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NBER Working Paper No. 13100
May 2007
JEL No. F3,F59,O1

ABSTRACT

This paper examines two related issues: (a) the implicit methodology used by the U.S. Treasury in determining whether China and America's other trading partners manipulate their exchange rates, and (b) the nature of the Chinese exchange rate regime since July 2005. On the first issue, we investigate the roles of economic variables consistent with the IMF definition of manipulation - the partners' overall current account/GDP, its reserve changes, and the real overvaluation of its currency - but also some variables suggestive of American domestic political considerations -- the bilateral trade balance, US unemployment, and an election year dummy. The econometric results suggest that the Treasury verdicts are driven heavily by the US bilateral deficit, though other variables also turn out to be quite important. On the issue of China's de facto exchange rate regime, we apply the technique introduced by Frankel and Wei (1994) to estimate implicit basket weights, adding several refinements. Within 2005, the de facto regime remained a peg to the dollar. However, there was a modest but steady increase in flexibility subsequently. We test whether US pressure has promoted RMB flexibility. We also test whether the recent appreciation against the dollar is due to a trend appreciation against the reference basket or a declining weight on the dollar in the reference basket, and suggest that they have different policy implications.

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1. INTRODUCTION

The issue of the regime governing the Chinese exchange rate—and specifically the question whether the currency is moving away from the de facto peg that for ten years has tied it to the US dollar—is much more than just another application, to a particular country, of the long-time question of fixed versus floating exchange rates. It is a key global monetary issue. It bears directly on China's surpluses in the current account and in the overall balance of payments, which are major counterparts to US deficits. The question even bears more broadly on what may well become one of the key issues of international political economy in the 21st century, perhaps the primary such issue: the rise of China and its likely long-run challenge to the global hegemony of the United States.

Exchange rate regimes in emerging markets have been a primary concern of international economists and policy-makers since the 1990s cycle of record capital flows to these countries followed by widespread crises. Most emerging market countries switched to more flexible exchange rate regimes in that episode. China is by far the largest developing country to continue to cling to a currency peg even after the Argentine and Turkish crises of 2001. That may have something to do with two considerations: the peg appears to have served China well, and that country was one of the few in Asia not to succumb to the crises of 1997-98. Indeed, it was praised by the United States and others at the time for not letting its currency devalue. The Chinese currency, known both as the yuan and the Renminbi ("People's currency"), stayed fixed against the dollar into the new phase of capital inflows to emerging markets that began around 2003.

It is another angle, however, that gives global urgency to the issue of the yuan-dollar exchange rate. The attention of policy-makers and researchers in international economics in the current decade has switched to the large and rising deficits that the United States is running in its current account and overall balance of payments. The emerging markets have by now grown so large that they are major players in the world economy. This is particularly true of China, which is on track to surpass Germany around 2008 as the world's third largest economy, even if GDP is evaluated at current exchange rates. China's importance in net international financial flows is even greater. The counterparts to those rising US external deficits are surpluses among Asian countries and major oil producers – rather than in Europe, as in the 1960s. Of these surplus countries, China has received by far the most attention.

There is a rapidly growing literature on the positive question of what are the causes of the Chinese surpluses (e.g., Prasad and Wei, 2005), as well as on the normative question of whether China should move to a more flexible exchange rate, either in its own interest, or in the interest of others, or both. The present paper does not deal with these issues. For what it is worth, we, like many others, come down on the side that China should increase its exchange rate flexibility in its own interest, but that the US deficits should not be blamed on China.

The present paper deals, instead, with two questions that, while perhaps appearing narrow and technical, lie at the heart of the debate. First, do the bi-annual U.S. Treasury reports to Congress base their findings with regard to whether China and other trading partners are "manipulating" their currencies on "manipulation" in the sense of the IMF Articles of Agreement? Or, rather, on criteria that come from domestic American politics? Second, is the precise exchange rate regime that China has put into place since 2005 a genuine departure from the earlier dollar peg, in the direction of flexibility? Is it targeted on a reference basket, with the genuine possibility of cumulatable daily appreciations, as was announced at the time?

The question of US findings regarding manipulation and the question of the nature of the current Chinese regime are directly connected. The connections run in both directions. Going from the first question to the second, the US political pressure has been fairly intense, and appears to have been an important factor behind the 2005 announcement of a change in policy, notwithstanding attempts by China's leaders to avoid the appearance of being swayed by the US push. In the paper, we attempt to find timing connections between US political rhetoric and Chinese steps toward flexibility. Going in the opposite direction, if China has not in fact changed its de facto pegging policy, as it has its official policy, such a finding might provide ammunition for a renewed US campaign, particularly in the form of threatened Congressional legislation. If, on the other hand, the change in regime was genuine, perhaps the RMB/dollar problem is already being gradually solved, with no need for further outside intervention.

The headline empirical findings for each of our two questions might not be surprising to some knowledgeable experts and insiders. But in both cases the findings are at odds with what routinely appears in the press, even the highest quality financial press, which often reports at face value both the U.S. Treasury findings regarding manipulation and the Chinese government's announcements regarding moves toward increased exchange rate flexibility. And in the case of the estimated weights in the new currency basket, even most experts are unable to guess correctly the identities of the non-dollar currencies to which the Chinese authorities have gradually shifted.

1.1 The US Treasury as a catalyst for RMB speculation

Political pressure from the US Treasury may have played a role in the origin of the entire economic question of yuan appreciation. Although China had already been running (small) balance of payments surpluses for several years before September 2003, there had not been a tremendous amount of speculation, either in the press or in the markets, regarding the possibility of yuan appreciation. Figure 1 shows the forward exchange rates from the NDF (Non-Deliverable Forwards) market. The yuan had actually been selling at a small forward discount against the dollar. Then, in October, 2003, it flipped to a forward premium. If we can use words that anthropomorphize the market, before October 2003 the NDF market expected future depreciation, but after that date it came to expect future appreciation. What happened around that time? In

September 2003, Treasury Secretary John Snow traveled to China to meet with its leaders. He was reported to have browbeaten them over the currency issue and to have extracted a promise eventually to allow the RMB to trade freely on international markets. On September 24, he successfully enlisted the support of the G-7 at a meeting in Dubai behind a new position for increased exchange rate flexibility, aimed at China. On October 1, Undersecretary John Taylor testified before Congress in favor of a more flexible RMB. On October 30, the semi-annual Treasury report was released to Congress with the finding for the first time in nine years that concerns regarding China's currency merited bilateral negotiations. Secretary John Snow's accompanying testimony repeated "China now has an opportunity to show leadership on the important global issue of exchange rate flexibility." In short, the timing is right to implicate the US Treasury in the flipped sign that appears in Figure 1.

Figure 1: Prices of Non Deliverable Forwards (NDFs) Around the Time Official US Pressure Began
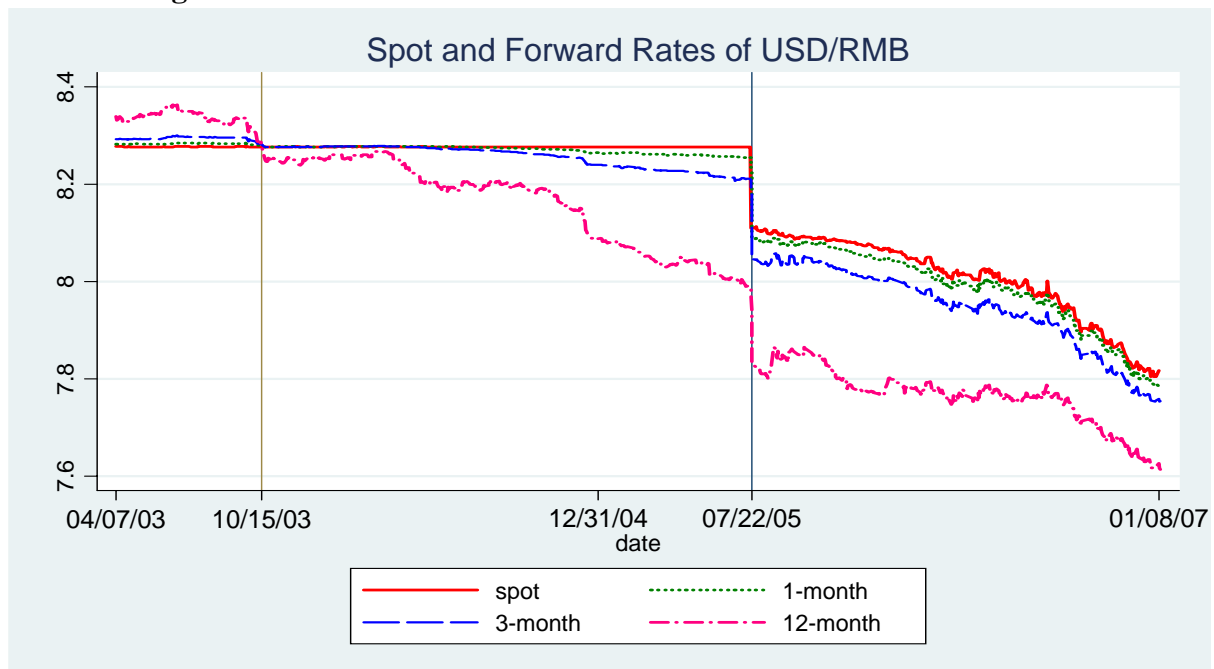
The forward premium started out small, but widened substantially in 2004. By July 2005, the one-year forward rate had moved to 8 yuan per dollar (a 3 per cent forecasted revaluation that was soon realized). The rate of accumulation of reserves by the People's Bank of China, i.e., the balance of payments, surplus accelerated thereafter, without a concomitant rise in the trade balance or in foreign direct investment. In other words, much of the increase in the BOP surpluses is explained by inflows of (unmeasured) portfolio capital including a dramatic reversal of Chinese capital flight (Prasad and Wei, 2005). The implication of the timing in Figure 1 was that the Treasury campaign may

have been the catalyst for speculation that underlay these portfolio inflows – speculation regarding future appreciation.

This is not to say that the Treasury campaign was necessarily the fundamental underlying cause of the speculative capital inflows. In the first place, it is reasonable to assume that the opposition political party, particularly candidates in the US presidential campaign of 2004, who subsequently picked up the theme, would have done so even in the absence of Administration initiatives, and that the latter were indeed an attempt to preempt the former. In the second place, the economic fundamentals -- particularly productivity growth differentials and current account surpluses in China and deficits in the United States -- pointed in the direction of an eventual decline in the yuan/dollar rate and speculators would sooner or later have noticed this. But it is interesting to "speculate" that China's speculative inflows and soaring reserve levels, which became the world's highest in 2006, might have been substantially more moderate were it not for the US public pressure.

1.2 Origins of the language of manipulation

Article IV of the IMF Articles of Agreement deals with Obligations Concerning Exchange Arrangements. After the Members of the Fund ratified the move to floating exchange rates in the Jamaica Communiqué of January 1976, they agreed a framework for mutual surveillance under what is called the "1977 Decision on Surveillance over Exchange Rate Policies," and they amended Article IV in 1978. Principle (A) of the 1977 Decision and Clause 3 of Section 1 of Article IV both require that each member shall "avoid manipulating exchange rates or the international monetary system in order to prevent effective balance of payments adjustment or to gain an unfair competitive advantage over other members." In theory, the obligation is meant to fall on countries seeking to keep the values of their currencies down so as to preserve a balance of payments surplus, as much as to those seeking to keep the values of their currencies up thereby preserving a balance of payments deficit.[1] In practice, however, the economic and political pressure on a surplus country to allow the value of its currency to adjust upward has always been far less than the pressure on a deficit country to allow the value of its currency to adjust downward. Many countries have been pushed into devaluing or floating downward. There have been very few cases – and no important ones – of countries having been successfully pushed into revaluing or floating upward since the end of the Bretton Woods system.

