of China’s trade surplus.⁷ A detailed description of the data and the definition of the variables are presented in Appendix B1-B4.

How do we measure the surprises from these underlying macroeconomic factors? Except for the interest rate differential variable, all other key macroeconomic indicators are announced on a monthly basis on different

⁵ In our regressions, we also include the meeting between President Hu and President Bush during Hu’s visit to Washington DC.

⁶ We also use the deviations from the interest rate parity condition as an explanatory variable and we obtain similar results. The results are available upon requests.

⁷ We have also included foreign exchange reserve accumulation as one of the indicators to reflect external imbalances. Because it is only announced every quarter, we did not include it in this version of the paper.

official dates. The unanticipated effects of these monthly macroeconomic indicators or macroeconomic surprises on the RMB exchange rate are measured as the differences between the official data on their release dates (real-time data) and their corresponding market forecasts that reflect market expectations.⁸ The market forecasts are obtained from the Bloomberg and the Reuters, which conduct regular surveys of financial institutions both in China and abroad every month before the official data releases of these monthly indicators (See Appendix D for a description of these market forecasts). Out of these monthly macroeconomic indicators, market forecasts for loans growth are only available from 2007 onwards. We therefore use month on month changes in loan growth as a proxy for the loan growth surprises. The sample used for the analysis of this paper spans from 4 January 2006 to 28 December 2007, the last trading day of 2007.

IV. METHODOLOGY AND MODEL SPECIFICATION

Methodology

We adopt event study methodology to examine whether foreign pressure calling for RMB appreciation has any statistically significant impact on both the pace and the conditional volatility of the CNY/USD exchange rate. To conduct an event study, one has to define the events, a window around the event, a success criterion, and a method to evaluate success criterion (Neely, 2005). As mentioned above, our events are news reports related to external pressures calling for faster RMB appreciation. For the case of the Sino-US meeting weeks, our window is three weeks, one week before, during, and after a meeting. The events recorded by other indicators of external pressures are assumed to occur throughout the sample period. To test our hypotheses, we use both direction and statistical significance as evaluation criteria, that is, external pressures are successful if they brought about a statistically significant appreciation of the RMB exchange rate.⁹ Following the existing literature, we adopt a GARCH model to empirically evaluate the success criteria, which we shall turn next.

⁸ In some occurrences, the data were announced before its official release date by news media quoting ad-hoc sources. The numbers quoted, however, do not always match the official numbers released. For consistency, we only rely on the data released on the official statistic release date.

⁹ The direction criterion is taken from the foreign exchange intervention literature and refers to an intervention as a success if the purchased currency appreciates the exchange rate and vice versa. See Humpage (2000) for details.

Model specification

We test whether or not external pressures affect both the daily returns and the conditional volatility in the CNY/USD exchange rate. The model used to test such effects is specified as follows:

$$r_t^{CNY} = \alpha + \beta r_{t-1}^{CNY} + \lambda \mathbf{x}_{t-1}^{macro} + \boldsymbol{\varphi} \mathbf{I}_{t-1}^f + \varepsilon_t \quad (1)$$

where $r_t^{CNY} = \log(S_t^{CNY}/S_{t-1}^{CNY}) * 100$, S_t^{CNY} is CNY/USD central parity exchange rate. In fact, two exchange rate quotes are generally available. \mathbf{x}_{t-1}^{macro} is a vector of macroeconomic surprises pertinent to the conditions of monetary policy, economic activity, and external imbalances in China; \mathbf{I}_{t-1}^f is a vector that contains various specifications of the foreign pressure indicators. The shocks to returns ε_t , are given by:

$$\begin{aligned} \varepsilon_t &= \eta_t \sqrt{h_t}, \eta_t \sim iid(0,1) \\ h_t &= \omega + \alpha \varepsilon_{t-1}^2 + \beta h_{t-1} + \boldsymbol{\gamma} \mathbf{I}_{t-1}^f \end{aligned}$$

in which $\eta_t \sim iid(0,1)$ and $\omega > 0, \alpha \geq 0, \beta \geq 0$ are sufficient conditions to ensure a strictly positive conditional variance, $h_t > 0$. The ARCH effect, α , captures the short run persistence of shocks, and the GARCH effect, β , indicates the contribution of shocks to long run persistence, $\alpha + \beta$.

The econometric difficulties associated with traditional event studies such as simultaneity and identification are less a problem here. Contrary to foreign exchange interventions that occur simultaneously to the changes in the exchange rate, the daily central parity rate is determined at beginning of a trading day, whereas, given the time difference, foreign pressure indicators occur before the central parity rate setting. Pressures should not have a simultaneous effect on the daily returns of central parity rate and therefore they should be exogenous.

A couple of complications may arise if the central parity rate of CNY/USD is set either by taking potential external pressures or domestic macroeconomic effects into consideration. For example, the dates of Sino-US meetings are usually set well in advance, thus leaving ample room for the

authorities to manoeuvre before hand. However, this may not be a serious problem for the following reason. As stated repeatedly by Premier Wen Jiabao, China's foreign exchange rate policy after the reform follows three basic principles of independent initiative, controllability, and gradual progress. Therefore, it is unlikely for PBC to take systematically external pressure that occurs irregularly into consideration, when setting the central parity rate on a daily basis. Therefore, we can not exclude the role of other factors such as market forces and domestic factors that may also affect the central parity rate and these factors will lead to the identification problem usually associated with event studies of foreign exchange interventions.

We deal with the identification problem by using macroeconomic surprises, constructed as the deviation from market expectations surveyed among market participants. This implies that the macroeconomic surprises should be orthogonal to the external pressure indicators. Therefore, the identification problem is avoided in our specification. The use of macroeconomic surprises as exogenous control variables in exchange rate intervention models are common in the literature.¹⁰

We are first interested in investigating the effect of external pressure on the daily returns of the RMB exchange rate. Both the control variables and the vector of pressure indicators are dated at $t-1$ as the central parity rate is set every morning before the trading day, whereas macroeconomic announcements occur throughout the trading day. A negative coefficient would indicate that external pressure lead to an appreciation of the exchange rate

Next, we investigate the impact of foreign pressure on conditional volatility of the CNY/USD spot exchange rate. This is conducted by using a conditional volatility model in the spirit of Engle (1982) and Bollerslev (1986). Following Neely (2005), we use a GARCH(1,1) model specification and the pressure indicators are also introduced in the conditional variance equation. A positive and significant coefficient on foreign pressure indicator would imply that foreign pressure tend to increase the conditional volatility of the CNY/USD exchange rate.

