Do External Political Pressures Affect the Renminbi Exchange Rate?

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Abstract

This paper investigates whether external political pressures 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 external pressure indicators pertaining to the RMB exchange rate, with a special emphasis on US pressures, to test the hypothesis. After controlling for domestic macroeconomic news, we find that external political pressures, including US-specific ones do not have a significant influence on RMB's daily returns. However, evidence suggests that external pressures, and especially those from the US, have statistically significant impacts on the conditional volatility of the RMB. Furthermore, we conduct the same exercise on the RMB non-deliverable forward rate (NDF). We find that the NDF market is highly responsive to macroeconomic news and political pressures and there is some weak evidence that non-US political pressures affect the daily returns of the NDF.

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1. Introduction

The Chinese currency, renminbi or yuan (RMB or CNY), had been appreciating at a gradual pace against the US dollar (USD) since the exchange rate reform on 21 July 2005 until the eruption of the global financial crisis in September 2008. The RMB exchange rate reform, which switched from a USD peg to a "managed float" against a basket of currencies, has been based on the principles of "independent initiative, controllability, and gradual progress" despite of having gone through various phases of faster or slower appreciations (Liu and Pauwels, 2007).[2] 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 18% by the end of 2008.

The reformed RMB exchange rate offers a rare opportunity to study an exchange rate arrangement that is gaining greater importance in the world foreign exchange markets and yet it is still largely subjected to government policy and the political environment. Furthermore, RMB's move to greater flexibility is taking place while the currency is not yet fully convertible; China's capital controls are still in place; and China's financial institutions are not yet liberalised. It is in part because of these features that the price formation mechanism of the RMB is yet fully market driven. Meanwhile, considerable external pressures, particularly motivated by global economic imbalances, have been exerted on the Chinese authorities to allow for more rapid appreciation of the RMB.

A question that naturally arises is 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, after controlling for domestic macroeconomic news such as monetary conditions, economic activity, and external imbalances. Furthermore, we also assess the effect of external political pressures on market expectations using the non-deliverable forward (NDF) rates. Political pressures and domestic macroeconomic news may induce the market participants to revise their expectations of what the CNY/USD exchange rate will be in the near term. In addition, the NDF offers two main advantages over the central parity rate: first, the market is in offshore and therefore it is free of government control and second, the market market is highly liquid.

We define external political pressures as policy statements or announcements by foreign officials and international organizations demanding for faster appreciation of the RMB exchange rate. The pressures are quantified with indicator variables based on a newly constructed dataset. We build the dataset 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

[2] 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)

organisations with focus on global economy such as the IMF and the OECD.

An event study methodology is applied to investigate the issue addressed in this paper. Indeed, there is a growing body of literature that uses event studies with high frequency data to evaluate effects of "news" in foreign exchange markets. Neely (2005) provides an excellent review of recent studies, especially those pertaining to central bank intervention in foreign exchange rate markets. 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 paper 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. Fratzscher's results also 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.

The contributions of this paper to the existing literature are as follows: first, unlike the existing literature on foreign exchange interventions that mostly examines the effect of domestic interventions on domestic currencies, this paper investigates the effect of external (foreign) 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 that 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 macroeconomic control variables that allow us to better identify the effect of external pressures on the daily returns of the RMB exchange rate. 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 both the CNY/USD central parity rate and the NDF rate. However, there is some evidence that the NDF rate may react to non-US pressures directed at the RMB exchange rate policy. There is strong evidence that foreign pressures do affect the daily conditional volatility of the CNY/USD central parity and the NDF rate significantly. Out of the underlying domestic factors, we find that interest rate differential between one-month LIBOR and CHIBOR has a significant impact on the pace of appreciation of the central parity rate. We also find that domestic macroeconomic surprises affect significantly the NDF rate but not the central parity rate.

The rest of the paper proceeds as follows. Section 2 provides an overview on the RMB exchange rate policy and our data. Section 3 specifies the empirical model. Section 4 interprets our findings. Section 5 discusses the potential issues encountered in interpreting the empirical results. Section 6 concludes.