The once-obscure question of Chinese exchange rate policy is today one of the hottest topics in the world of international monetary policy issues. The United States has

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[1] International Monetary Fund (2006b, p. 15): "…the term 'in order to prevent balance of payments adjustment' is sufficiently broad to cover situations where a member is manipulating its exchange rate in a manner that makes it either overvalued or undervalued."

since 2003 been pressuring China to abandon its peg to the dollar and allow the renminbi (RMB) to appreciate, and some have claimed that China's refusal to do so constitutes unfair manipulation of the currency for competitive advantage. The motivation evidently stems from concerns over the US trade deficit, where China is following closely in the path of scapegoat that was earlier tread by Japan and Korea. American firms that have trouble competing against China are of course a source of political pressure. The Chinese have largely resisted the pressure to appreciate, even though many economists think an abandonment of the peg may be in their own interest.[2]

The meaning of the word "manipulation" is open to dispute, since it plays no role in economic theory. The 1977 Decision refers to the intent behind the actions of the authorities. Some claim that a country that has in the past made the decision to fix its exchange rate cannot now be accused of manipulation. No deliberate action has been taken. Etymologically, the root of the word is the Latin for "hand," which suggests active steps rather than a passive acceptance of developments. In this view, if a country opts to peg, it cannot be accused of manipulation. This is so even when future developments leave the currency "undervalued," whether because such factors as the Balassa-Samuelson effect or low inflation have rendered a once-appropriate exchange rate level no longer appropriate, or because the anchor currency, in this case the dollar, has in the meantime depreciated against other relevant currencies. A fixed exchange rate is a legitimate choice for any country under Article IV. It is pointed out that smaller countries with long-time fixed exchange rates, say the Cote d'Ivoire, would never be accused of manipulation.

Some, on the other side, claim that China's decision to cling to a peg when the currency could as easily be allowed to appreciate is a deliberate choice with the intent to gain competitive advantage on world markets, and that it frustrates balance of payments adjustment, with adverse effects on the rest of the world (e.g., Goldstein, 2003, 2004; and Goldstein and Lardy, 2003, 2005). They point out that the 1977 Decision specifically lists "protracted large-scale intervention in one direction in the exchange market" as one of the criteria that the Fund shall consider "as among those which might indicate the need for discussion" with a member over its exchange rate policy.

Although the U.S. Treasury must report to Congress biannually regarding whether individual trading partners are manipulating currencies for unfair advantage, it has resisted Congressional pressure to name China as an outright currency manipulator. Part 2 of this paper tests econometrically two competing hypotheses regarding the determinants of the Treasury decisions. (1) The first hypothesis is that the determinants are legitimate economic variables. (2) The second hypothesis is that the determinants are variables suggestive of domestic American political expediency. The econometric results

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[2] Frankel (2006a) presents the arguments, and gives other references to recent writings. In its Article IV consultation of October 2006, the International Monetary Fund took the position that the RMB was undervalued as well.

suggest that the Treasury verdicts are driven heavily by the US bilateral deficit with the country in question, though some of the other legitimate variables also turn out to be quite important. Partly as a result, China runs a relatively high danger of being named a manipulator.

An interesting question in international law arises. On the one hand, the US Congress did legally mandate that the bilateral balance should be an important consideration. On the other hand, the bilateral balance does not appear as a criterion in 1977 Decision or Article IV of the International Monetary Fund, the original source of the "manipulation" language. The Fund, rather, emphasizes instead the factors described as "legitimate economic variables" under (1) above. We shall return at the end to the potential importance of manipulation definitions that diverge between the United States and the Fund.

1.3 The new regime

China announced the switch to a new exchange rate regime in July 2005. The exchange rate – after a minor initial revaluation of 2.1%--would be set with reference to a basket of other currencies (with numerical weights unannounced), allowing a movement of up to +/- .3% in bilateral exchange rates within any given day. In theory this daily band could cumulate at the maximum to a strong trend of 6.4% per month, which would require both that movement among the major currencies is low and that the Chinese authorities make maximum use of the 0.3% band. In practice, the cumulative trend has been only a small fraction of this.[3] The trend has been dwarfed by movements in the dollar against the euro, yen, and other currencies, as Figure 2 shows.

Although the announced change in official policy was originally taken at face value in public policy circles, it is clear that, at least for the remainder of 2005, the currency remained closely linked to the dollar. More recently, the RMB has indeed started to give some weight to some other currencies with the result that the cumulating trend against the dollar has gradually accelerated, but the process is very slow.

The second econometric task of this paper is to analyze precisely what exchange rate regime China put in place after July 2005. We take account of the likelihood that the regime has evolved even over the short span of time since then. Fortunately, abundant exchange rate data are available daily, or even intra-daily, which makes it possible to answer the question. The basic approach uses the technique introduced by Frankel and Wei (1994): one regresses changes in the value of the local currency, in this case the RMB, against changes in the values of the dollar, euro, yen, and other currencies that are

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[3] A cumulative 6 % appreciation of the RMB against the dollar by the end of 2006 – 1/17th of the maximum possible trend—has been widely reported. But this number fails to distinguish between appreciation against a basket and appreciation against the dollar due to changes in the cross rates of currencies within the basket. Indeed, the effective exchange rate has hardly changed at all during this period.

candidate constituents of the basket. If China is following a perfect basket peg, it should be easy to recover precise estimates of the weights. The fit should be perfect, an extreme rarity in econometrics (the standard error of the regression should be zero, and $R^2 =$ 100%). More likely, the basket peg is not perfect, but one can still expect to estimate the weights with fairly tight standard errors. The real questions are how wide the band is, how great is the estimated weight on non-dollar currencies, and how strong is the trend term.

Figure 2: Value of the Yuan in terms of other major currencies: Whole Sample
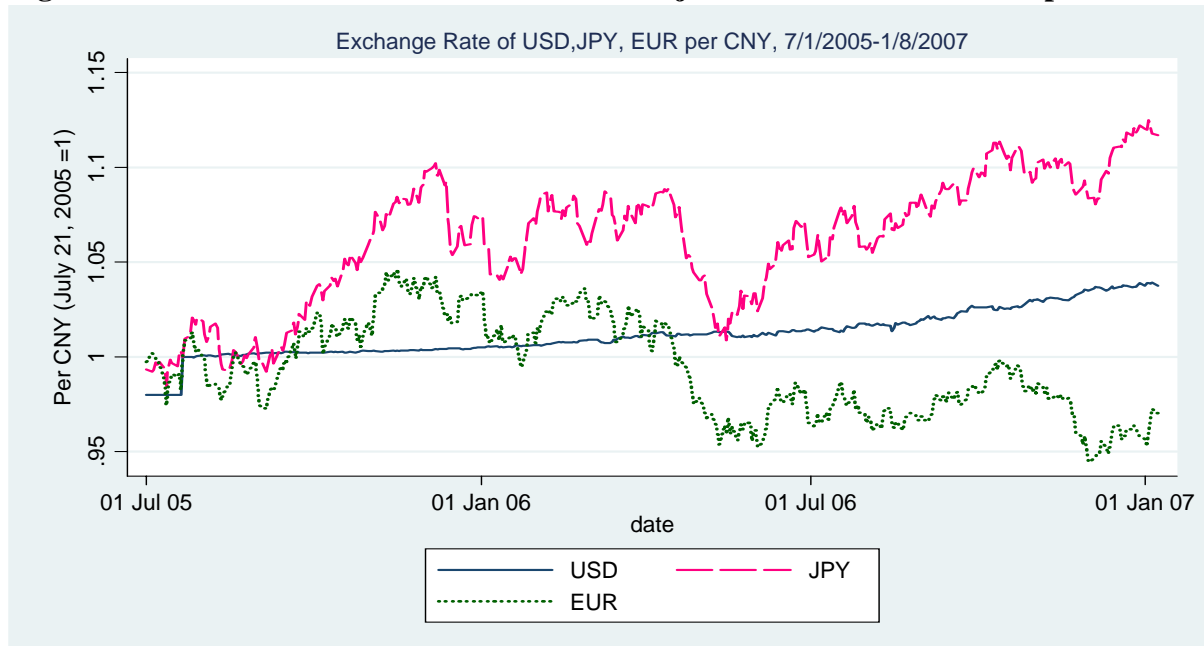
2. DOES THE US TREASURY BASE DETERMINATION OF MANIPULATION ON VALID ECONOMICS OR POLITICAL EXPEDIENCY?

Since they were first mandated in 1988, there have been 31 biannual reports from the U.S. Treasury regarding whether individual trading partners – particularly those in Asia—were manipulating currencies for unfair advantage. In recent years, parallel to calls from American politicians to allow the RMB to appreciate against the dollar, the Treasury has recommended policy changes and indicated that it has commenced discussions with the Chinese government. There has been speculation that the Treasury could go to the next step, and name China as an outright currency manipulator, as it did in the early 1990s, and as it did to Korea and Taiwan, Province of China in the late 1980s. This part of the paper seeks to test two competing hypotheses: (1) that the Treasury decisions are determined by legitimate economic variables – the partners' overall current account/GDP, its reserve changes, and the real overvaluation of its

currency, and (2) that the Treasury decisions are determined by variables suggestive of domestic American political expediency—US unemployment, an election year dummy, and the bilateral trade balance.[4]

An alternative use for the estimated equation is to try to predict what the Treasury can be expected to find in a given report, if it acts in accord with its past behavior. The ex ante prediction of a probit version of the model was that there was a 40 percent chance that China would be named as a currency manipulator in April 2006 (it wasn't), and a 99 per cent chance that it would at least be reported as meriting bilateral discussions (it was).

2.1 Brief History of the Semi-Annual Treasury Reports

The US Congress mandated in its Omnibus Trade and Competitiveness Act of 1988 biannual reports from the U.S. Treasury regarding whether trading partners were manipulating currencies. More specifically, in Section 3004, the Treasury is required to "consider whether countries manipulate the rate of exchange between their currency and the United States dollar for purposes of preventing effective balance of payments adjustments or gaining unfair competitive advantage in international trade." The law says the U.S. must hold talks with governments deemed to be breaking the rules. Fred Bergsten had originally instigated in 1986 the idea of pushing the newly industrialized economies of Asia to revalue, at a time when a large depreciation of the dollar against the yen and other traditional major currencies had not yet produced the promised improvement in the US trade balance. The US campaign was successful in persuading Korea and Taiwan to let their currencies appreciate in the late 1980s.[5]

In the first of the *Reports to Congress on International Economics and Exchange Rate Policy*, filed in October 1988, two economies, Korea and Taiwan, Province of China, were found to be guilty of manipulation. Singapore and Hong Kong SAR "got off with a warning" in that policy changes were recommended. In subsequent years, the countries pronounced manipulators, or given warnings, have always been Asian. From May 1992 to July 1994 China was the primary target. Ironically, in January 1994, China engineered a *de*valuation of its official exchange rate against the US dollar, unifying its dual exchange rate system. In the late 1990s, the mechanism fell somewhat into disuse: none of the countries investigated in 1996 was found to be a problem, and the Treasury reports were not filed at all after January 1997, until January 1999. These were the years

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[4] In an exercise roughly analogous to this one, Noland (1997) found that bilateral trade imbalances explain the judgments of partners' trade policies that are made in annually mandated reports to Congress by the US Trade Representative.