¹⁰ See Neely (2005) for a good survey.

V. EMPIRICAL RESULTS

Results for the Overall External Pressure

Table 2 presents the empirical findings on the effect of the overall external pressure indicator in Column I and the US and non-US pressure indicators in Column II on both the mean and the conditional variance of the CNY/USD exchange rate. Other than the control variables and external pressure indicators as specified in Equation (1), we also add a dummy variable to account for a possible structural shift due to the widening of the trading band of the RMB exchange rate on 18 May 2007.

We first look at the intercept term, the lagged daily returns variable of the CNY/USD exchange rate, and dummy variable for the widening of the trading band. The constant is always negative and significant, indicating that the CNY/USD exchange rate appreciates at a pace of 0.03% per day on average, holding other things equal. On the other hand, the lagged daily returns variable, which contains past information on the RMB, does not seem to be a good predictor for the future. In addition, the dummy variable for the effect of the widening of the trading band does not appear to be statistically significant, either. This suggests that the daily changes of the RMB exchange rate did not grow significantly larger even after the widening of the trade band.

We then look at the set of control variables pertaining to monetary conditions, economic activity, and external imbalances. With respect to the variables that fall in the category of monetary conditions, only the interest rate differential variable is statistically significant and with a positive sign. Given the variable is measured as one-month LIBOR minus one-month CHIBOR, the positive coefficient of the interest rate differential variable implies that the larger the interest rate differential, the larger the depreciation of the CNY/USD exchange rate. Deviations from the market expectations or surprises arising from the monthly official releases of financial institution loans and M2 are never statistically significant. Similarly, the deviations from the market expectations from those monthly data releases of both economic activity (CPI, FAI, and IP) and external imbalances (the trade surplus) never appear to have any influence on the daily exchange rate changes.

We are finally able to discuss the effect of external pressure on the daily returns of the renminbi exchange rate. The sign of coefficient of the overall pressure indicator from all sources is negative, indicating that external pressure leads to an appreciation of the exchange rate as expected. However, the coefficient of this variable is not statistically significant. When examining the external pressure effects from the US and non-US sources in Column II, we observe the similar pattern, that is, the coefficients associated with these variables have the expected negative signs, but are never statistically significant. Such findings suggest that external pressures do not appear to have any significant influence on the daily returns of the CNY/USD.

The results from the variance equation of the GARCH(1,1) model are presented in the bottom panel of Table 2. Contrary to the mean regression, we find that the overall external pressure indicator has a statistically significant and positive effect on the conditional volatility of the CNY/USD exchange rate at the 5% level of significance. This positive and significant effect is also present for both the US only and non-US pressure indicator (Column II). All coefficients of these pressure variables have positive signs, indicating that the external pressures increase the conditional volatility of the CNY/USD exchange rate.

Table 2. Regression Results for the Overall Foreign Political Pressure

	Model	
	I	II
<i>Mean equation</i>		
Intercept	-0.0332* (0.0096)	-0.0297* (0.0094)
Daily RMB return (lagged)	-0.0495 (0.0521)	-0.0443 (0.0497)
Interest rate differential	0.0087* (0.0036)	0.0075* (0.0036)
Macroeconomic news on		
Loan growth	0.0098 (0.0226)	0.0086 (0.0215)
Fixed asset investment growth	0.0083 (0.0145)	0.0080 (0.0153)
Industrial production growth	0.0049 (0.0110)	0.0059 (0.0121)
Trade balance	-0.0044 (0.0031)	-0.0043 (0.0030)
Broad money growth	0.0314 (0.0227)	0.0287 (0.0219)
CPI inflation	-0.0436 (0.0689)	-0.0498 (0.0718)
Dummy variable on wider daily trading band	-0.0029 (0.0110)	-0.0036 (0.0108)
Dummy variable on external pressure from		
All sources	-0.0060 (0.0058)	
United States		-0.0026 (0.0058)
Non-US		-0.0154 (0.0114)
<i>Variance equation</i>		
Intercept	-0.0001* ##	-0.0001 ##
ARCH term	0.0819* (0.0271)	0.0697* (0.0231)
GARCH term	0.9172* (0.0231)	0.9216* (0.0206)
Dummy variable on external pressure from		
All sources	0.0005* (0.0001)	
United States		0.0003* (0.0001)
Non-US		0.0009* (0.0004)

The dependent variable is the daily return of the RMB exchange rate and all explanatory variables are lagged one period. All regressions follow the GARCH(1,1) model and are estimated by maximum likelihood using the Berndt-Hall-Hall-Hausman (BHHH) maximization algorithm. Bollerslev-Wooldrige robust standard errors are presented in parentheses. An asterisk * denotes statistical significance at the 95% confidence level. The sign ## indicates that the figure is smaller than 0.00005.

The Effect of Sino-US Meetings on the RMB Exchange Rate

Our empirical findings so far have shown that external pressures, regardless sources, do not seem to affect the daily returns of the CNY/USD exchange rate. However, they do have statistically significant effect on the conditional volatility of the RMB exchange rate. A further and perhaps more interesting question to ask is whether the Sino-US meetings on the issue of the RMB exchange rate are different, as compared with other types of external pressures. Indeed, as shown in Table 1, it appears that the CNY/USD exchange rate might appreciate faster during the Sino-US meeting week, while the volatility of the CNY/USD exchange rate might fluctuate more in the week preceding the meeting than those during and that after the meeting week. In this subsection, we investigate the US effect on both the mean and conditional volatility of the CNY/USD exchange rate more formally.

Similar to the specification in Table 2, we continue to use the same explanatory variables to control for domestic factors. However, we now further refine the specification of the US pressure indicator by creating a separate Sino-US meeting week variable and a US pressure variable without including these meetings. The Sino-US meeting week variable includes all 5 days of the week when a meeting was held (even though the meeting might run for 2-4 days only) so that we can investigate the effects of both daily changes and the conditional volatility of the CNY/USD exchange rate before, during, and after a meeting week.