2. The RMB exchange rate reform and the data

2.1 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.[3] 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 ±0.3%. The band was subsequently widened to ±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

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

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. Hence, 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. Due to the change in definition and determination of the central parity rate and for simplicity, we use the daily central parity rate starting from 4 January 2006.

2.2 Expectations and the forward exchange rate

While the government-controlled central parity rate provides an interesting avenue to analyse external political pressures on the RMB exchange rate, it will also be useful to compare it with some purely market-driven offshore exchange rate. The RMB non-deliverable forward rate (NDF) is a natural candidate for this exercise.

The NDF rate is the closest available proxy to market expectations of the spot exchange. Unlike the central parity rate, participation in the NDF market is not limited to nominated Chinese institutions only, it is opened to all interested participants in the market, especially those multinational corporations with RMB exposures. Hence, it is purely market driven. The RMB NDF contracts are similar to forward foreign exchange transactions where a principal amount, a forward rate, and a maturity date are included in the contract. Unlike a typical forward rate, the settlements for the RMB NDF rate are usually made in USD at the time of maturity to reflect the difference between the agreed forward rate and the actual spot rate.[4] The NDF markets for the RMB are highly liquid and active in Hong Kong and Singapore. We only present the results for 12-month NDF rates in the Hong Kong market.[5] Similar to other currency markets, the NDF markets are opened 24 hours a day. The reference rates are usually measured by Bloomberg at the end of the trading day of three different time zones: Tokyo (at 20:00 hours), London (at 18:00 hours), and New York (at 17:00 hours). We use Tokyo's time zone and on a 5 trading day basis, since it is the closest to Beijing time, and hence coincide with the Chinese trading times.

2.3 Defining and coding 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

[4] See Fung, Leung and Zhu (2004) for a detailed discussion of the NDF market.
[5] The results for the 3 months NDF rate turn out to be very similar to the 12 months NDF rate results. Hence they are not presented in the paper.

non-US entities such as the European Union, Japan, and major international organizations such as the IMF, the G7 group, and the OECD. We construct 5 foreign pressure indices from theses sources. 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.[6] 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 exchange rate, and the reaction in China to pressures originating in the United States might differ from the reaction to those originating elsewhere.

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.[7] 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.

In order to track whether there are some differences before, during, and

[6] The non-US variable combines the pressures coming from the EU (and its member countries), Japan and international organisations because each of these entities has too few data points on its own.

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

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.[8] 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.

2.4 Is weighting news equally too restrictive?

One may wonder whether our findings could suffer from treating all news events equally when quantifying the external political pressure indicators. One way to check this is to see whether there exists a systematic pattern in large daily RMB changes that is consistent with news that bears 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 1 (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 depreciation days presented in table 1 (b).

[Table 1 (a) & (b)]

While we observe that some large depreciation days are associated with no events at all, we also observe that some of the largest depreciation days can be 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. We arrive at the same conclusion for the same experiment conducted on the 12-month NDF rate. Table 2 (a) and (b) show that there is little evidence supporting patterns of more significant news affecting the 12-month NDF rate. That said, our indicators that treat external political pressures equally may not affect our findings much.

[Table 2 (a) & (b)]

2.5 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,

[8] In our regressions, we also include the meeting between President Hu and President Bush during Hu's visit to Washington DC.

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.[9] 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.[10] 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 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.[11] 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.

3. Methodology and model specification

3.1 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

[9] 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.

[10] Foreign exchange reserve accumulation could also be included as one of the indicators to reflect external imbalances, but it is only announced every quarter.

[11] 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..

successful if they brought about a statistically significant appreciation of the RMB exchange rate.[12] Following the existing literature, we adopt a GARCH model to empirically evaluate the success criteria, which we shall turn next.