[5] For the Korean case, see Bergsten (1989) and Frankel (1993a, b). There was an earlier precedent in the Yen-dollar talks of 1983-84, in which the US Treasury pressured Japan to open its capital markets, with the motive of allowing appreciation of the yen, and reducing the pattern of capital flowing from surplus Japan to deficit America (Frankel, 1984).

of the East Asia crises, in which the concern had abruptly shifted to whether countries had been artificially keeping the value of their currencies too *high* rather than too low. From May 2002 to May 2003, Treasury did not even identify any countries as having been investigated. During this period, judged from the black market exchange rates on China's streets, the RMB was deemed overvalued. (A table in the appendix to this paper lists the findings of all the Treasury reports, according to our classification scheme.)

The intense pressure on China from American politicians of both parties to revalue its currency upward began in 2003. There are plenty of good arguments pro and con, whether China should move in the direction of increasing exchange rate flexibility and/or allowing its currency to appreciate. This is true whether the criterion is China's own economic interest, or facilitating an orderly unwinding of record global current account imbalances. But it is clear that much of the pressure coming from the United States is political, tied to the record US trade deficits and loss of jobs in manufacturing.[6]

The response of the U.S. Treasury has been measured. But ever since October 2003—as the U.S. entered a presidential election year—two countries have again been designated in its semi-annual reports as meriting recommendations or discussion: China plus one other, either Japan or Malaysia. As already noted, China announced a change in exchange rate regime in July 2005, an abandonment of its de facto peg against the dollar. But perhaps in recognition that not that much had yet changed in reality, the Treasury gave China the same designation in its report of November 2005.

Next came the report of April 2006.[7] Speculation mounted that the Treasury was likely to name China a manipulator outright. The domestic political pressure to do so was strong. Congressmen had entered what is usually considered an arcane subject, a trading partner's exchange rate regime. The Schumer-Graham bill, originally proposed in February 2005, has received the most attention. It would impose WTO-illegal tariffs of 27.5 percent against all Chinese goods if China does not substantially revalue its currency. On March 28, 2006, Senators Baucus and Grassley proposed another bill substituting the phrase "currency misalignment" in place of "unfair manipulation." Schumer and Graham subsequently withdrew their bill and suggested that they might return with a WTO-legal version.[8] When the Treasury released its report, it did not

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[6] Bergsten (2006), Frankel (2005, 2006a), Goldstein (2003, 2004), Goldstein and Lardy (2003, 2005), and Roubini (2007) are among those in favor of increased flexibility and/or revaluation for the yuan. McKinnon (2006), McKinnon and Schnabl (2003, 2004), Mundell (2004) and Cooper (2005) are among those opposed.

[7] Dated May. In fact the reports are often submitted a little later than they are officially due. Perhaps busy Treasury officials do not relish devoting resources to producing a document that, at best, is ignored, and, at worst, becomes the grist for attacks by grandstanding Congressmen.

[8] By now Schumer and Graham have backed off approximately three times: first after a weeklong visit to China where they became more familiar with the situation; second after China's July 2005 announcement of a change in regime, and third in 2006 when Henry Paulson was named Treasury Secretary.

ratchet up China's designation to "manipulator." The result was again the same in the subsequent report released in December 2006.

We now examine the statistical pattern of designations in the historical record since 1988. This allows a bottom line prediction of what the Treasury is likely to do in the future if it follows the pattern of its predecessors. The primary goal of this section, however, is to assess two different interpretations of the driving force behind the Treasury reports. First, one could take the 1988 legislation and the subsequent reports at face value, as an attempt to evaluate the economics of currency undervaluation. The IMF Articles of Agreement prohibit member countries from manipulating their currencies for their own competitive advantage. (That not only the phrase "manipulation" but also the phrase "unfair competitive advantage" appears in the 1977 Decision and in the revised Article IV illustrates that these were themselves politically-negotiated documents.[9]) The IMF has seldom in practice exercised this sort of surveillance. Only twice has the IMF found that a country has deliberately undervalued its currency, while it has found hundreds of cases of countries overvaluing their currencies. Thus one could interpret the US Congress and Treasury as stepping in to enforce this principle on their own, in the absence of IMF action. The biannual Treasury reports submitted during the period when John Snow was secretary have included Appendices that are thoughtfully written to explain the economics of exchange rates and trade balances, and the way the Department makes its decisions. U.S. Treasury (2005, Appendix) lists six important indicators that factor into its decision. They include trade and current account balances, rapid foreign exchange reserve accumulation, and measures of undervaluation and real effective exchange rate movements. The list explicitly *does not* include bilateral trade balances among the criteria, and even explains why they are not economically relevant.

Second, one could interpret the biannual reports as a manifestation of political pressures within the United States. While economists do not believe that bilateral trade deficits are of much economic significance, they clearly do matter politically. Bilateral deficits are blamed for loss of US jobs, especially in manufacturing, and politicians compete to see who can use the tougher rhetoric. The focus was on Japan 20 years ago and Korea 15 years ago. The spotlight is now on China, with India perhaps waiting in the wings, auditioning for the scapegoat role. (Fortunately the actual policy actions of whoever holds the White House tend to some extent to be tempered by offsetting lobbying from US firms that benefit from cheap imports and by realities of international economics and politics.)

To accept this framework and the test of the two hypotheses, it is not necessary either to accept or reject the claim that the three variables that refer to the partner country are the ones that capture good economic logic. It is also not necessary either to accept or

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[9] Boughton (2001, p. 68). The leitmotif over the decades in negotiations over the world monetary system is that the US has favored free-floating exchange rates and the French have opposed them. The history of the 1970s negotiations is in de Vries (1986).

reject that an appreciation of the yuan by itself would have little effect on the overall US trade balance (because the downward effect on the bilateral deficit with China would be largely offset by upward effects on the bilateral balances with other developing countries) and would have still less effect on US employment (because the US growth rate is determined in the long run by the capacity of the economy and in the medium run by the Federal Reserve, which is prepared to limit the rate of growth of demand to maintain price stability).

2.2 Econometric Investigation of Determinants of Treasury Findings

As already noted, we use three variables to capture the first hypothesis, that the Treasury findings are motivated by genuine international economics: the overall current account surplus of the trading partner (as a percent of its GDP), the change in the partner's reserve holdings (using its GDP as the scale variable, along with a few alternative denominators), and the value of the partner currency (relative to the IMF's concept of the PPP exchange rate). We also use three variables to capture the second hypothesis, that the reports are motivated by American politics: the bilateral balance of the United States with the partner in question, the US unemployment rate, and a dummy variable for a presidential election year.

The sample consists of 63 US trading partner countries, observed in each of the 31 reports through November 2005. This estimation is updated through the end of 2006 in the final version of this paper to be published in *Economic Policy*. We also in that version report clustered standard errors.

The variable to be explained is ordinal, defined as follows:

0 = country not investigated
1 = examined as a potential manipulator
2 = policy changes recommended / conducting discussions
3 = found to be manipulating its exchange rate.

The results are reported in the tables. There is evidence for both hypotheses. The variables that an economist would recognize as legitimate have a statistically significant effect on the decisions in the Treasury reports – the partners' overall current account/GDP, the overvaluation of its currency relative to PPP, and sometimes its reserve changes. The results for the reserves variable—essentially the balance of payments surplus—are uneven, in some cases showing up insignificant or with the wrong sign. (Table 3 suggests that the best scale variable for the change in reserves is GDP, not the level of imports or the level of reserves itself.)

But variables that an economist would not recognize as legitimate also matter. In particular the bilateral trade balance is the most consistently and strongly significant. It is generally significant at the 1% level of significance (or "99% level of confidence"). The

US unemployment rate is often significant, at the 5 or 10 % significance level, but not always. When a dummy variable for a US presidential election year appears, it, like the others, is of the hypothesized sign; but it is not statistically significant. When the presidential election dummy is interacted with US unemployment, it comes closer to statistical significance. There were only five presidential elections during this period, so lack of observations may explain the lack of statistical significance.

Overall, three aspects of the regression results suggest that the domestic political variables are more important determinants of the Treasury decision than the legitimate global manipulation criteria: the absence of a clear role for reserve accumulation by the partner country as mandated by the IMF criteria, the significance of US unemployment, and the very high significance of the bilateral balance notwithstanding that Treasury (2005) deliberately excludes this indicator from its list of criteria. If it was the IMF interpreting the criteria in the Articles of Agreement, rather than the Treasury interpreting the criteria in the 1988 US law, then consistent uni-directional intervention in the foreign exchange market would receive a lot more emphasis, and the US-specific variables such as the bilateral trade balance and US unemployment would not appear at all.

It should be noted that the law governing the Treasury reports mandates both sorts of tests: "If the Secretary considers that such manipulation is occurring with respect to countries that (1) have material global current account surpluses; and (2) have significant bilateral trade surpluses with the United Sates, the Secretary of the Treasury shall take action to initiate negotiations…" In that sense, to interpret evidence (that the bilateral balance numbers drive the Treasury decision to accuse a country of manipulation) as political, requires assigning the political motivation to the Congress, which passed the law, rather than to the Treasury that merely has to follow it. Alternatively, one could argue that the legally operative criterion lies in the interpretation of the ambiguous word "manipulation," that many of the 185 members of the IMF currently satisfy conditions (1) and (2) above – most of whom are never mentioned in the Treasury reports—and that therefore Treasury does genuinely have the latitude necessary to exercise its judgment. Others, however, would argue that the phrase "material global current account surpluses" means that the country in question must have a big share of the global surplus, as China does but Cote d'Ivoire does not, to qualify as a manipulator.

American politicians could come to regret it, if China finally followed their advice, because the result could well be an abrupt upward movement in US interest rates when the Chinese authorities stopped intervening in the market by buying dollar securities. The same could be the result if the Chinese authorities were to switch the *composition* of their reserves away from the dollar, perhaps in line with the ongoing shift in the currency composition of their reference basket away from the dollar. For these reasons, if the political pressure on the Treasury from the Congress to name China a manipulator is intense, the Treasury has the option to invoke the provision in the last sentence of Section 3004: "The Secretary shall not be required to initiate negotiations in cases where such negotiations would have a serious detrimental impact on vital national economic and security interests…" The Secretary may also explain to Congress that the

detrimental economic impact would fall on his ability to sell Treasury securities (and the detrimental security impact would fall on the US Government's ability to enlist China's help on higher priority goals such as defusing the North Korean nuclear threat).

A third hypothesis should also be noted: that the US Treasury (in any administration) walks a fine line. On the one hand, it needs to placate vote-conscious Congressmen who are in danger of passing protectionist legislation more damaging than anything likely to come out of a Treasury report. On the other hand, it needs to take into account the constraints of international diplomacy (too much pressure on China would backfire politically) and of international markets (the danger of sparking a hard landing for the dollar, in which the dollar falls abruptly, interest rates rise, and securities prices fall).

It appears that the Treasury is eager not to single out one country for unique opprobrium. There has never been a case where a single country is left completely exposed on its own. Table 5 indicates that, other things equal, the country with the top ranking in terms of the combination of economic and political variables is less likely to be named than if it had some other country to hide behind, while the second-ranked and third-ranked countries are more likely to be moved up, to give the leader company. These results are highly significant statistically.