The empirical findings are presented in Table 3. For the mean regression, most of the control variables and the dummy variable for the widening of the trading band continue to be statistically insignificant, while the constant and the interest rate differential variable remain statistically significant and positive. Column II presents the result without including the meeting week effect. The coefficient, though negative as expected, is still not statistically significant. But would the RMB exchange rate behave differently during the Sino-US meetings? Column III presents the results. We find that the Sino-US meeting indicators for the week before and after a meeting never show up to be statistically significant in affecting the daily changes of the RMB exchange rate and also have a positive sign, which suggests the CNY/USD rate actually depreciates over these periods. The coefficient for the indicator during the meeting week is negative, suggesting the change of the central parity rate of the CNY/USD exchange rate does appreciate somewhat. However, it is never statistically significant. Such findings also hold

when we examine the Sino-US meeting indicators alone without including the other pressure indicators (Column III). Similarly, when excluding the meeting weeks, the coefficient of the US pressure indicator has a negative sign on the daily returns of the CNY/USD exchange rate, but is not statistically significant (Column IV). Note that Columns II to IV of Table 3 are robustness checks that intend to exhaust all the variants of US pressures.¹¹

Similar to what we have found in table 2 for the conditional volatility equation, the US pressure indicator excluding the effect of the meeting weeks continues to be statistically significant. The coefficient for the Sino-US meeting week is negative and significant in influencing the conditional volatility at the 5% significance level, suggesting that the conditional volatility actually declines during the meeting weeks on average. The coefficients for the meeting week indicators before and after a Sino-US meeting are positive, though not statistically significant. In particular, our formal statistical analysis does not appear that suggest that the conditional volatility is higher for the week before a Sino-US meeting, as hinted by the simple statistic comparison of unconditional variance in Table 1. When focusing on the meeting indicator exclusively (Column III of Table 3), we obtain the same results both in magnitude and statistical significance, which is somewhat in contrast to our casual observations as presented in Table 1.

One may wonder whether our findings may be affected by treating all news events equally when quantifying the external political pressure indicators. One of the ways to check this is to see whether there is a systematic pattern in large daily RMB changes that are consistent with some news that may have more important implications than others for the RMB exchange rate. These significant news events could include US congressional bills that may have tangible impact on the Sino-US economic relations, US-China meetings with a focus on the RMB exchange rate, or concerns on the RMB voiced by top EU officials. We therefore present a table that lists both the 10 largest daily appreciations and the 10 largest depreciations of the RMB central parity rate, together with their corresponding news in the week. These 20 large changes in RMB exchange rate account for roughly 4% of the total observations. Table 4 (a) shows the 10 largest appreciations. As we can see, it is difficult to draw any conclusion from these 10 largest appreciations days, as they are not always affected by significant events. In fact, there are just as many days of large appreciations without any events as those days with ones of significance. Indeed, such observations also apply to the 10 largest

¹¹ Note that the results for Column II have a different set of start values for the GARCH regression because of a convergence problem.

depreciation days presented in Table 4 (b). While we observe that some large depreciation days are associated with no events at all, we also observe that the rest of the largest depreciation days are even associated with political pressures for faster RMB appreciation. Therefore, it is difficult to conclude that the central parity rates would be consistently set in a way that reflects external political pressures of significance. That said, our indicators that treat external political pressures equally may not affect our findings much.

Table 3. Regression Results for Sino-US Meetings on the RMB

	Model			
	I	II	III	IV
<i>Mean equation</i>				
Intercept	-0.0280*	-0.0390*	-0.0382*	-0.0388*
	(0.0095)	(0.0099)	(0.0101)	(0.0099)
Daily RMB return (lagged)	-0.0338	-0.0572	-0.0560	-0.0536
	(0.0496)	(0.0527)	(0.0533)	(0.0547)
[Results for other control variables are omitted]				
Dummy variable on wider daily trading band	-0.0030	0.0011	0.0001	-0.0006
	(0.0111)	(0.0120)	(0.0123)	(0.0111)
Week following Sino-US meeting	0.0065	0.0042	0.0038	
	(0.0135)	(0.0129)	(0.0123)	
Week of Sino-US meeting	-0.0169	-0.0164	-0.0186	
	(0.0120)	(0.0128)	(0.0128)	
Week prior to Sino-US meeting	0.0181	0.0202	0.0162	
	(0.0197)	(0.0204)	(0.0211)	
Dummy variable on external pressure from				
United States, except during Sino-US meetings	-0.0025	-0.0028		-0.0035
	(0.0060)	(0.0064)		(0.0063)
Non-US	-0.0161			
	(0.0112)			
<i>Variance equation</i>				
Intercept	-0.0001*	-4.9E-05	4.3E-05*	-0.0001
	##	##	##	##
ARCH term	0.0319*	0.0569*	0.0417*	0.1012*
	(0.0141)	(0.0194)	(0.0180)	(0.0319)
GARCH term	0.9625*	0.9489*	0.9581*	0.9047*
	(0.0148)	(0.0173)	(0.0170)	(0.0267)
Week following Sino-US meeting	0.0004	0.0002	0.0003	
	(0.0003)	(0.0003)	(0.0003)	
Week of Sino-US meeting	-0.0015*	-0.0013*	-0.0016*	
	(0.0005)	(0.0006)	(0.0006)	
Week prior to Sino-US meeting	0.0008	0.0009	0.0011	
	(0.0006)	(0.0006)	(0.0007)	
Dummy variable on external pressure from				
United States, except during Sino-US meetings	0.0003*	0.0003		0.0004*
	(0.0001)	(0.0002)		(0.0002)
Non-US	0.0007*			
	(0.0003)			

The dependent variable is the daily return of the RMB exchange rate and all explanatory variables are lagged one period. All regressions follow the GARCH(1,1) model and are estimated by maximum likelihood using the Berndt-Hall-Hausman (BHHH) maximization algorithm. Bollerslev-Wooldrige robust standard errors are presented in parentheses. An asterisk * denotes statistical significance at the 95% confidence level. The sign ## indicates that the figure is smaller than 0.00005. Model of column II could not converge using the same specification as all other models. The starting values were consequently modified to achieve convergence.