3.2 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:

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

where $r_t^{CNY} = \log\left(S_t^{CNY} / S_{t-1}^{CNY}\right)*100$, S_t^{CNY} is CNY/USD central parity exchange rate or the NDF rate. $\mathbf{x}_{t-1}^{macro}$ 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:

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

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 of a problem here. Contrary to foreign exchange interventions that occur simultaneously to the changes in the exchange rate, foreign pressures occur before the central parity rate is set, given the time difference. Furthermore, foreign exchange interventions are initiated as part of a domestic policy vis-à-vis the exchange rate and often as a reaction to its movements at the time of the intervention. Foreign political pressures, on the other hand, arise from abroad as an attempt to impact the long-term domestic policy on exchange rate. Hence, foreign pressures should be exogenous to both the daily returns of central parity rate and the RMB NDF.

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

[12] 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.

exchange rate intervention models are common in the literature.[13]

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 Neally (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. Finally, we repeat the exercise using the NDF rate instead of the central parity rate.

4. Empirical results

4.1 The effect of external pressures on the central parity rate

Table 3 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 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.

None of the domestic macroeconomic news pertaining to the monetary conditions (financial institutional loan and M2), economic conditions (CPI, FAI and IP) and external imbalances (trade surplus) is statistically significant. Only the interest rate differential variable is statistically significant and with a positive sign. Given that 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. However, one needs to be careful in interpreting this finding as the interest differential has been rising continuously throughout the sample period. Unlike most foreign exchange markets in

[13] See Neely (2005) for a good survey.

industrialized economies, which react strongly to macro news, the central parity rate of CNY/USD market does not seem to be driven by fundamentals. This is in part expected because participation in the spot market is limited to a few traders authorised by the Chinese authorities. We shall see in Section 4.3 that this result no longer holds when looking at the non-deliverable forward market.

Next we turn to 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, 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.

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 (see variance equation in Table 3). 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]

4.2 The effect of Sino-US meetings on the central parity 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 analyse is whether the bilateral Sino-US meetings bilateral on trade and currency issues, including the Sino-US Strategic Economic Dialogue (SED), have any notable influence on both the daily returns and conditional volatility of the CNY/USD exchange rate, as compared with other types of external pressures.

We continue to use the same explanatory variables to control for domestic factors as specified in Table 3. 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 4. 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 4 are robustness checks that intend to exhaust all the variants of US pressures.[14]

Similar to what we have found in table 3 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. We find consistent results when focusing on the meeting indicators exclusively (Column III of Table 4) as we obtain similar results across specifications both in magnitude and statistical significance.

[Table 4]

4.3 Do external political pressures affect the renminbi NDF rates?

Contrary to the central parity rate, the RMB NDF rate is mostly driven by domestic macroeconomic news (Table 5). All macroeconomic news except fixed asset investment growth is statistically significant. The two most important determinants of the NDF rate are both CPI inflation and broad money growth (M2) in terms of coefficient magnitude. Larger than expected growth in CPI, loans, industrial production and trade balance tend to signal significant appreciation of the NDF rates. On the other hand, surprises in broad money tend to signal depreciation. Moreover, as in the central parity case, the interest rate differential is significant and positive, but of a larger magnitude.

Non-US political pressures seem to have some effect on the 12-month NDF rate, though its coefficient is smaller in magnitude than the statistically significant domestic macroeconomic news. As shown in Table 6, this result is consistent and robust to changes in specification. When examining the external pressure effects from the US, on the other hand, the sign of the coefficient is positive, different from the CPR case but

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

nonetheless not significant. Moreover, overall external political pressures do not appear to have any statistically significant influence on the daily returns of the NDF rates. The sign of coefficient of the overall pressure indicator from all sources is negative for the 12-month NDF rate, indicating that external pressure leads to an appreciation of the exchange rate. These findings are quite consistent with the central parity results. Table 5 also shows that external political pressures do not appear to induce higher or lower conditional volatility unlike the results found for the central parity rate (see the variance equation)

[Table 5]

The Sino-US meetings do not have a statistically significant affect on the daily returns of the NDF rate but rather on its conditional volatility, as seen in Table 6. The signs of the Sino-US meeting week (prior, during and post) variables are inconsistent across specification. External political pressures from the US, which excludes the Sino-US meetings, remains statistically insignificant but negative, indicating an appreciative effect. As in Table 4, the conclusion drawn on the macroeconomic news variables in Table 5 still holds for Table 6. On the other hand, the week of the Sino-US meeting variable is statistically significant and consistently increasing the NDF's conditional volatility, different from what we find in the CPR case. Furthermore, the results also indicate that the week before the meeting variable affects significantly and negatively conditional volatility. The results imply that the market anticipates the Sino-US meetings and that trading becomes less volatile the week before the meetings, where as the conditional volatility of the NDF rate tend to increase during a week when US delegations meet the Chinese ones.