2.3 Predictions of Who Is Named by the Treasury Report

An alternative use for the equation is to ask the question what the Treasury could ex ante have been expected to find in its report due (for example) April 2006, if it acted in accord with its past behavior.[10] The values for the April 2006 report, predicted by the linear equation based on recent data, were as follows

China	1.62
Japan	0.57
Korea	0.14
Malaysia	0.36
Taiwan, Province of China	0.17.

The 1.62 value for China in April 2006 suggests a relatively high probability that China would be named a manipulator. But the equation still needs to be refined. The linear equation predicts that China will most likely not be named a manipulator, and rather classified only as meriting bilateral discussions.[11] How can the highest predicted score of the entire sample period be so low? The problem probably lies in part in the

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[10] This section of the paper will be omitted from the published version, to save space.

[11] This is the equation that does not allow for the results in Table 5, which suggest that Japan may be elevated to give China company.

relatively low R^2 and in part in the functional form, which is linear despite the limited dependent variable.

A more appropriate functional form, especially if the equation is to be used to predict the probability that China will be named a manipulator, is the Probit, which is suitable for prediction of probabilities in circumstances where the variable to be explained is dichotomous. An event either happens or does not happen. (The domain of the function maps into the appropriate 0-to-1 range.) This is our next step.

Table 6 reports the results of the probit model. In the probit formulation US unemployment emerges as highly significant. In the first two columns, the dependent variable has been defined more simply as 1 for countries named manipulators and 0 for all others. The lower half of the table lists the 10 countries with the highest predicted scores for April 2006. The first column of the table reports results based on all 63 countries. As a result, half of the countries that appear in the top ten are oil-exporters. Yet Treasury chooses as a matter of deliberate policy not to report oil exporters as manipulators. So a more appropriate specification is to exclude the oil exporters, which is done in the second column of the table. In this specification, four variables are statistically significant and of the right sign—two each, under the political hypothesis (bilateral balance and US unemployment) and the economic hypothesis (partner's current account ratio, and partner's exchange rate overvaluation). The prediction in the lower half of the table gives China a 40 percent chance of being found a manipulator. The right half of the table shows the analogous equation that defines the probit event as a finding that the partner merits at least a recommendation of policy changes or conducting discussions. Here the probability that China will be so classified rises to 99 percent. Running a distant second, depending on the specification, is either Saudi Arabia, Singapore, Japan, or Malaysia. Table 7 shows that the 40 percent "manipulator" rating that the equation assigns China is higher than any country has every received, the closest being Singapore in October 2003 (35%). But it is still less than 50%.

As it happened, Treasury decided not to name China a manipulator in the April or October reports, released respectively in May and December, 2006; but it did continue to place the country in the "discussions" category.

2.4 Ordered Probit technique

A more sophisticated analysis of this problem uses the ordered probit technique.[12] Let Y denote the Treasury's decision, which can take one of the four values:

0 = not investigated
1 = examined as a potential manipulator
2 = policy changes recommended / conducting bilateral discussions
3 = found to be manipulating its exchange rate.

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[12] The earlier simple probit results will be omitted from the published version of this paper, to save space.

Let us assume that Y depends on the value of a latent variable Y*, which in turns depends on a set of observables:

$$Y^* = X \beta + \varepsilon$$

and

$$Y = 0 \text{ if } Y^* < k1,$$
$$Y = 1 \text{ if } k1 \leq Y^* < k2,$$
$$Y = 2 \text{ if } k2 \leq Y^* < k3$$
$$Y = 3 \text{ if } k3 \leq Y^*$$

where k1, k2, and k3 are "cutoff points" and k1 < k2<k3 and residual ε is assumed to follow a standard normal distribution. Vector X includes period dummies (to capture changing US or global economic environment), US bilateral trade balance with the country in question, the partner country's overall current account balance (as a share of GDP), the extent of the partner's currency overvaluation, and the scaled change in the partner's reserve position. The cutoff points and β can be estimated by maximum likelihood.

The sample again consists of 63 US trading partner countries, observed in each of the 32 reports through April 2006. The results are reported in Table 8. There is again evidence for both hypotheses. The legitimate global variables have a statistically significant effect on the decisions in the Treasury reports – the partners' overall current account/GDP, and the overvaluation of its currency relative to PPP. The results for the reserves variable are not statistically significant.

But variables that an economist would not recognize as legitimate also matter. In particular the bilateral trade balance is the most consistently and strongly significant. It is generally significant at the .01 significance level. In Appendix Tables 2-4, in place of the period dummies, we include separate measures of the US unemployment and a dummy for US presidential election years. The US unemployment rate is often significant, at the .10 or .05 significance levels, but not always. When a dummy variable for a US presidential election year appears, it, like the others, is of the hypothesized sign; but it is not statistically significant, unless interacted with the unemployment variable.

2.4.1 Extensions of ordered probit results

It is possible the Treasury's decisions have hysteresis. If it chooses to investigate a country for possible manipulation in one period, it is likely to do so again in the next period, even after holding the value of other variables constant. To check this, we augmented the basic model by including in the X-vector a new dummy that indicates if Y > 0 in the previous report. The estimation results are reported in Table 9a. One sees that this conjecture is confirmed in the data. Indeed, the goodness of fit (pseudo R-squared) is increased from about 0.2 in Table 8 to about 0.7 in Table 9a. A larger US trade deficit, a larger partner country's current account surplus, currency undervaluation, or a larger currency undervaluation of the partner country would raise the probability that the

country in question may be singled out for bilateral discussions or as a currency manipulator. These results are qualitatively the same as before. Interestingly, an increase in the partner's foreign exchange reserves (scaled by GDP) is now also found to raise that probability in a statistically significant way.

As a further extension, one can also interact the dummy for positive Y in the most recent past Treasury report with all the key regressors. The results are reported in Table 9b. Generally the same qualitative results remain.

2.4.2 Prediction with the ordered probit model

Now we use the estimated ordered probit model to forecast the Treasury reports. Table 10 reports in-sample probability predictions during the last two report cycles (November 2005 and May 2006, respectively) for all 8 Asian countries that have ever been singled by the Treasury for bilateral discussions or designated as a currency manipulator.

For May 2006, the model suggests that China had the highest probability of being named as a currency manipulator, but the probability was 33 percent, less than a flip of coin. The country with the second highest probability of being named as a manipulator was Malaysia, with a probability of 22 percent. But China had a 63 percent probability of being recommended for bilateral discussions, short of being named as a currency manipulator.

3.   WHAT IS THE CURRENT EXCHANGE RATE REGIME IN CHINA?

If a country announces that it adopts a basket peg but does not reveal the exact weighting of the component currencies, how would one verify if the country's deed is consistent with its words? In the remainder of this paper we apply a simple methodology first developed more than a decade ago[13] to the case of a RMB currency basket to study its evolution since July 21, 2005.

To summarize our findings from the outset, we find that the Chinese currency continues to assign heavy weight to the U.S. dollar, but that there are signs of some modest but steady increase in flexibility since the spring of 2006. We also look at the possibility of US pressure being a cause of steps toward increased flexibility, by counting complaints from U.S. officials about the RMB as reported in the press. There is no evidence that such complaints have led the Chinese to revalue the RMB relative to the

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[13] Frankel (1993) and Frankel and Wei (1994, 1995). The approach has since been used by others, including Bénassy-Quéré (1999), Ohno (1999), Frankel, Schmukler and Servén (2000), and Bénassy-Quéré, Coeuré, and Mignon (2004).   For the RMB: Eichengreen (2006), Shah, Zeileis, and Patnaik (2005), and Yamazaki (2006, p.8). Haldane and Hall (1991) had earlier regressed the British pound exchange rate against the dollar and the Deutschemark; but their equation did not have a theoretical basis as estimation of basket weights, as nobody considered the pound to be on a basket peg.

currency basket. There is some evidence, however, that US officials' complaints tend to be associated with gradual (though modest) reductions in the weight of the dollar in the RMB currency basket.

3.1 Uncovering the Secrets in an Opaque Currency Basket

The Chinese currency had been effectively pegged to the US dollar[14] at the rate of 8.28 RMB/dollar from 1997 until July 21, 2005 when the Chinese central bank announced the switch to a managing float regime "with reference to a basket of currencies." The announcement was billed as a major regime change.

3.1.1 What is publicly announced and what is not

As is often the case with currency baskets, the weights were not made public. Speculation ensued after the announcement about which currencies were in the new reference basket and what their weights were. Jen (2005), for example, guessed that the weight on the dollar was 85%.

On August 9, 2005, Central Bank Governor Zhou Xiaochuan (2005) disclosed a list of 11 currencies as constituents of the reference basket, in a speech in Shanghai marking the opening of the central bank's second headquarters. In particular, he stated that the major currencies in the basket are the US dollar, the euro, the yen, and the Korean won. We will label these four as the first-tier currencies in the basket. In addition, Governor Zhou stated that the rest of the currencies in the basket are the Singapore dollar, the British pound, the Malaysian ringgit, the Russian ruble, the Australian dollar, the Thai baht, and the Canadian dollar. The last seven will be labeled as the second-tier currencies. The governor said that these currencies were chosen because of their economies' importance for China's current account.

What were not announced were the weights on these currencies, nor the frequency and the criteria with which these weights might be altered.

3.1.2 A picture is worth a thousand words

Before we turn to regression-based estimation, it may be useful to inspect some simple time series plots. Some perspective can be gleaned from Figure 1, the graph that traces out the spot and three forward rates (from 1, 3 and 12 months non-deliverable forward contracts, respectively) of the USD/RMB exchange rate from April 2003 to January 2007. Interestingly, even though the actual regime change came in July 2005, the market had been expecting an RMB revaluation as reflected in the forward rate ever since

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[14] Incidentally, however, China's official policy has never been a pegged exchange rate.   This just goes to show the common divergence between de jure and de facto exchange rate regimes and the importance of inferring the true regime from observed data, a point that is by now well understood.

October 2003. In fact, on July 20, 2005, the day before the actual regime change, the 12-forward contract was forecasting an exchange rate of 8 RMB/US dollar, which implied a higher magnitude of appreciation than what actually happened the day after, but which turned out to be relatively close to the actual spot rate a year later (July 20, 2006).

To see how the RMB's value has evolved relative to major currencies, turn to Figure 2, the one that plots the value of the yuan in units of US dollars, euros and yen, respectively, since July 1, 2005. The three exchange rate series are rescaled to be equal to one on the first day (July 21, 2005) after the exchange rate regime reform, so that one can easily see subsequent percentage changes. A number of features stand out. First, in spite of the announced abandonment of the dollar peg, the link to the U.S. dollar even after July 21, 2005, is clearly much stronger than to either the euro or the yen. Second, one can discern a gradual (and very slow) strengthening of the RMB against the dollar, accumulating a total of another 4% of appreciation from July 21, 2005 to the end of 2006. Third, the value of the RMB against the euro and the yen fluctuates a lot from day to day, mostly a reflection of the fluctuation in the value of the US dollar against these other two currencies. Relative to July 20, 2005, the day before the exchange rate reform, the RMB had by April 26, 2006, appreciated by about 12% against the yen, but depreciated against the euro by about 2%.

To get a sense of the evolving range of the dollar/RMB movement, Figure 3 plots the percentage changes (the first differences in the log) of the exchange rate since July 22, 2005. Up to the spring of 2006, most of the daily movement was within 0.05%, with occasional movements approaching or exceeding 0.1% especially in the more recent period. In other words, the daily movement of the dollar/RMB had been tiny, despite the announced switch to a managed floating exchange rate. Since the spring of 2006, however, there has been a visible increase in the daily movement, with daily changes exceeding 0.1% frequently.