Table 4 (a). Top ten daily appreciations in July 2005—December 2007 (chronologically ordered)

Date	Day	Central parity rate	%dod	Reported external pressure during the week
01/02/2007	Thu	7.7615	-0.2072	Paulson faced congressional testimony and said he would push China
12/06/2007	Tue	7.6475	-0.4045	Senator Baucus introduced bill S.1607 on currency misalignment
13/06/2007	Wed	7.6282	-0.2527	Same as the above
10/07/2007	Tue	7.5845	-0.3159	US Rice said China could play fairer on trade, yuan
24/08/2007	Fri	7.5691	-0.2059	No reported external pressure
10/09/2007	Mon	7.5252	-0.2111	No reported external pressure
08/11/2007	Thu	7.4251	-0.3026	France's Sarkozy said he shared US concern over yuan's rate
11/12/2007	Tue	7.3797	-0.2112	Paulson visited China for the 3rd Strategic Economic Dialogue
24/12/2007	Mon	7.3315	-0.3499	No reported external pressure
27/12/2007	Thu	7.3079	-0.2992	No reported external pressure

Table 4 (b). Top ten daily depreciations in July 2005—December 2007 (chronologically ordered)

Date	Day	Central parity rate	%dod	Reported external pressure during the week
16/05/2006	Tue	8.0150	0.2098	US Treasury said any evidence of yuan shift would be welcome
14/08/2006	Mon	7.9928	0.2543	Paulson said he was working hard on China currency issue
15/05/2007	Tue	7.6948	0.2720	No reported external pressure
08/06/2007	Fri	7.6656	0.2011	US Treasury and EU pressed China on currency
26/07/2007	Thu	7.5789	0.2550	Key Senate committee drafted a currency bill aimed at China
09/10/2007	Tue	7.5232	0.1729	EU pressed China on currency
13/11/2007	Tue	7.4309	0.2277	EU officials were said to highlight yuan weakness
03/12/2007	Mon	7.4143	0.1971	Japan and France called for more appreciation in the yuan
06/12/2007	Thu	7.4205	0.3010	Japan and Paulson called for more appreciation in the yuan
17/12/2007	Mon	7.3790	0.2728	No reported external pressure

Source: Reuters and CEIC

This table shows the reported external pressures prior to the days with the largest daily changes in the central parity rate (CPR). All events from the preceding weekend to the moment of CPR announcement are considered, except when the rate was announced on Monday, for which events that occurred on the previous Friday are also considered. Events that happened after the CPR announcement are not included, except for important and anticipated events such as the Strategic Economic Dialogue.

VI. CONCLUSIONS

This paper adopts an event study methodology to investigate whether external pressures calling for faster RMB appreciation have any statistically significant effect on changes in central parity rate of the CNY/USD exchange rate and its conditional volatility. We create a new dataset that collates RMB related statements made by foreign officials from the Reuters database and other sources such as the Library of Congress website. We quantify external pressures with several binary indicators and find that these indicators have no influence on daily changes of the CNY/USD exchange rate. However, they do appear to have a statistically significant impact on the conditional volatility of the RMB exchange rate, especially for those US pressure indicators. We further investigate the pressure from the US because it has been the key source of external pressures for more rapid RMB appreciation. Specifically, we analyse whether Sino-US meetings with focuses on the RMB exchange rate policy have any impact on both the conditional volatility and daily returns of the central parity rate of the renminbi against the US dollar. We find that the meetings do not necessarily have any impact on daily returns of the RMB exchange rate. Moreover, the indicator for Sino-US meeting week has a negative influence on the conditional volatility of the CNY/USD exchange rate, implying that volatility declines during the meeting week.

Our analysis indicates that external pressures have no statistically significant effect in affecting the pace of the RMB exchange rate. It appears that the pace of the CNY/USD appreciation is mostly based on domestic policy concerns. In particular, the US-China interest rate differential, a key measure of the costs of sterilisation, appears to be an important determinant in affecting the pace of the RMB appreciation. However, foreign pressures and especially the pressures coming from the United States do have statistically significant effect on the volatility of the CNY/USD exchange rate.

Our findings appear to have reinforced the notion that external pressure is unlikely to yield any major changes in China's exchange rate policy, although they make the daily movements of the renminbi exchange rate more volatile. Indeed, it seems that domestic policy concerns that have so far been the key determinant in affecting the appreciation of the renminbi.

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APPENDIX A: Major developments on the Mainland's exchange rate system since July 2005

Date	Major Development
21 Jul 2005	<ul style="list-style-type: none"> The currency system was transformed from a fixed exchange rate system to a managed float regime with reference to a basket of currencies. The RMB/USD exchange rate was immediately adjusted to 8.11 representing a 2.1% appreciation from the existing rate of 8.28. Under the new system, the RMB was allowed to be traded against the US dollar within a daily trading band of +/- 0.3% around a central parity rate, which was set daily to the closing market rate of the previous trading day. The trading of renminbi against the Euro, Japanese yen and Hong Kong dollar was arranged similarly with a wider trading band of +/- 1.5% to account for the fluctuations of these currencies against the US dollar in the international markets.
23 Sep 2005	<ul style="list-style-type: none"> The daily trading band for non-US dollar currencies was widened from 1.5% to 3.0%.
4 Jan 2006	<ul style="list-style-type: none"> Over-the-counter (OTC) trading was introduced to the interbank foreign exchange market, in addition to the existing system of centralized trading. A number of financial institutions were designated market makers, and obligated to quote bid/ask prices and provide liquidity to the market The RMB/USD central parity rate would be calculated every morning as a weighted average of exchange rates quoted from the market makers. The weights would be set according to their quotes and volume of trading. The central parity rates for the renminbi against the Euro, Japanese yen and Hong Kong dollar would be converted from the RMB/USD central parity rate according to the cross exchange rates between the US dollar and these currencies in the international foreign exchange markets at 9am.
18 May 2007	<ul style="list-style-type: none"> The daily trading band for RMB/USD exchange rate was widened from +/- 0.3% to +/- 0.5% around the central parity rate.