[Table 6]

In sum, the RMB NDF market appears to be strongly driven by macroeconomic news, contrarily to the CNY/USD central parity rate. Furthermore, it seems that non-US external pressures have statistically significant effect in appreciating the NDF rate, offering some evidence that the market does react to political announcements directed at the RMB. The NDF's conditional volatility diminishes anticipatively the week preceding a meeting, and increases during the week of Sino-US meetings. These empirical evidences show the outcome of these meetings help induce some market reactions.

5. Do political pressures affect the RMB in the long run? Some Discussions

So far, this paper has shown that there is little evidence that external political pressures have had an effect on either the central parity rate or the NDF rate on a daily basis. Should one therefore conclude that such political pressures do not influence either the authority setting the CPR or the market participants in the NDF market? It is arguable that the significant effect recorded on the conditional variance could itself be evidence that external political pressures are being effective by introducing market uncertainty and raising the probability of larger future CNY/USD appreciations. This evidence appears to be consistent across specifications when investigating both the central parity rate and the NDF rate. In the CPR case, US, non-US and Sino-US meetings

have statistically significant effects, whereas in the NDF case only Sino-US meetings appear to have significant effects. Nonetheless, this evidence is somewhat indirect, as political pressures do not seem to affect directly daily returns of either the CPR or NDF in their first moment. It is also worth noting that although volatility models provide an appropriate framework to analyse the conditional volatility in high frequency data such as daily returns of exchange rate, the effect of external pressures on the returns may be harder to capture with daily data.

It can be argued that the success of political pressures in affecting the pace of the RMB's appreciation could be observed over a longer time horizon instead of on a day-to-day basis. This could be because that the decision makers of the exchange rate policy not only have to consider foreign political pressures but also domestic policy concerns such as vested interests in export industries. In some occasions, the daily CPR rate movements, which are controlled and timed, could be even used as policy tools to send messages countering foreign political pressures in order to satisfy domestic interests. This could provide another potential explanation for the lack of evidence found in the empirical section, as the persistence of external political pressures could possibly have an influence on both the CPR and the NDF over time. Unfortunately, it is not a simple task to demonstrate this point rigorously or within the current framework used in this paper. In order to provide some discussion, one would need recourse to circumstantial evidence and casual observations. One such circumstantial evidence is the accelerated pace of appreciation of the CNY/USD spot rate in 2007, compared to 2006, as a sign of success of external political pressures. On the other hand, it could also be related domestic concerns not captured by the macroeconomic variables used in this paper. The movements in the NDF market, however, seem to be well accounted for by domestic macroeconomic surprises, underlying its market determination.

Another example of longer run effect is presented in Table 7 which summarises some casual observations about the average daily returns of the CNY/USD exchange rate (CPR and NDF) over a 1-week window – before, during, or after 6 bilateral Sino-US meetings on trade and currency issues, including the Sino-US Strategic Economic Dialogue (SED). These casual observations are not a replacement for formal frameworks but are merely an illustration of the discussion developed in this section. A pattern is discernable as on average the renminbi appreciates faster during a meeting week than it does in a week before and a week after a bilateral meeting. The average weekly appreciation of the CPR is about 0.05% during a meeting week, compared to 0.003% and 0.007%, respectively, for the week before and the week after a bilateral meeting. On average, the CPR appreciates almost 2.7 times faster during a meeting week than the sample mean appreciation (spanning from January 2006 until December 2007). 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. Another interesting fact is that the average rate of appreciation of the week after a meeting often falls below its sample mean, suggesting that the pace of the exchange rate appreciation often slows after a meeting.