As another way to see the evolving flexibility, Figure 4 plots the standard deviation of the daily exchange rate movement over a sequence of rolling 20-day sample since July 22, 2005. After some initial moderate gyration in the rate following the announced regime change, the fluctuations die down in the last few months of 2005 and the beginning of 2006. The standard deviation then trends upward after the beginning of 2006, reaching around 0.08% by the end of 2006, a tripling relative to the magnitude in the immediate aftermath of the regime change announcement. In order not to lose sight of the big picture, we note again that, in spite of the visible increase in exchange rate flexibility, the absolute magnitude of the movement has been small so far.

3.1.3 *Implicit weights in the currency basket*

Assuming that the value of the RMB is indeed determined by a currency basket, how does one uncover the currency composition and weights in the basket? This is a problem to which Ordinary Least Squares regression is unusually well suited. If we know the list of currencies, of which the ones used in the basket can be a subset, then we

regress changes in the log value of the RMB against changes in the log values of the candidate currencies.

The reason to work in terms of changes rather than levels is the likelihood of non-stationarity. Concern for nonstationarity goes beyond the common refrain of modern time series econometrics, the inability to reject statistically a unit root, which in many cases can be attributed to insufficient power. One of the most important hypotheses we are testing is that the authorities have allowed the yuan to drift away from a basket, perhaps via an upward trend. Thus it is important to allow for nonstationarity. Working in terms of first differences is the cleanest way to do so.   We should include a constant term to allow for the likelihood of a trend appreciation in the RMB, whether against the dollar alone or a broader basket. Algebraically, if the RMB is pegged to currencies *X1*, *X2*, … and *Xn*, with weights equal to *w1*, *w2*, … and *wn*, then

$$logRMB(t+s)\text{-}logRMB(t) = c + \sum w(j) \, [logX(j, \, t+s) - logX(j, \, t)]$$

If the exchange rate is truly governed by a strict basket peg, then we should be able to recover the true weights precisely, so long as we have more observations than candidate currencies, and the equation should have a perfect fit.

Shah, Zeileis, and Patnaik (2005) adopted this methodology to study the Chinese currency basket after July 21, 2005 and found that the RMB was still tightly pegged to the dollar and nothing else. However, they only considered four candidate currencies in the RMB basket (the dollar, the yen, the euro, and the pound), probably unaware of the eleven-currency disclosure made the Chinese central bank. In addition, their sample was only the initial few months after July 21, 2005. Frankel and Wei (2006) extended to 11 the components of the basket, but found that the RMB regime in the second half of 2005 was still a tight dollar peg – as tight as that of the Hong Kong SAR regime. Eichengreen (2006, p. 22-25) had daily observations of data that ran from July 22, 2005, to March 21, 2006, and found a dollar weight around .9, but with no evidence of a downward trend in the weight, and no significance on non-dollar currencies. Each of these three papers was too early to catch the evolution in 2006. Yamazaki (2006, p.8) updated the estimation, and found some weight had shifted to the euro, yen and won; but he estimated the equation in terms of levels rather than changes (risking non-stationarity), did not allow for a trend, did not allow for the other currencies on the list, and had a relatively small number of (bimonthly) observations.

One methodological question, before we turn to the new results. How do we define the "value" of each of the currencies? This is the question of the numeraire. [15] If

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[15] Frankel (1993) used purchasing power over a consumer basket of domestic goods as numeraire; Frankel and Wei (1995) used the SDR; Frankel and Wei (1994, 2006), Ohno (1999), and Eichengreen (2006) used the Swiss franc; Bénassy-Quéré (1999), the dollar; Frankel, Schmukler and Luis Servén (2000), a GDP-weighted basket of five major currencies; and Yamazaki (2006), the Canadian dollar.

the exchange rate is truly a basket peg, the choice of numeraire currency is immaterial; we estimate the weights accurately regardless.[16] If the true regime is more variable than a rigid basket peg, then the choice of numeraire does make some difference to the estimation. Some authors in the past have used a remote currency, such as the Swiss franc (e.g., Frankel and Wei, 1994).

A weighted index such as the SDR or a trade-weighted measure is probably more appropriate. Here is why. Assume the true regime is a target zone or a managed float centered around a reference basket, where the authorities intervene to an extent that depends on the magnitude of the deviation. This seems the logical alternative hypothesis in which a strict basket peg is nested. Then the error term in the equation represents shocks in demand for the currency that the authorities allow to be partially reflected in the exchange rate (but only partially, because they intervene if the shocks are large). Following this logic, one should use a numeraire that is similar to that used by the authorities in measuring what constitutes a large deviation. The authorities are unlikely to use the Swiss franc or Canadian dollar in thinking about the size of deviations from their reference point. They are more likely to use a weighted average of major currencies. If we use a similar measure in the equation, it should help minimize the possibility of correlation between the error term and the numeraire.[17] Similarly, if there is a trend in the exchange rate equation (a constant term in the changes equation) representing deliberate gradual appreciation of the currency, then the value of the RMB should be defined in terms of whatever weighted exchange rate index the authorities are likely to use in thinking about the trend. These considerations suggest a numeraire that is itself composed of a basket of currencies. We choose here the Special Drawing Right (SDR).

Using daily exchange rates (from July 21, 2005 to the beginning of 2007) and the SDR as the numeraire currency, we implement a sequence of estimations for the whole

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[16] If the linear equation holds precisely in terms of any one "correct" numeraire, then add the log exchange rate between that numeraire and any arbitrary unit to see that the equation also holds precisely in terms of the arbitrary numeraire. This assumes the weights add to 1, and there is no error term, constant term, or other non-currency variable.

[17] A methodological innovation, relative to Frankel-Wei (1994) and other past work estimating currency weights for a putative basket peg, should soak up some of the error term and give better estimates: by including on the right-hand side of the equation percentage changes in total exchange market pressure (defined as percentage changes in the value of the currency plus percentage change in reserves), the test can allow for the fluctuations in demand for the currency that can push the exchange rate away from the central basket parity.   A coefficient near zero implies that fluctuations in currency demand provoke sufficient reserve changes to prevent a deviation of the exchange rate from the basket, i.e., a basket peg.   A coefficient closer to one implies that fluctuations in currency demand are largely allowed to be reflected as deviations of the exchange rate from the basket, a situation of managed floating. This approach may do a better job of answering the question to what extent the authorities intervene to stabilize the currency, not just the question what is the basket in terms of which the authorities define stability. We were not able to implement this approach for the post-2005 RMB because reserve data are only available monthly, and 18 observations are not enough for estimation. But we hope to try out this idea in the future.

sample. Column 1 of Table 10 reports the result. Of the 11 currencies that are supposedly in the basket, only two currencies receive weights that are steady enough throughout the sample period to show up with positive and statistically significant weights: the US dollar (90% weight) and Malaysian ringgit (5% weight). Surprisingly, two major non-dollar currencies, the euro and the yen, receive zero weight in the basket. (These results stay the same when we switch the numeraire currency from SDR to Swiss franc or gold as a robustness check, to be discussed below.) It appears that the Chinese authorities are more concerned with preserving trade competitiveness against major Asian rivals than with minimizing variability vis-à-vis the world's most important currencies or China's most important export markets.

Despite the official pronouncement that China has ceased its particular link to the U.S. dollar, substituting instead a reference basket of currencies, the sample-wide estimated weight on the dollar is still 90%. Further, the regression has a tight fit, with R-squared of 0.95 and root mean squared errors (MSE) of 0.03%, suggesting a tight peg to the basket. This finding is in contrast to the official position that the link to the basket (whatever its composition) is loose, that it is just a reference point. For comparison, we implement the same methodology on a currency that is clearly floating, namely the Japanese yen, and another currency that is known to be pegged to the U.S. dollar, namely, the Hong Kong dollar. The R^2 is 0.54 for the Japanese yen, much lower than that of the RMB. It is 99% for Hong Kong dollar, not that much different from the RMB. Similarly, the root mean squared error is 0.36% for the yen, an order of magnitude bigger than for the RMB, but is 0.02% for the Hong Kong dollar, virtually the same as the RMB. It is striking that the behavior of the Chinese RMB since July 21, 2005 closely resembles that of a known dollar pegger, the HK dollar, but is very far from a known floater, the yen.

We implement similar methodology on three other East Asian currencies: the Singapore dollar, the Malaysian ringgit, and the Korean won. They constitute intermediate cases. Of the three, the Singapore dollar and Malaysian ringgit both appear to be following loose basket pegs. The weights on the dollar are lower, and the fit looser, than in the case of the RMB. Nevertheless, considering that the Malaysian currency appears to be the only important non-dollar currency in the Chinese basket, it is striking that the ringgit itself gives .5 weight to the dollar (also .1 weight, each, to the Taiwan dollar, Philippine peso and Indian rupee). It means there is even less scope for yuan appreciation against the dollar.

3.2 Evolution of the Basket

The situation is changing rapidly over time. Estimates that impose unchanging coefficients could well be misleading.

3.2.1 Estimates from the sub samples

To allow for evolution of the Chinese exchange rate regime since the July 21, 2005 policy change, we divide the sample into six approximately equal-sized sub-periods: (1) July 22-October 31, 2005, (2) November 1, 2005 – January 31, 2006, (3) February 1 – April 28, 2006, (4) May 1- July 31, 2006, (5) August 1-October 31, 2006, and (6) October 1, 2006 – January 8, 2007.[18] The results are reported in Tables 11 through 17.

The estimation by sub-periods reveals some interesting shifts. In the first two sub-samples, the regime is virtually a US dollar peg, after the initial 2.1% revaluation. The weight on the dollar is 0.997 in the first sub-sample, and 0.968 in the second sample. Neither estimate differs statistically from one. Except for a tiny weight (0.02) on the Korea won in the second sub-sample, no other currency in the basket receives weight. The R^2 is essentially 100%. So for these sub-periods, the regime was simply a dollar peg masquerading as a basket.

After January 2006, however, the dollar weight falls. In the sub-period February-April, 2006, the estimated weight on the US dollar is only 0.70. A few other currencies, notably, the Malaysian ringgit, the Korea won, the Russian rubble, and the Thai baht, receive positive weights in the basket. The yen and euro continue to receive no positive weight. The root MSE increases marginally from 0.02-0.03% in the first two sub-samples to 0.04% in the third sub-period.[19]

The estimated weight on the dollar returns to 0.95 during May-July, 2006, but then declines to 0.87 and 0.89 in the last two sub-periods. Interestingly, none of the other currencies such as the ringgit, the won, the yen, or the euro, received a positive weight that is statistically significant. In other words, the relaxed association between the RMB and the dollar in the last five months of 2006 is not accomplished by shifting more weights to other non-dollar currencies in the basket, but by a looser association between the RMB and the entire currency basket. These are also the first two sub-periods when the trend is statistically significant: a trend appreciation of .0002 per day, which is .001 per week, or 5.2 per cent per year. This is far less than the maximum allowable under the announced band, but is nonetheless large enough to be important.

To summarize, in the first six months following the announced shift by the Chinese central bank to a managed floating regime with reference to a basket of eleven

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[18] The last subperiod overlaps with the previous one for a month in order to ensure enough observations in the sample.