Memorandum Items:

Date	Major Development
1981	<ul style="list-style-type: none"> An internal settlement rate was established for trade-related foreign transactions in addition to the existing official rate. The trade-related exchange rate was set to 2.8 RMB/USD while the prevailing official rate was 1.5 RMB/USD.
1 Jan 1985	<ul style="list-style-type: none"> The trade-related exchange rate was abolished and the official exchange rate was maintained at 2.8 RMB/USD.
Mar 1988	<ul style="list-style-type: none"> Dozens of foreign exchange adjustment centers were established, in which the renminbi was traded among market participants at a foreign exchange swap rate. The swap rate was determined by the market but subject to interventions from the People's Bank of China.
1985	<ul style="list-style-type: none"> The official RMB/USD exchange rate was gradually devalued from 2.8 in 1985 to 5.22 on 17 Nov 1990.
1 Jan 1994	<ul style="list-style-type: none"> The official and swap rates were unified and the official RMB/USD exchange rate was devalued from 5.7 to 8.7. The renminbi gradually appreciated to 8.3 in 1995 and stayed around that level until the currency reform in July 2005.

Sources: State Administration of Foreign Exchange, People's Bank of China

APPENDIX B1. List of all instances of political pressure from the United States

Date	Pressure from the United States
28/07/2005	Senators renew China tariff threat if yuan inaction
01/09/2005	US senator urges progress on yuan during Hu visit
07/10/2005	Snow says China needs to act soon on yuan
11/10/2005	Snow says to push privately on yuan flexibility
28/10/2005	US's Snow urged further yuan moves from China - FT
01/11/2005	Senator: China must revalue currency more
04/11/2005	Snow says China can move faster on forex
08/11/2005	Bush urges China to do more to let currency rise
10/11/2005	Bush to urge China to take additional steps on yuan
18/11/2005	Kimmit: US wants China to move quickly on forex
02/12/2005	US Snow says wants to see more movement on yuan
08/12/2005	Snow sees flexible forex as key on trade imbalances
12/12/2005	Tsy official expects China action on FX
19/12/2005	Tsy official: US not satisfied with yuan reforms
05/01/2006	Snow: China should allow more yuan revaluation
06/01/2006	US's Snow says China needs more yuan flexibility
10/01/2006	Senator warns China of US anger at trade deficit
23/01/2006	Bush says told China to float its currency
01/02/2006	US senator questions China movement on currency
09/02/2006	US senators to prod China on forex in March visit; US senators urge downgrading of China trade status
13/02/2006	White House urges China to loosen currency system
14/02/2006	US trade rep Portman holds news conference on China; US vows to get tougher on China trade
15/02/2006	US considers naming China FX manipulator - Bloomberg
16/02/2006	US 's Snow: China has made little progress on currency; US senator says crafting bipartisan China bill
28/02/2006	Snow says more China yuan flexibility needed; Senator: US Tsy hardening stance on China yuan
01/03/2006	US Tsy's Adams urges yuan flexibility; No decision to delay Senate vote on China bill-aide
02/03/2006	Snow: China ready for more moves in yuan
03/03/2006	US Snow says more yuan flexibility needed in China
10/03/2006	US's Snow renews call for China yuan flexibility; Bush urges keeping trade free, vows to prod China
21/03/2006	US lawmakers to press china to raise value of yuan
22/03/2006	US senators push China over currency and trade
24/03/2006	Senator: US could label China currency manipulator; US senator Graham says yuan status quo unacceptable
28/03/2006	White house repeats calls for China to move on currency; US senators unveil bill to prod china on currency
29/03/2006	US Tsy: flexible China forex a top priority
30/03/2006	Bush says will prod China's Hu on fair trade
11/04/2006	Treasury spokesman: China should allow flexible Forex; Bush to call on China to address currency issue
13/04/2006	US Treasury's Snow: China must open markets faster; US Snow: China has not done enough on Yuan flexibility; Bush says China needs move to flexible currency
18/04/2006	Zoellick: China yuan reforms seem "agonizingly slow"
19/04/2006	US Snow: China "too cautious" on currency

20/04/2006 Bush: "Would hope" for more appreciation in yuan

21/04/2006 US official: China currency moves "not enough"

27/04/2006 Senator urges Treasury to stop "pussyfooting" on yuan; Bernanke: China should do more on forex flexibility

04/05/2006 US Senator wants China revaluation by end-2006; US Tsy Adams: China currency policy "too cautious"

08/05/2006 US says China moving on forex flexibility but slow

10/05/2006 US Treasury weighs tougher stance on China forex

11/05/2006 US says China not manipulator, wants currency rise; Snow: US "dissatisfied" with China forex reform

12/05/2006 Treasury's Adams: US will keep pushing China on forex reform

15/05/2006 US Treasury: Any evidence of yuan shift welcome; Tsy spokesman: US wants greater Chinese forex flexibility

18/05/2006 US Treasury Chief: China should do more on currency; Key US senators unhappy at China forex policy; Treasury Snow: Pace of China forex reform "disappointing"

01/06/2006 US Official: China should speed up forex adjustment

06/06/2006 Senator: US Treasury pick to be tough on China

13/06/2006 Bernanke: China, world better off with flexible yuan

27/06/2006 Paulson: US needs to keep pressure on China yuan

11/07/2006 Paulson sworn in as US Treasury Secretary; Senator urges Paulson to keep pressure on China yuan

26/07/2006 US Senators to meet Paulson on China yuan concern; Schumer: Senate approval of China bill more likely

27/07/2006 US senators set Sept. 30 deadline on yuan action

31/07/2006 Fed's Poole: More flexible yuan in China's interest

08/08/2006 US Treasury to keep pushing China on currency

11/08/2006 Paulson: China should show more flexibility on yuan

06/09/2006 US Treasury Secretary seen urging China to raise yuan

14/09/2006 US official: China FX flexibility a top US priority; Tsy official: flexible China forex is still a G7 priority

15/09/2006 Two US Senators ask for vote in China trade bill

19/09/2006 US's Paulson in China to gently prod on yuan

20/09/2006 US Paulson arrives in Beijing to press reforms

22/09/2006 US Senate likely to pass China tariff bill - senator; Paulson prods Beijing to let Yuan rise more