[Table 7]

Similarly to the CPR, the daily average appreciation of the RMB NDF rate during a

meeting week is 0.04% on average. The NDF rate, on the other hand, appreciates more than the CPR on average (0.03%) after a meeting week. The average appreciations in both the meeting week and week following the meeting are larger than the mean appreciation calculated over the full sample (0.027%). Note also, that the NDF tends to depreciate on average before bilateral meetings. Judging from these casual observations, it would seem that the Sino-US meetings induce a larger appreciation of both the CPR and the NDF rate, unlike our formal findings in the previous section.

Lastly, the overall lack of significant effect from the external political pressures on both rates could also simply be attributed to errors in measuring the pressure variables, although we showed earlier that weighting news equally was not too restrictive. This would require revising the construction of the database on political pressures, however.

6. Conclusions

This paper adopts an event study methodology to investigate whether external pressures calling for faster RMB appreciation have any statistically significant effect on both the central parity rate of the CNY/USD exchange rate and the 12-month non-deliverable forward rate and their 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 central parity 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. On the other hand, domestic macroeconomic news is statistically important in determining the 12-month NDF rate. Moreover, there appears to be some limited evidence that non-US political pressures directed at the RMB tend to appreciate the 12-month NDF rate. Although statistically significant, the magnitude of the non-US pressures in affecting the NDF rate is much smaller than that of each macroeconomic surprise. The Sino-US meetings also make the NDF more volatile, consistent with the central parity rate results.

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 as well as the 12-month NDF rate more volatile. Indeed, it seems that other domestic policy concerns not captured in our model have so far been the key determinant in affecting the appreciation of the central parity rate, whereas the domestic macroeconomic news are the main factors in determining the NDF movements.

Although our findings show that foreign political pressures have little impact on the pace of the renminbi exchange rate, it does not exclude the possibility that persistent external pressures on the RMB exchange rate introduce market uncertainty and raise the probability of larger future CNY/USD appreciations in the long run. This is indeed an interesting question that deserves further research.

References

Bollerslev, T., (1986), "Generalized Autoregressive Conditional Heteroskedasticity," *Journal of Econometrics*, 31, 307-327.

Bollerslev, T., (1990), "Modelling the Coherence in Short-run Nominal Exchange rate: A Multivariate Generalized ARCH Approach," *Review of Economics and Statistics*, 72, 498-505.

Chaboud, A. P. and O. F. Humpage, (2005), "An Assessment of the Impact of Japanese Foreign Exchange Interventin:1991-2004," *International Finance Discussion Papers: No. 824*, Board of Governors of the Federal Reserve System.

Bonse-Neal, C., and Tanner, G., (1996), "Central Bank Intervention and the Volatility of Foreign Exchange Rates: Evidence from the Options Market," *Journal of International Money and Finance*, 15(6),853-878.

Dominguez, K. M., (1998), "Central Bank Intervention and Exchange Rate Volatility," *Journal of International Money and Finance*, 18, 161-190.

Engle, R.F., (1982), "Autoregressive Conditional Heteroscedasticity with Estimates of the Variance of the United Kingdom Inflation," *Econometrica*, Vol. 50, pp987-1008.

Fatum, R. and M. Hutchison, (2003), "Is Sterilised Foreign Exchange Rate Intervention Effective After All? An Event Study Approach," *Economic Journal*, April, 113(487), pp390-411.

Fatum R. and M. Hutchison, (200x), "Effectiveness of Official Daily Foreign Exchange Market Intervention Operation in Japan," *Journal of International Money and Finance.*

Fratzscher, M., (2004), "Communication and Exchange Rate Policy," *ECB Working Paper* No. 363, May.

Fung, Hung-Gay, Wai K. Leung and Jiang Zhu (2004), "Nondeliverable forward market for Chinese RMB: A first look," *China Economic review*, 15, 348 – 352.

Humpage, O. F., (2000), "The United States as an Informed Foreign Exchange Speculator," *Journal of International Financial Markets, Institutions, and Money,* September-December, 10(3-4), 287-302.