[19] When similar regressions are done for other currencies, most are seen to switch, from assigning significant weights to the US dollar in the first two sub-samples, to none in the third sub-sample. The exceptions are Malaysia, which reduces its dollar weight from 0.964 in the first sub-period to 0.608 in the last sub-period, and Hong Kong SAR, the institutionally-fixed currency, which as expected continues to assign nearly 100% weight to the US dollar.

currencies, China made such a heavy reference to the US dollar that it was indistinguishable from a dollar pegger. However, during the period after February, 2006, there came signs of increased flexibility. First, in the spring of 2006, some weight in the basket was shifted to other currencies, particularly the Malaysian ringgit, the Korean won, the Russian ruble, and the Thai baht. Surprisingly, throughout the sample, there is not an iota of evidence of any positive weight assigned to the yen or the euro. Second, since the fall of 2006, in addition to the lesser weight on the dollar (an estimated weight of 0.9 rather than 1.0 as in the earlier periods), the association between the RMB and the reference currency basket has become looser. There is a non-negligible trend of appreciation against the basket, and slightly looser fit.

3.2.2 Robustness with respect to numeraire currency

We have chosen to emphasize estimates that use the Special Drawing Right as the numeraire currency. We have said earlier that the choice of the numeraire is irrelevant if the currency is strictly pegged to a currency basket. However, if the value of the currency relative to the basket is allowed to fluctuate, different numeraires might generate different point estimates. For this reason, we now examine if the conclusions are robust with respect to the choice of numeraire. In particular, we repeat these regression tables by using the price of gold as an alternative numeraire.

The new regression results are reported in Tables 10A and 11A through 17A, corresponding to the whole sample, and the sub-periods, respectively. Although the exact point estimates vary somewhat, the same qualitative results as before emerge clearly. First, in the initial eight months after July 21, 2005, the Chinese exchange rate regime is best characterized as a virtual peg to the US dollar. The goodness-of-fit measure and RMSE for the Chinese RMB are closer to those of the Hong Kong dollar, than to currencies known to have some flexibility. Second, there are signs of increased flexibility since February of 2006. The weight on the US dollar declines (though the estimated magnitude of the decline is not as large as when the SDR is used as the numeraire). Third, as before, there is no evidence of a positive weight assigned to either the euro or the yen.

3.2.3 Allowing for steady acceleration in the shift

Several considerations suggest it would be useful to return to estimation over the entire 18-month sample period but to allow for steady escalation of the various flexibility parameters. First, everything we know about Chinese government officials, from their history of economic reforms to their own words, points to policy change that is gradual. Second, looking simply at the yuan/dollar exchange rate in Figure 2, there is a gradual trend appreciation that visually accelerates. Third, looking at the econometric estimates across our sub-samples, all three flexibility parameters loosen up as we move from 2005 to late 2006: the weight on the dollar tends to fall, the appreciation trend becomes

positive and significant, and the fit becomes looser. All these considerations recognize very little movement in the short-term, but suggest signs of an accelerating pattern that if extrapolated a few years into the future could imply substantial flexibility.

Allowing for a time trend of appreciation that is linear in the log of the exchange rate is easy; that is the constant term that has been in the changes regression all along. Allowing for a *steadily accelerating* time trend requires adding some function of time to the changes equation; the simplest is to add time itself. Allowing for there to be a time trend in weight placed on the dollar versus non-dollar currencies is trickier. We add to the equation time-dependent terms that interact with the changes in currency values, to see how the weights change over time. We begin with a simple linear trend specification for these time-dependent terms as well, even though linearity here is less realistic than for the trend in the log of the RMB exchange rate itself.

The penultimate row of estimates in Table 18 shows a highly significant downward linear trend in the weight placed on the dollar.[20] The constant term is still highly significant statistically as well, but the implied estimated trend appreciation against the basket (.0001 per day, or 2.5 per cent per year) is now half what it was before. Interestingly, there is only weak evidence here of an *acceleration* of the trend appreciation per se (third to last row of estimates in Table 18). Evidently the visual impression of accelerating appreciation in, for example, Figure 2, may be primarily due to the (quite modest) shift in weight to non-dollar currencies at a time when they have been appreciating against the dollar.

3.2.4 Pressure from the U.S. and the movement of the Chinese currency

We now turn to a question that links the two parts of the paper: Do complaints about the Chinese exchange rate from US Treasury officials or other US officials lead China to respond by appreciating its currency relative to the basket and by reducing the weight of its currency on the dollar?

The change of the currency regime on July 21, 2005, came after two years of complaints from the United States (and a few other countries). Complaints from US officials and politicians continued, perhaps because as we have seen there had been so little de facto change to match the announcement. To document the official US pressure systematically, we searched an electronic database of news reports (FACTIVA/NewsPlus) and recorded the number of news stories in all English-language newspapers in Washington DC, New York City, and Los Angeles, in which US officials are reported to have asked China to speed up the exchange rate flexibility/revaluation from July 1, 2005 to January 8, 2007. Figure 5 plots two separate time series: the cumulative numbers of the complaints from US Treasury officials and those from

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[20] We have also allowed for non-linear trends, which would slow down with the passage of time.   The basic results were little changed.

officials of other government agencies (e.g. the White House, Congress and Federal Reserve System), respectively. Complaints from the two sources appear correlated in their timing.

To see whether Chinese exchange rate behavior is related to the complaints, Table 19 [and 19A] reports a sequence of currency weight regressions that have added the cumulative US complaints and their interactions with the weight on the dollar as extra regressors. When the two complaint series are added separately (Columns 1-3 in Table 19), the new regressors are not statistically significant, perhaps because they are collinear. We next try add the sum of the two sets of complaints together (Columns 4-6). There is no evidence of an association between the complaints from U.S. officials and appreciation of the RMB relative to the currency basket. There *is* evidence that cumulative complaints are associated with a reduction in the RMB's *weight on the US dollar*.

Since the two complaint series are by construction non-decreasing functions of time, one could wonder if they simply pick up a trend effect. We add a time trend and its interaction with the dollar weight as the additional regressors. The results are little changed. Again, there is evidence of a gradual decline in the RMB's weight on the US dollar, but there is no evidence of a steady appreciation of the RMB relative to the whole basket.

3.2.5 Constraining the basket weights to sum to 1

There is a good argument for constraining the weights on the currencies to add up to 1. However weak one thinks the link to the reference basket might be, and or however large or small the weight on the dollar, the authorities must view movements in the RMB through the metric of distance from some reference rate or effective exchange rate. The easiest way to implement the adding up constraint is to run the regressions with the changes in the log yuan value on the left-hand side of the equation transformed by subtracting off the changes in the log value of one of the currencies, say the dollar, and the changes in the values of the non-dollar currencies on the right-hand side transformed in the same way.

To see this, we repeat equation (1):

$$\Delta \log RMB_t = c + \sum w(j) [\Delta \log X(j)_t]$$
$$= c + \alpha \, \Delta \log \$_t + \beta(1) \, \Delta \log €_t + \beta(2) \, \Delta \log £_t + \beta(3) \ldots$$

We want to impose the adding up constraint $\alpha = 1 - \beta(1) - \beta(2) - \beta(3) \ldots$ We implement it by running the regression equation (2):

$$[\Delta \log RMB_t - \Delta \log \$_t]$$
$$= c + \beta(1) [\Delta \log €_t - \Delta \log \$_t] + \beta(2)[\Delta \log £_t - \Delta \log \$_t] + \beta(3) \ldots \quad (2)$$

The results are reported in Tables 20-21. One can recover the implicit weight on the dollar by adding the estimated weights on the non-dollar currencies, and subtracting the sum from 1. We see in columns (1) or (7) of Table 20 [or 20A] for example, that the weight on the dollar is 1 minus the weights on the won (.02) and ringgit (.07), which is .91. These are very similar to the corresponding estimates in Table 18 [or 18A], when no constraint was imposed on the weights. The increase in the Root MSE is tiny, suggesting that a test would not reject the constraint that the weights sum to one. But imposing the constraint sharpens the estimates a bit; for example the coefficient on the Korean won now appears statistically significant not just when gold is used as numeraire but also in the preferred case where the SDR is used as numeraire. The basic findings are unchanged: significant weights only on the same two non-dollar currencies, a trend appreciation against the basket, and gradually diminishing linear weight on the dollar.

Table 21 [and 21A] impose the adding-up constraint in the equation where we test the role of official US complaints. Again the results are little changed from Table 19 [and 19A]; but the complaints have an even stronger negative effect on the dollar weight. There is little evidence that they lead to an immediate appreciation, however small, per se.

3.2.7 Allowing for nonlinear trends in the weights

In sections 3.2.3 and 3.2.4 we allowed for a downward trend in the weight assigned to the dollar in the basket of reference currencies. But the specification was a linear trend. Since the currency weights are logically bounded by 0 and 1, a linear functional form for the trend in the weights, which has the undesirable property that the weights eventually breech the limits of 0 or 1, is not the best specification. Instead, the term designed to capture the possible shifting of weight toward non-dollar currencies can be assumed proportionate to *[1-exp(-δ t)],* which runs from 0 to 1 as required. The parameter δ helps captures the speed of the shift.

We can continue to impose the constraint that the weights sum to 1, not just at *t=0* but throughout the period, implementing the constraint by subtracting the change in the value of an arbitrary currency from all currency variables (i.e., from both the change in the RMB value and the change in the values of other candidate currencies in the basket). Algebraically, if X(j) is the value of currency j in the basket, and w(j) is the weight on that currency, then

$$\Delta \log RMB_t = f(t) + \sum w(j) \, \Delta X(j)_t$$

To impose the constraint that $\sum_1^J w(j) = 1$, we only need $w(1) = 1 - \sum_2^J w(j)$.
Now we choose euro as the first currency. The constraint on the weights implies that

$$[\Delta \log RMB_t - \Delta \log €_t] = f(t) + \sum_2^J w(j)(\Delta X(j)_t - \Delta \log €_t),$$

where *w(j)* can lie anywhere between zero and one.

Now let us add the time-dependent weight terms, using the exponential functional form for the weights *w(j)*. We consider four different ways to specify and/or estimate the trend terms; the choice depends on how one feels about nonlinear estimation.[21]

- Specification 1: let *w(j) = b0(j) + b1(j)* t,   f(t) = c0 + c1*t* .

This is the simplest specification and is estimated with OLS.

- Specification 2 : let *w(j) = b0(j) + b1(j)* [1- exp(-d t)],   f(t) = c0 + c1*t* .

We set *d* = 0.00001. While the trend on the currency weights is non-linear, by selecting a particular value for *d* we keep the specification still linear in the parameters to be estimated. Therefore, this equation can be estimated with OLS as well.

- Specification 3: let *w(j) = b0(j) + b1(j)* [1- exp(-d t)],   f(t) = c0 + c1*t*

Instead of imposing a value, *d* is a parameter to be estimated. A non-linear least squares method is used for estimation.

- Specification 4: let *w(j) = b0(j) + b1(j)* [1- exp(-d t)],   f(t) = c0 + c1*t*

Because estimation of the parameter *b1(USD)* in specification 3 does not converge, we now set *b1(USD)* = -28.9, which is the point estimate of *b1(USD)* from specification 2. The parameter *d* is still to be estimated, which we do by a non-linear least square method.