13/10/2006 Paulson: important China moves ahead with reforms

24/10/2006 Paulson urges China currency flexibility

27/10/2006 Paulson says US will push China on currency

07/11/2006 Tsy Kimmitt: In China's interest to have market set yuan

16/11/2006 US advisory body tells congress to get tougher with China

17/11/2006 Tsy Kimmitt: China must accelerate currency reform

28/11/2006 Paulson says there is a need for greater FX flexibility

11/12/2006 Paulson: China needs more currency flexibility short term

14/12/2006 Paulson urges China to pursue freely tradable yuan

15/12/2006 Bernanke urges China to let yuan rise; US Senators urge Paulson to press China on yuan; Bernanke: stronger yuan would stabilize China's economy

10/01/2007 3 US Reps renew bill to punish China for forex policy

31/01/2007 Tsy Paulson: Pace of China's forex, mkt reforms too slow

01/02/2007 Paulson tells angry US senators he will push China; US lawmakers call for legislation on China trade imbalance

09/02/2007 Paulson: US pressing for quick action on yuan

14/02/2007 Paulson again urges China to speed forex reform

15/02/2007 Fed's Bernanke - China still not done enough on FX; Bernanke: stands by "effective subsidy" comment on yuan

16/02/2007 Bernanke: yuan undervalued, should be market-based
 01/03/2007 US lawmakers upbeat on chances of China forex bill
 02/03/2007 US Paulson: US not satisfied with pace of change in China
 28/03/2007 US Senators vow action on China currency bill this year
 29/03/2007 Paulson says yuan should appreciate in short term
 12/04/2007 Fed's Bernanke: Flexible currency good for China
 17/04/2007 US Tsy Lowery: pace of China currency reforms needs to quicken
 02/05/2007 Paulson says China needs to act quickly on yuan
 04/05/2007 Paulson repeats China must let currency value rise
 08/05/2007 US manufacturers to press Bush aides on China yuan
 10/05/2007 Treasury: US "totally frustrated" with China on yuan; US House Democrats vow action on Asian currencies
 18/05/2007 US lawmakers press Bush admin for action on Chinese Yuan; Paulson: still trying to persuade China to float yuan
 22/05/2007 Paulson says want faster China currency appreciation
 23/05/2007 US says impatient on trade, China says don't push
 24/05/2007 Lawmaker: US house "moving forward" on China bill; US lawmakers complain to Wu about China's currency; Bush: pressed China on currency and beef
 25/05/2007 Sen. Graham urges China significantly revalue yuan
 31/05/2007 US Tsy Lowery: China should move faster on forex flexibility
 01/06/2007 US Tsy Official: China should allow freer float of yuan
 05/06/2007 Paulson: "powerful arguments" in favor of flexible yuan
 08/06/2007 US Paulson says need for China revaluation rising
 12/06/2007 US senators to unveil China currency bill Wednesday
 14/06/2007 US senators introduce forex misalignment bill
 20/06/2007 Paulson tells congress he is pushing China to reform
 21/06/2007 Paulson: China moving on yuan, but too slowly
 22/06/2007 US senator's bill pressures China on currency
 02/07/2007 Paulson says faster China yuan appreciation needed
 06/07/2007 Top US democrat candidates back China currency bill
 18/07/2007 Bernanke: In China's interest to let currency float
 19/07/2007 Bernanke: Slow rise in China's yuan frustrating
 24/07/2007 Key Senate committee to draft China currency bill
 25/07/2007 Senate panel to consider currency-misalignment bill thu
 27/07/2007 Senate finance committee ok currency misalignment bill
 31/07/2007 Paulson cajoles China anew to let yuan rise faster; second US Senate panel readies China currency bill
 01/08/2007 Paulson to make his currency case to china's Hu; second US Senate panel Oks forex bill aimed at China
 03/08/2007 US's Kimmitt urges more open China currency regime
 07/08/2007 US sen. Lieberman: currency legislation a warning to China
 08/08/2007 Paulson: China should speed currency changes; US sen. Baucus says Congress to pass China bill
 05/09/2007 Bush says China currency float would be helpful
 06/09/2007 US Treasury: Want to see a more flexible Yuan exchange rate
 12/09/2007 US senator eyes action on forex, other trade bills
 20/09/2007 Treasury's McCormick: Easier yuan exchange rate will help China
 26/09/2007 US house nearing action on China bill
 23/10/2007 Paulson repeats call for faster China yuan rise
 29/10/2007 Paulson: China should move quicker on freeing yuan
 09/11/2007 Paulson: yuan needs to strengthen quickly
 14/11/2007 US Tsy: China needs flexible exchange rate
 27/11/2007 US Tsy aide renews call for yuan flexibility

06/12/2007	Paulson says Europe's push on China welcome; Paulson: China forex reform not moving fast enough
12/12/2007	Paulson urges more flexible China currency policy
20/12/2007	US Tsy doesn't name China as currency manipulator; US lawmakers vow action on China after report

APPENDIX B2. List of all instances of political pressure from the European Union and Japan

Date	Pressure from the European Union and Japan
07/10/2005	Japan joins renewed calls for yuan flexibility
04/11/2005	ECB's Issing: Unclear China done enough FX reform
10/11/2005	German government concerned at China trade balance
18/11/2005	ECB's Weber urges China to exploit forex flexibility
23/03/2006	Japan MOF: China too slow to adapt to forex system
07/04/2006	French finmin Breton: Japanese Yen, Chinese Yuan are probably not at their fair value
10/04/2006	Japan MOF urges China to make yuan more flexible
21/04/2006	Japan Koizumi: Yuan revaluation would be good for China.
27/04/2006	ECB's Bini Smaghi: Yuan should appreciate strongly
19/05/2006	Merkel to say yuan appreciation not enough - official
13/07/2006	Japan MOF Wantanabe: China's yuan needs to be more flexible
14/09/2006	Japan MOF: China FX regime should be more flexible
18/09/2006	EU's Almunia: China's yuan should be more flexible
21/09/2006	ECB's Weber calls for yuan flexibility to cut imbalances
18/01/2007	French trade minister says China yuan still undervalued
15/02/2007	ECB's Quaden: Yen, Yuan too weak against Euro
23/02/2007	ECB Trichet: Yuan, other Asian currencies, should appreciate
12/04/2007	Japan Omi: Hope for more flexibility in yuan
08/05/2007	Italian finmin says eurogroup reaffirmed G7 message on Chinese yuan
21/05/2007	EU's Almunia says more China FX moves needed
05/06/2007	German G8 report: China must make progress on forex
07/06/2007	France's Sarkozy: China should play by int'l rules on forex
08/06/2007	ECB chief says ground for more flexible China FX
17/07/2007	France: G7 must discuss yen, yuan undervaluation
20/07/2007	France says Chinese yuan value a problem
18/09/2007	EU urges China FX reform to address CNY/EUR real rate
03/10/2007	Belgian finmin says yuan causing problems
09/10/2007	Euro zone warns on currencies, plans China visit
10/10/2007	Eurogroup has real problem with yuan - Chairman
15/10/2007	French pres spokesman: Chinese yuan "artificially undervalued"
17/10/2007	EU says needs more action from China on trade gap
22/10/2007	ECB Bini Smaghi: G7 wants yuan to gain vs euro
23/10/2007	France says Chinese yuan clearly undervalued
07/11/2007	France's Sarkozy says he shares US concern over yuan rate
08/11/2007	EU prods China on currency, seeks wealth fund rules
12/11/2007	ECB, EU officials to highlight yuan weakness
16/11/2007	Eurogroup's Juncker: Yuan 20-25pct undervalued
22/11/2007	Sarkozy to urge "fair" forex on China visit
26/11/2007	Sarkozy urges China to allow yuan to strengthen; Sarkozy: China needs to accelerate yuan rise vs euro
30/11/2007	ECB Trichet: Appropriate to accelerate yuan appreciation; France's Lagarde urges faster yuan rise versus euro
07/12/2007	Sarkozy: Shares same concern as Merkel over yuan weakness