Ito, T., (2002), "Is Foreign Exchange Intervention Effective? The Japanese Experiences in the 1990s," *NBER Working Paper* 8914.

Liu, L. and L. Pauwels, (2007), "Has the Pace of the Renminbi Appreciation Accelerated?" *Mimeo*, Hong Kong Monetary Authority.

Neely, C. J., (2005), "An Analysis of Recent Studies of the Effect of Foreign Exchange Intervention," *Federal Reserve Bank of St. Louis Review,* November-Devember, 685-716.

People's Bank of China, (2006), "Spokesperson of the People's Bank of China Answers Questions on Further Improving Interbank Spot Foreign Exchange Market," People's Bank of China (January), Beijing China.

Table 1 (a). Top ten daily appreciations in January 2006—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 1 (b). Top ten daily depreciations in January 2006—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 within the weeks prior to the days with the largest daily in the central parity rate (CPR). For the large changes in the CPR taking place on a Monday, all the events that occurred on the previous Friday and during the weekend are taken into consideration. Events that happened after the CPR appreciation/depreciation are not included, except for important and anticipated events such as the Strategic Economic Dialogue.

Table 2 (a). Top ten daily appreciations in January 2006—December 2007 for the 12-month NDF rate (chronologically ordered)

Date	Day	12-month NDF rate	%dod	Reported external pressure during the week
22/03/2007	Thu	7.2545	-0.4401	No reported external pressure
19/07/2007	Thu	7.2015	-0.4019	China currency legislation likely-US lawmaker; G7 must discuss yen, yuan undervaluation - France; Bernanke: slow rise in China's yuan frustrating
20/08/2007	Mon	7.2075	-0.5672	No reported external pressure
01/10/2007	Mon	7.0375	-0.5385	No reported external pressure
18/10/2007	Thu	7.0125	-0.5050	France says China yuan is artificially undervalued; IMF urges greater currency flexibility for China
29/10/2007	Mon	6.9655	-0.4726	Paulson: China should move quicker on freeing yuan
09/11/2007	Fri	6.8765	-0.7317	France's Sarkozy says he shares US concern over yuan rate; Paulson: yuan needs to strengthen quickly
23/11/2007	Fri	6.7790	-0.6543	Sarkozy to urge "fair" forex on China visit-official; OECD Gurria: EU, ECB should lobby China for yuan flexibility
29/11/2007	Thu	6.7090	-0.6463	French Pres Sarkozy urges China to allow yuan to strengthen; US Treasury aide renews call for yuan flexibility; EU: China could be moving toward stronger yuan
11/12/2007	Tue	6.7615	-0.4206	US envoy says China must let yuan strengthen faster; A day before Paulson's visit to China for the 3rd SED

Table 2 (b). Top ten daily depreciations in January 2006—December 2007 for the 12-month NDF rate (chronologically ordered)

Date	Day	12-month NDF rate	%dod	Reported external pressure during the week
30/03/2007	Fri	7.2780	0.2683	US Senators vow action on China currency bill this year; Paulson says yuan should appreciate in short term
15/08/2007	Wed	7.1735	0.4611	No reported external pressure
16/08/2007	Thu	7.1405	0.7292	No reported external pressure
17/08/2007	Fri	7.2485	0.3109	No reported external pressure
17/09/2007	Mon	7.1815	0.3907	Paulson says impatient with China's pace of change
05/11/2007	Mon	6.9700	0.3089	No reported foreign event
22/11/2007	Thu	6.8235	0.2715	Sarkozy to urge "fair" forex on China visit-official
05/12/2007	Wed	6.7815	0.7549	Japan urges China to allow faster yuan rise
06/12/2007	Thu	6.8095	0.4120	Japan urges China to allow faster yuan rise; Paulson says China must speed up currency reform
17/12/2007	Mon	6.8145	0.8548	No reported external pressure

Source: Reuters and CEIC

This table shows the reported external pressures within the weeks prior to the days with the largest daily changes in the 12-Month RMB Nondeliverable Forward rate (NDF). If the large changes in the 12-month NDF takes place on a Monday, all the events that occurred on the previous Friday up to the Monday 1900 hours (Tokyo time) are taken into consideration. Events that happened after the NDF appreciation/depreciation are not included, except for important and anticipated events such as the Strategic Economic Dialogue.