The results are reported in Table 22. This table is probably the most important for distinguishing whether the gradual appreciation of the yuan against the dollar is attributable to a shift of weights in the basket away from the dollar, or rather to an appreciation against the basket. The table confirms that in the immediate aftermath of the policy change in July 2005, the weight on the dollar was an estimated .98, statistically indistinguishable from 1. It also confirms a downward trend in the weight on the dollar (this time estimated in a realistic nonlinear functional form). While it is less clear which of the other currencies are receiving the reallocation of weight, an upward trend in the weight on the Malaysian ringgit appears the strongest statistically. With non-linear least squares (the last two columns in the table), the ringgit trend acquires statistical significance. Strikingly, there is no statistical significance to the trend of appreciation against the basket, let alone to acceleration in that trend. Rather the action comes from the decline in the weight on the dollar.

Could the steady decrease in the dollar weight that we find produce important flexibility in the future if it continues? It is hard to judge the importance of the parameter

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[21] We tried also imposing the constraint that the relative importance of the non-dollar weights vis-à-vis each other remains constant over time, while still allowing the upward trend in their collective importance.   But this constraint was not supported by the data, and those results are not included here.

estimates by just looking at them, especially for estimates from a non-linear specification. So we calibrate what the implied path for the weight on the dollar is out in the future, extrapolating the trend of our sample period based on the last column in the table. Figure 6 reveals the shift away from the dollar to be painfully slow over a five year period: starting at .98 in 2005, the dollar weight has fallen only to .87 by 2010.

3.3 Other extensions

Some extensions of the empirical estimates allow us to gain more confidence in the findings.

3.3.1 Method of moments

Bénassy-Quéré, Coeuré, and Mignon (2004) propose a modification of the Frankel-Wei methodology based on a method of moments approach. The advantage of the modification is that it does not depend on the choice of a numeraire currency. As a robustness exercise, we apply the Bénassy-Quéré et al approach to the Chinese currency data. We take the eleven currencies that the Chinese central bank says are in the basket as given, impose the restriction that the sum of their weights in the basket is equal to one, and estimate by GMM. We experimented with different sets of lagged regressors as the instrumental variables, skipping the first lag to avoid contamination from possible serial correlation. Unfortunately, it is generally difficult for the estimation to converge in our sample.

As an alternative, we focus on the set of first-tier currencies in China's announced basket, namely, the dollar, the yen, the euro, and the Korean won. This time, we do obtain convergence. There is also a decline in the weight on the US dollar by this approach, though the decline is more moderate than in the previous estimation, from 0.97/0.98 in the first and second subperiods to 0.91 in the last subperiod. As before, the Korean won receives some positive weight, especially in the latest subperiod, and there is little sign of positive weight on the euro or yen.

3.3.2 Intra-daily movements

It is possible that the RMB regime governing intra-day exchange rate movement is different from that governing day to day or month to month movement. In particular, the regime announced in July 2005 sets a limit on intra-day movement, leaving the possibility that the rules governing the change from daily close to the following day's open quotes could be different. Unfortunately, as RMB trading is relatively thin, there are generally too few observations to perform a regression based on one day's data. So we have to pool intra-day data together.

We have collected intra-day data (quotes at 15 minute intervals) for two periods: July 22 – August 25, 2005, and February 16 – May 17, 2006. In a given 15 minute

interval, say, 10:00-10:15 am, the exchange rate is the last quote during the interval. If there is no active quote available, then the most recently available quote is used. For a very active currency, say the euro, the quote is likely to take place at or close to 10:15 am. However, for a thinly traded currency, such as the RMB, the actual time of the quote could be much earlier. It is useful to bear in mind that this potential mismatch in timing among the different exchange rates introduces noise into our estimation.

Table 23 reports a sequence of estimation using 15-minute exchange rates and the SDR as the numeraire currency.[22] If one focuses on the four first-tier currencies in the Chinese basket, one sees that the weight on the dollar is very high throughout the sample, virtually 99-100% in all sub-periods. If one uses all 11 currencies as candidate currencies in the basket, then the weight on the dollar fluctuates (between 0.51 in the very last sub-period to nearly 1 in the second-to-the last sub-period).[23]

These results are consistent with the interpretation that the intra-day RMB regime may be somewhat different from the day to day or month to month regime. Within a day, the dollar weight is likely to be high and close to 1, now as in 2005. However, from day to day, the dollar weight may have declined subsequent to the first months after the July 2005 announcement.

3.3.3 A proposed extension for future work

In a future extension (to be applied to other currencies where a quasi-basket may have lasted long enough to give us a full sample of monthly data), we plan to integrate our technique for estimating basket weights with the other, larger, branch of the literature on empirical inference of exchange rate regimes: the attempts at de facto classification of regimes into such categories as fixed, floating and intermediate, based typically not just on observed movements in the exchange rate but also on observed movements in reserves.[24] The first literature estimates weights, regardless how tight or loose the relationship, while the second literature estimates the tightness of the relationship.

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[22] The SDR rate is reported once a day by the International Monetary Fund. However, since its composition is fixed in the sample except for a one-time discrete adjustment of the currency weights on January 1, 2006, we can compute its intra-day rate vis-a-vis the dollar based on the intra-day exchange rates of the currencies that make up the SDR.

[23] Table 23A repeats these estimation but using the Swiss franc as the numeraire currency. This time, the weight on the dollar stays in a narrower range (0.895 to 1). Interestingly, with intra-day data (and the Swiss franc as the numeraire), one can see a hint of the influence of the euro on the value of the Chinese currency, especially in the more recent period (April 18 – May 17, 2006) when the euro has a weight of 0.02. The yen never has a positive weight, and sometimes appears with a negative estimated weight in the earlier sub-periods.

[24] E.g., Calvo and Reinhart (2002), Shambaugh (2004), Levy-Yeyati & Sturzenegger (2005), Bubula & Otker-Robe (2002), Reinhart & Rogoff (2003, 2004).

It is time for a merger of techniques. The proposed approach is still to seek to explain changes in the value of the RMB by means of changes in the values of other currencies, as in Frankel-Wei (1994, 1995) and other past work, but at the same time to include on the right-hand side of the equation percentage changes in total exchange market pressure (defined as percentage change in the foreign exchange value of the currency plus percentage change in reserves). This test should do a better job of answering the question to what extent the authorities intervene to stabilize the currency, not just the question what is the basket in terms of which the authorities define stability. One respect in which this innovation would be an improvement over the original Frankel-Wei approach is that, by controlling for total exchange market pressure, it would take into account periods of high variability in the exchange rate equation's exogenous disturbances, which could otherwise show up as a looser fit (higher Standard Error of Regression) in some periods or countries than in others and erroneously be interpreted as evidence of higher-flexibility regimes. If the coefficient on the exchange market pressure variable is 1, that means that the authorities allow fluctuations in the demand for the national currency to show up solely in the exchange rate, and do not intervene in the market at all. If the coefficient is zero, then the authorities are accommodating fluctuations in demand for the currency by allowing the supply of the currency to change correspondingly, and are holding the exchange rate constant. We are unable to apply this technique to the RMB because there are not yet enough post-2005 observations of reserves to run a meaningful regression.

3.4 Conclusions regarding the recent Chinese exchange rate regime

To summarize our findings, within 2005 there was very little change in the de facto regime despite the announced policy change in July of that year. Not only did the true weight on the dollar in the basket remain close to 1, but the tightness of the fit was similar to that of the Hong Kong dollar, which is on a currency board! [25] In 2006, the de facto regime began to put a significant, but still small, weight on some non-dollar currencies. These were not primarily the yen or euro as one would expect, but rather the currencies of other Asian developing countries (the won and the ringgit) which themselves do not float freely against the dollar. Moreover, these weights were still small and the peg was still tight. The small increase in flexibility that we have seen could be important only if it were a harbinger of more to come. This is likely, as Chinese leaders gradually become more comfortable with the idea.

Reporting in the financial press has focused on the appreciation of the RMB against the dollar. The focus is understandable, both because this is the question of political interest, and because looking at a graph of the dollar/yuan exchange rate (e.g. in

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[25] As often with countries said to be on a currency board, Hong Kong SAR's regime differs in some ways from a pure idealized currency board.

Figure 2) seems to tell a clean story of an appreciation trend that, though starting out very small, has been gradually escalating in an exponential way. If this accelerating trend were in fact deemed part of the current regime, one could extrapolate it and predict more serious appreciation in the future.

Our results, however, suggest that the regime probably is not best described as a dollar peg with a trend appreciation, let alone a gradually accelerating trend. The findings of Section 3.2.7 are the sharpest on this point. Rather, the regime is better described as a basket peg with weights on non-dollar currencies that, though starting out very small in 2005, rose gradually rising in 2006. The difference in characterizations of the regime could make a big difference for the future. Our results suggest that if the Korean won and Malaysian ringgit stop appreciating against the dollar, or even begin to reverse, so will the Chinese currency. In any case, the evidence supports the hypothesis of small steps away from the dollar link more than small steps toward appreciation per se. This ultimately may not be enough to appease the US Treasury or, especially, the US Congress.

This adds to the onus on the IMF to deal with the yuan/dollar question. Multilateral institutions and international law are more relevant to this issue than is the case with most big-power issues realistically speaking. The Members originally intended the Fund, not national authorities, to judge manipulation. More recently, the institution was given a reinforced mandate in the spring of 2006, both by its governing body and – perhaps more importantly—by the G-7. The mandate was to reconsider the 1977 Decision and thereby expand the surveillance described in the Articles of Agreement beyond the *World Economic Outlook* and bilateral Article IV consultations, and to look into the issue of global current account imbalances through a multilateral consultation process. In practical terms, this means that the US Treasury in 2006 passed the RMB issue on to the IMF, giving that institution a rare potential opportunity to pass judgment or at least help broker a multilateral agreement over the Chinese currency and also G-7 imbalances.[26] Many economists identify G-7 imbalances as more a result of deficient US national saving than of China's support of the dollar against its own currency.[27] A cooperative agreement might entail concrete steps by the US government to raise national saving, together with a decision by China jointly with other Asian countries, and oil-exporters which are running even larger surpluses, to allow their currencies to appreciate simultaneously. Europe would have a role as well.[28] Negotiations over such an

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[26] To Mervyn King (2006), the IMF either takes this opportunity or else is out of a job. The U.S. Treasury also supported a strengthening of IMF surveillance: in Adams (2006) and U.S. Treasury (2006a), e.g., by making more explicit the definition of "protracted large-scale intervention." The IMF Managing Director responded to the new mandate with a process to review surveillance, both bilateral and multilateral, as part of his Medium-Term Strategy for the Fund.

[27] Frankel (2006b) considers the various arguments.

[28] Traditionally the part of European policymakers is to agree to make their goods and labor markets more flexible. Perhaps a more realistic European contribution to the package could be an agreement to stand by

agreement cannot take place in the G7 because China, Korea, and the others are not members. The IMF is the logical place.

Agreeing on such multilateral cooperation will not be easy. Both sides will be reluctant to make the necessary concessions. The United States is not likely to give up easily on the politically attractive idea that China bears some responsibility for its trade deficit, represented numerically by the bilateral deficit. Congress deliberately intended to legitimize the bilateral deficit in the 1988 law, however the IMF Articles of Agreement define manipulation. China for its part is not likely to give up easily on the idea that it has the sovereign right to move as slowly on currency reform as it deems in its interest. But both sides also have something important to lose if the issue is not settled. China's leaders run the danger of losing free access to a very large and important export market. The US leaders run the risk of the political momentum behind the scapegoat strategy backfiring, in the form of either self-inflicted protectionist legislation or a hard landing for the dollar and US securities in global financial markets. The RMB/dollar rate and associated imbalances is a better subject for multilateral surveillance and international cooperation than any subject to come along in many years, and it is more likely to be amenable to progress in the forum of the IMF than anywhere else. If nothing else, this process might help delay and deflect protectionist fervor in the US Congress.