APPENDIX B3. List of all instances of political pressure from international organisations

Date	Pressure from international organisations
16/09/2005	OECD urges freer yuan to support China growth
17/11/2005	IMF July report urges phased moves for Chinese yuan
21/11/2005	IMF presses China to allow yuan to move more
14/12/2005	Rato: IMF, US agree on need for yuan flexibility
19/12/2005	ADB urges China to let yuan appreciate vs dollar
03/02/2006	IMF Rato: China can go further on yuan flexibility
19/04/2006	IMF says China can afford more currency flexibility
20/04/2006	IMF poised to implement new FX watchdog role
24/04/2006	G7 urges China to cut trade surplus via flexible forex
13/06/2006	IMF's Rato says China needs to let flexible yuan work
12/09/2006	IMF urges greater currency flexibility in China
14/09/2006	Treasury official: flexible China forex is still a G7 priority
18/09/2006	G7 pushes China on yuan, backs stronger yen
01/11/2006	IMF official: China yuan rising, pace still too slow
14/11/2006	G20 ministers to urge forex flexibility - Canada
28/11/2006	OECD's Cotis: Chinese yuan is undervalued
16/01/2007	IMF's Rato: FX flexibility in China's interest
22/01/2007	IMF Rato: China needs greater FX flexibility
26/01/2007	IMF Rato: More flexible yuan in China's interest
10/04/2007	ADB's Kuroda calls for China FX flexibility
13/04/2007	IMF: China may need to tighten policy, urges yuan flexibility
24/04/2007	IMF urges China to raise rates, let yuan climb
04/05/2007	ADB calls for greater flexibility by China on yuan; G8 to urge China to reform currency policy
22/06/2007	IMF says forex changes will identify manipulators
17/10/2007	IMF urges greater currency flexibility for China
22/10/2007	IMF Rato: Chinese yuan "considerably undervalued"

The events listed in tables A1–3 are chosen from a larger set of Reuters headlines related to the Chinese currency, between 22/7/2005 and 28/12/2007. The headlines have been slightly edited for better readability. For example, the names of the persons or organisations have been moved to the front of each sentence if it was not the case originally. Some words are in short-form in the original headlines. For instance, the phrase “foreign exchange” has often been referred to as “FX” or “forex”. Most of these words remain in their original forms in the tables above.

**APPENDIX B4. Congressional actions that apply pressure on China
regarding the RMB currency system**

Bill number:	H.R. 3283	Sponsor:	Rep. English Phil
Introduced:	14/7/2005	Voted:	26/7/2005, 27/7/2005
Outcome:	Passed in House		
Title:	To enhance resources to enforce United States trade rights		
Bill number:	S.2317	Sponsor:	Sen. Baucus, Max
Introduced:	16/2/2006	Read:	16/2/2007
Outcome:	Referred to the Committee on Finance		
Title:	A bill to amend the Trade Act of 1974 to require the United States Trade Representative to identify trade enforcement priorities and to take action with respect to priority foreign country trade practices, and for other purposes		
Bill number:	S. 2467	Sponsor:	Sen. Grassley, Chuck
Introduced:	28/3/2006	Read:	28/3/2006, 29/3/2006
Outcome:	Placed on Senate Legislative Calendar under General orders		
Title:	A bill to enhance and improve the trade relations of the United States by strengthening United States trade enforcement efforts and encouraging United States trading partners to adhere to the rules and norms of international trade, and for other purposes		
Bill number:	H.R. 5043	Sponsor:	Rep. Cardin, Benjamin L.
Introduced:	29/3/2006		
Outcome:	Referred to the House Committee on Ways and Means		
Title:	To amend United States trade laws to address more effectively import crises, and for other purposes		
Bill number:	S.3992	Sponsor:	Sen. Bunning, Jim
Introduced:	28/9/2006	Read:	28/9/2006, 30/9/2006
Outcome:	Placed on Senate Legislative Calendar under General Orders		
Title:	A bill to amend the Exchange Rates and International Economic Policy Coordination Act of 1998 to clarify the definition of manipulation with respect to currency, and for other purposes		
Bill number:	H.R.321	Sponsor:	Rep. English, Phil
Introduced:	9/1/2007		
Outcome:	Referred to the House Committee on Ways and Means		
Title:	To require the Secretary of the Treasury to analyze and report on the exchange rate policies of the People's Republic of China, and to require that additional tariffs be imposed on products of that country on the basis of the rate of manipulation by that country of the rate of exchange between the currency of that country and the United States dollar		
Bill number:	S.364	Sponsor:	Sen. Rockefeller, John D.
Introduced:	23/1/2007	Read:	23/1/2007
Outcome:	Referred to the Committee on Finance		
Title:	A bill to strengthen United States trade laws and for other purposes		
Bill number:	H.R.782	Sponsor:	Rep. Ryan, Tim
Introduced:	31/1/2007		
Outcome:	Referred to the Committee on Ways and Means		
Title:	To amend title VII of the Tariff Act of 1930 to provide that exchange-rate misalignment by any foreign nation is a countervailable export subsidy, to amend the Exchange Rates and International Economic Policy Coordination Act of 1988 to clarify the definition of manipulation with respect to currency, and for other purposes		