Table 3. Regression Results for the Overall Foreign Political Pressure

	Model	
	I	II
Mean equation		
Intercept	-0.0332*	-0.0297*
	(0.0096)	(0.0094)
Daily RMB return (lagged)	-0.0495	-0.0443
	(0.0521)	(0.0497)
Interest rate differential	0.0087*	0.0075*
	(0.0036)	(0.0036)
Macroeconomic news on		
Loan growth	0.0098	0.0086
	(0.0226)	(0.0215)
Fixed asset investment growth	0.0083	0.0080
	(0.0145)	(0.0153)
Industrial production growth	0.0049	0.0059
	(0.0110)	(0.0121)
Trade balance	-0.0044	-0.0043
	(0.0031)	(0.0030)
Broad money growth	0.0314	0.0287
	(0.0227)	(0.0219)
CPI inflation	-0.0436	-0.0498
	(0.0689)	(0.0718)
Dummy variable on wider daily trading band	-0.0029	-0.0036
	(0.0110)	(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)
Variance equation		
Intercept	-0.0001*	-0.0001
	##	##
ARCH term	0.0819*	0.0697*
	(0.0271)	(0.0231)
GARCH term	0.9172*	0.9216*
	(0.0231)	(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.

Table 4. Regression Results for Sino-US Meetings on the RMB

	Model			
	I	II	III	IV
Mean equation				
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)			
Variance equation				
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-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 5. Regression Results for the RMB NDF 12 Months

	Model	
	I	II
Mean equation		
Intercept	-0.1057 *	-0.1054 *
	(0.0307)	(0.0308)
Daily NDF return (lagged)	0.0982	0.0944
	(0.0544)	(0.0531)
Interest rate differential	0.0390 *	0.0383 *
	(0.0123)	(0.0123)
Macroeconomic news on		
Loan growth	-0.0580 *	-0.0581 *
	(0.0269)	(0.0275)
Fixed asset investment growth	-0.0075	-0.0068
	(0.0165)	(0.0163)
Industrial production growth	-0.0476 *	-0.0487 *
	(0.0163)	(0.0155)
Trade balance	-0.0106 *	-0.0111 *
	(0.0035)	(0.0033)
Broad money growth	0.1101 *	0.1051 *
	(0.0318)	(0.0315)
CPI inflation	-0.1780 *	-0.1911 *
	(0.0616)	(0.0602)
Dummy variable on wider daily trading band	0.0139	0.0145
	(0.0183)	(0.0178)
Dummy variable on external pressure from		
All sources	-0.0137	
	(0.0116)	
United States		0.0028
		(0.0125)
Non-US		-0.0377 *
		(0.0178)
Variance equation		
Intercept	0.0001	0.0000
	(0.0002)	(0.0002)
ARCH term	0.0690 *	0.0693 *
	(0.0273)	(0.0309)
GARCH term	0.9343 *	0.9310 *
	(0.0263)	(0.0301)
Dummy variable on external pressure from		
All sources	0.0001	
	(0.0005)	
United States		0.0001
		(0.0006)
Non-US		0.0007
		(0.0011)

The dependent variable is the daily return of the NDF 12 Months 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. 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 6. Regression Results for the RMB NDF 12 Months

	Model			
	I	II	III	IV
Mean equation				
Intercept	-0.0454 *	-0.0555 *	-0.0529 *	-0.0617 *
	(0.0226)	(0.0222)	(0.0223)	(0.0230)
Daily NDF return (lagged)	0.1138 *	0.1215 *	0.1205 *	0.1128 *
	(0.0519)	(0.0530)	(0.0530)	(0.0538)
	[Results for other control variables are omitted]			
Dummy variable on wider daily trading band	-0.0026	-0.0043	-0.0011	0.0048
	(0.0181)	(0.0181)	(0.0184)	(0.0189)
Week following Sino-US meeting	-0.0225	-0.0240	-0.0232	
	(0.0264)	(0.0268)	(0.0265)	
Week of Sino-US meeting	0.0044	-0.0090	-0.0057	
	(0.0233)	(0.0230)	(0.0227)	
Week prior to Sino-US meeting	0.0055	0.0005	-0.0031	
	(0.0141)	(0.0141)	(0.0122)	
Dummy variable on external pressure from				
United States, except during Sino-US meetings	-0.0087	-0.0076		-0.0078
	(0.0123)	(0.0126)		(0.0134)
Non-US	-0.0376 *			
	(0.0165)			
Variance equation				
Intercept	0.0001	0.0000	3.8E-05	0.0001
	(0.0002)	(0.0002)	(0.0002)	(0.0002)
ARCH term	0.0814 *	0.0837 *	0.0706 *	0.0647 *
	(0.0280)	(0.0272)	(0.0247)	(0.0262)
GARCH term	0.9199 *	0.9177 *	0.9327 *	0.9396 *
	(0.0254)	(0.0250)	(0.0215)	(0.0259)
Week following Sino-US meeting	-0.0005	-0.0008	-0.0010	
	(0.0016)	(0.0015)	(0.0014)	
Week of Sino-US meeting	0.0031 *	0.0036 *	0.0034 *	
	(0.0011)	(0.0012)	(0.0012)	
Week prior to Sino-US meeting	-0.0014 *	-0.0013 *	-0.0013 *	
	(0.0005)	(0.0004)	(0.0003)	
Dummy variable on external pressure from				
United States, except during Sino-US meetings	-0.0002	-0.00005		-0.0002
	(0.0006)	(0.0006)		(0.0005)
Non-US	0.0001			
	(0.0013)			

The dependent variable is the daily return of the NDF 12 Months 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. 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 7: Mean of CNY/USD Daily Returns of the CPR and NDF before, during, and after Sino-US Meetings on China's Exchange Rate Policy

	Meetings in 2006		Meetings in 2007				
	Paulson visits China	Paulson visits China (1st SED)	Paulson visits China	Wu visits USA (2nd SED)	Paulson visits China	Paulson visits China (3rd SED)	Average
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							
CPR	-0.027	-0.017	0.012	-0.008	-0.004	0.026	-0.003
NDF	-0.036	-0.099	0.074	0.017	-0.092	0.271	0.022
Week of meeting							
CPR	-0.068	-0.021	-0.004	-0.073	-0.004	-0.136	-0.051
NDF	-0.027	-0.064	-0.016	-0.003	0.018	-0.156	-0.042
Following week							
CPR	-0.025	0.001	-0.012	-0.007	0.004	-0.005	-0.007
NDF	-0.090	-0.047	-0.178	0.065	-0.029	0.089	-0.032
Sample Mean							
CPR							-0.019
NDF							-0.027

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

This table shows the mean of the daily return on the CNY/USD central parity rate and NDF 12 Months rate over one-week windows before, during and after the Sino-US meetings. The sample mean daily appreciation is calculated for the period spanning 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.

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

Date	Major Development
21 Jul 2005	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	The daily trading band for non-US dollar currencies was widened from 1.5% to 3.0%.
4 Jan 2006	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	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	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	The trade-related exchange rate was abolished and the official exchange rate was maintained at 2.8 RMB/USD.
Mar 1988	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	The official RMB/USD exchange rate was gradually devalued from 2.8 in 1985 to 5.22 on 17 Nov 1990.
1 Jan 1994	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	Kimmitt: 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:	
	A high ranking US official made comments in favour of a quicker or larger appreciation of the renminbi	Reuters
	(Sino-US meeting) There were official visits between Henry Paulson and Wu Yi, and Hu Jintao's visit to the US	Reuters, Xinhua, US Department of the Treasury
	A bill with the potential of influencing the renminbi was being introduced or voted upon in either house of the US Congress.	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.