Bill number:	H.R.1002	Sponsor:	Rep. Spratt, John M. Jr.
Introduced:	12/2/2007		
Outcome:	Referred to the House Committee on Ways and Means		
Title:	To authorize appropriate action if the negotiations with the People's Republic of China regarding China's undervalued currency and currency manipulation are not successful		
Bill number:	S.796	Sponsor:	Sen. Bunning, Jim
Introduced:	7/3/2007	Read:	7/3/2007
Outcome:	Referred to the Committee on Finance		
Title:	Same as H.R.782		
Bill number:	S.1607	Sponsor:	Sen. Baucus, Max
Introduced:	13/6/2007	Read:	13/6/2007
Amended:	31/7/2007		
Outcome:	Referred to the Committee on Finance		
Title:	A bill to provide for identification of misaligned currency, require action to correct the misalignment, and for other purposes		
Bill number:	S.1677	Sponsor:	Sen. Dodd, Christopher J.
Introduced:	21/6/2007	Read:	21/6/2007
Outcome:	Referred to the Committee on Banking, Housing, and Urban Affairs		
Title:	A bill to amend the Exchange Rates and International Economic Coordination Act of 1988 and for other purposes		
Bill number:	H.R.2942	Sponsor:	Rep. Ryan, Tim
Introduced:	28/6/2007		
Outcome:	Referred to the Committee on Ways and Means		
Title:	To provide for identification of misaligned currency, require action to correct the misalignment, and for other purposes		

APPENDIX C. External pressure variables

The following dummy variables represent the difference sources of external pressure on the renminbi exchange rate.

Variable	Equal to one if	Source
External pressure from the US	any of the sources of pressure below was present: <ul style="list-style-type: none"> • A high ranking US official made comments in favour of a quicker or larger appreciation of the renminbi • (Sino-US meeting) There were official visits between Henry Paulson and Wu Yi, and Hu Jintao's visit to the US • A bill with the potential of influencing the renminbi was being introduced or voted upon in either house of the US Congress. 	Reuters Reuters, Xinhua, US Department of the Treasury US Library of Congress website
External pressure from major non-US sources	a high ranking official representing a major non-US economy such as the European Union and Japan, or an international organisation such as the IMF and G7, spoke in favour of a quicker appreciation.	Reuters
Overall external pressure	any of the sources of external pressure above was present.	N/A
Sino-US meeting week	the week contains a Sino-US meeting.	N/A

APPENDIX D. Market forecasts of monthly economic indicators

Month of data release	Trade balance		Consumer price index		Broad money		Industrial production		Fixed asset investment, ytd	
	Forecast	Actual	Forecast	Actual	Forecast	Actual	Forecast	Actual	Forecast	Actual
Jan-06	10.3	11.0	1.5	1.6	18.1	17.6	16.4	16.5	27.6	27.2
Feb-06	6.3	9.5	2.0	1.9	18.0	19.2	-	-	-	-
Mar-06	7.9	2.5	1.2	0.9	18.1	18.8	16.1	16.2	26.6	26.6
Apr-06	5.4	11.2	1.4	0.8	18.5	18.8	16.4	17.8	26.4	29.8
May-06	9.0	10.5	1.2	1.2	18.5	18.9	17.0	16.6	29.1	29.6
Jun-06	12.0	13.0	1.2	1.4	18.8	19.1	16.5	17.9	29.0	30.3
Jul-06	13.1	14.5	1.6	1.5	18.6	18.4	17.5	19.5	30.0	31.3
Aug-06	14.5	14.6	1.6	1.0	18.0	18.4	19.3	16.7	30.7	30.5
Sep-06	15.0	18.8	1.2	1.3	18.0	17.9	16.7	15.7	30.0	29.1
Oct-06	13.7	15.3	1.5	1.5	17.5	16.8	16.0	16.1	28.4	28.2
Nov-06	17.7	23.8	1.6	1.4	16.5	17.1	16.0	14.7	27.6	26.8
Dec-06	20.1	22.9	1.5	1.9	17.0	16.8	14.5	14.9	26.3	26.6
Jan-07	20.0	21.0	2.0	2.8	16.6	16.9	15.0	14.7	26.3	24.5
Feb-07	15.4	15.9	2.5	2.2	16.9	15.9	-	-	-	-
Mar-07	7.2	23.8	2.9	2.7	16.3	17.8	15.5	18.5	24.0	23.4
Apr-07	21.1	6.9	2.8	3.3	17.5	17.3	17.0	17.6	23.0	25.3
May-07	15.9	16.9	3.1	3.0	17.0	17.1	17.5	17.4	25.3	25.5
Jun-07	18.8	22.5	3.4	3.4	17.0	16.7	17.0	18.1	25.4	25.9
Jul-07	24.0	26.9	3.5	4.4	16.5	17.1	17.6	19.4	26.0	26.7
Aug-07	22.5	24.4	4.9	5.6	17.0	18.5	19.2	18.0	26.8	26.6
Sep-07	25.2	25.0	5.9	6.5	18.2	18.1	18.1	17.5	26.5	26.7
Oct-07	22.0	23.9	6.3	6.2	18.0	18.5	17.6	18.9	26.6	26.4
Nov-07	30.0	27.1	6.4	6.5	18.3	18.5	18.4	17.9	26.2	26.9
Dec-07	26.8	26.3	6.4	6.9	18.1	18.5	17.8	17.3	26.6	26.8

Trade balance is in billion USD and other indicators are in % year-on-year growth. The median forecasts are taken from Reuters, except for investment, which is from Bloomberg. The numbers correspond to the months in which they are announced. Since the statistical releases for the indicators above are lagged by one month, a trade balance announcement in January 2006, for example, would refer to the actual trade balance in December 2005. Since the statistical bureau usually releases production and investment figures for the period of January and February combined due to the Chinese New Year, a moving holiday that may fall in either month, the forecasts reported in March referred to the same two-month period as well.