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in the event that the dollar goes into uncontrolled freefall, ready to buy up dollars to put a reasonable floor under its value. Talk of a "new Plaza Agreement" could be dangerous unless there is also a "new Louvre Agreement" waiting in the wings.

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Tables for Part II:
Explaining findings of Treasury Department biannual Report to Congress on International Economics and Exchange Rate Policy

	Full sample	Excluding major oil exporters[1]	15 Asian economies[2]	8 named in reports[3]
Table 1: Different samples using pooled OLS				
US bilateral goods trade balance with partner country	**-0.9185*****	**-0.9245*****	**-0.9850*****	**-0.6928 *****
	0.0603	0.0655	0.1548	0.2045
Partner country's Current account/GDP ratio	**0.0034*****	**0.0144*****	**0.0284*****	**0.0114**
	0.0010	0.0021	0.0069	0.0111
Partner's Exchange rate relative to PPP	**-0.1271*****	**-0.1829*****	**-0.2322****	**-0.6939 *****
	0.0253	0.0291	0.1115	0.1569
Ratio of partner country's change in reserves/GDP	**0.0070*****	**0.0032**	**-0.0117**	**-0.0214 ***
	0.0027	0.0034	0.0091	0.0124
US unemployment rate	**0.0167***	**0.0224****	**0.0826****	**0.0873**
	0.0089	0.0102	0.0374	0.0645
Constant	**0.0236**	**0.0538**	**-0.1555**	**0.5366**
	0.0525	0.0596	0.2129	0.3876
R squared	**0.1273**	**0.1546**	**0.1112**	**0.1059**
Observations	**1946**	**1667**	**458**	**241**

[1] Excludes Algeria, Kuwait, Mexico, Nigeria, Norway, Russia, Saudi Arabia, United Arab Emirates and Venezuela.

[2] Includes Bangladesh, China, Hong Kong SAR, India, Indonesia, Japan, South Korea, Malaysia, Pakistan, Philippines, Russia, Singapore, Sri Lanka, Taiwan, Province of China and Thailand.

[3] Includes China, Hong Kong SAR, Japan, South Korea, Malaysia, Russia, Singapore and Taiwan, Province of China.

Table 2: Full sample including US domestic variables

	(1)	(2)	(3)	(4)	(5)	(6)
US bilateral goods trade balance with partner country	-0.9185 ***	-0.9090 ***	-0.9100 ***	-0.9104 ***	-0.9186 ***	-0.9124 ***
	0.0603	0.0602	0.0602	0.0602	0.0604	0.0602
Partner country's Current account/GDP ratio	0.0034 ***	0.0032 ***	0.0032 ***	0.0032 ***	0.0034 ***	0.0033 ***
	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010
Partner's Exchange rate relative to PPP	-0.1271 ***	-0.1245 ***	-0.1241 ***	-0.1244 ***	-0.1274 ***	-0.1251 ***
	0.0253	0.0252	0.0252	0.0252	0.0253	0.0252
Ratio of partner country's change in reserves/GDP	0.0070 ***	0.0077 ***	0.0076 ***	0.0075 ***	0.0070 ***	0.0072 ***
	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027
US unemployment rate	0.0167 *				0.0160 *	
	0.0089				0.0090	
US GDP growth		0.0056				
		0.0060				
Presidential election year			0.0112			-0.0922
			0.0189			0.0912
US unemployment rate interacted with election year				0.0027	0.0019	0.0183
				0.0033	0.0033	0.0158
Constant	0.0236	0.0993 ***	0.1122 ***	0.1112 ***	0.0247	0.1131 ***
	0.0525	0.0260	0.0203	0.0203	0.0525	0.0204
R squared	0.1273	0.1261	0.1259	0.1260	0.1275	0.1265
Observations	1946	1946	1946	1946	1946	1946

Table 3: Full sample using different denominators for reserves variable

	Ratio to $US GDP	Ratio to GDP (PPP)	Ratio to Imports	Percentage change in reserves
US bilateral goods trade balance with partner country	-0.9185 ***	-0.9381 ***	-0.9291 ***	-0.9331 ***
	0.0603	0.0601	0.0609	0.0602
Partner country's Current account/GDP ratio[1]	0.0034 ***	0.0027 **	0.0037 ***	0.0038 ***
	0.0010	0.0012	0.0010	0.0010
Partner's Exchange rate relative to PPP	-0.1271 ***	-0.1373 ***	-0.1316 ***	-0.1327 ***
	0.0253	0.0254	0.0255	0.0252
Partner country's change in reserves	0.0070 ***	0.0104 ***	0.0004	0.0115
	0.0027	0.0037	0.0007	0.0179
US unemployment rate	0.0167 *	0.0159 *	0.0186 **	0.0188 **
	0.0089	0.0089	0.0089	0.0089
Constant	0.0236	0.0346	0.0220	0.0223
	0.0525	0.0526	0.0526	0.0526
R squared	0.1273	0.1242	0.1244	0.1244
Observations	1946	1946	1946	1946

[1] Also uses GDP(PPP) in denominator for current account when using GDP(PPP) for reserves.

Table 4: Different samples using panel estimators

	Full sample		Excluding major oil exporters[1]		15 Asian economies[2]		8 named in reports[3]	
	Fixed Effects	Random Effects	Fixed Effects	Random Effects	Fixed Effects	Random Effects	Fixed Effects	Random Effects
US bilateral goods trade balance with partner country	-0.1218	-0.2453 ***	-0.1108	-0.2451 **	-0.1654	-0.2467	-0.1961	-0.2559
	0.0965	0.0907	0.1098	0.1025	0.2385	0.2263	0.3309	0.3158
Partner country's Current account/ GDP ratio	0.0012	0.0012	0.0075 ***	0.0071 ***	0.0256 ***	0.0241 ***	0.0367 ***	0.0338 ***
	0.0008	0.0008	0.0022	0.0021	0.0067	0.0065	0.0111	0.0109
Partner's Exchange Rate relative to PPP	0.0555	0.0145	0.1191 *	0.0464	0.5408 *	0.3452	0.5249	0.2266
	0.0563	0.0490	0.0696	0.0584	0.2961	0.2407	0.4229	0.3722
Ratio of partner country's change in reserves to GDP	-0.0063 ***	-0.0059 ***	-0.0107 ***	-0.0101 ***	-0.0225 ***	-0.0228 ***	-0.0274 **	-0.0279 ***
	0.0021	0.0021	0.0027	0.0027	0.0072	0.0072	0.0106	0.0105
US unemployment Rate	0.0077	0.0094	0.0121	0.0144 *	0.0617 **	0.0633 **	0.1018 *	0.1023 *
	0.0064	0.0064	0.0074	0.0074	0.0281	0.0281	0.0527	0.0525
Constant	0.0022	0.0144	-0.0459	-0.0158	-0.2905	-0.2141	-0.4006	-0.2063
	0.0507	0.0572	0.0598	0.0659	0.2203	0.2473	0.4376	0.5085
R squared	0.0080	0.0603	0.0075	0.0541	0.0315	0.0454	0.0116	0.0003
Hausman test (prob > χ^2)		0.0000		0.0000		0.3620		0.7433
Observations	1946	1946	1667	1667	458	458	241	241

[1] Excludes Algeria, Kuwait, Mexico, Nigeria, Norway, Russia, Saudi Arabia, United Arab Emirates and Venezuela.

[2] Includes Bangladesh, China, Hong Kong SAR, India, Indonesia, Japan, South Korea, Malaysia, Pakistan, Philippines, Russia, Singapore, Sri Lanka, Taiwan, Province of China, and Thailand.

[3] Includes China, Hong Kong SAR, Japan, South Korea, Malaysia, Russia, Singapore and Taiwan, Province of China.

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Table 5: Avoidance of naming a country in isolation				
US bilateral goods trade balance with partner country	**-0.9185 *****	**-1.1791 *****	**-0.5454 *****	**-0.8585 *****	**0.1369**
0.0603	0.0877	0.0612	0.0612	0.1078
Partner country's Current account/GDP ratio	**0.0034 *****	**0.0033 *****	**0.0033 *****	**0.0034 *****	**0.0034 *****
0.0010	0.0010	0.0009	0.0010	0.0009
Partner's Exchange rate relative to PPP	**-0.1271 *****	**-0.1272 *****	**-0.1275 *****	**-0.1266 *****	**-0.1266 *****
0.0253	0.0252	0.0237	0.0251	0.0232
Ratio of partner country's change in reserves to GDP	**0.0070 *****	**0.0067 ****	**0.0075 *****	**0.0059 ****	**0.0064 ****
0.0027	0.0027	0.0025	0.0027	0.0025
US unemployment rate	**0.0167 ***	**0.0194 ****	**0.0126**	**0.0164 ***	**0.0060**
0.0089	0.0089	0.0084	0.0088	0.0082
Prediction ranked first		**-0.4079 *****			**0.7331 *****
	0.1001			0.1111
Prediction ranked second			**1.1211 *****		**1.4441 *****
		0.0696		0.0798
Prediction ranked third				**0.3494 *****	**0.6200 *****
			0.0698	0.0689
Constant	**0.0236**	**0.0039**	**0.0458**	**0.0239**	**0.0881 ***
0.0525	0.0525	0.0493	0.0522	0.0486
R squared	**0.1273**	**0.1347**	**0.2302**	**0.1384**	**0.2663**
Observations	**1946**	**1946**	**1946**	**1946**	**1946**

Table 6: Probabilities for April 2006, as predicted by Probit model (dichotomous dependent variable)

	Probability of being reported as "manipulating" exchange rate		Probability policy changes recommended or conducting discussions	
	Full sample	**Excluding major oil exporters[1]**	**Full sample**	**Excluding major oil exporters[1]**
US bilateral goods trade balance with partner country	**-1.7096 *****	**-1.8011 *****	**-2.6135 *****	**-2.4896 *****
	0.4458	0.4864	0.2921	0.2940
Partner country's Current account/GDP ratio	**0.0628 *****	**0.1310 *****	**0.0362 *****	**0.0729 *****
	0.0183	0.0303	0.0105	0.0144
Partner's Exchange rate relative to PPP	**-0.9714 ****	**-1.2594 *****	**-0.7656 *****	**-0.8916 *****
	0.4016	0.4407	0.2004	0.2045
Ratio of partner country's change in reserves to GDP	**-0.0206**	**-0.0703 ***	**0.0184**	**0.0018**
	0.0301	0.0366	0.0173	0.0194
US unemployment rate	**0.4810 *****	**0.6189 *****	**0.1919 *****	**0.2227 *****
	0.1407	0.1654	0.0663	0.0707
Constant	**-5.1493 *****	**-5.8606 *****	**-2.8380 *****	**-2.8525 *****
	0.9491	1.0998	0.4056	0.4258
Pseudo R squared	**0.2402**	**0.3159**	**0.2192**	**0.2497**
Observations	**1946**	**1667**	**1946**	**1667**

Rank for April 2006		Prob.		Prob.		Prob.		Prob.
1	**China**	0.44	**China**	0.40	**China**	0.99	**China**	0.99
2	**Saudi Arabia**	0.08	**Singapore**	0.18	**Japan**	0.17	**Malaysia**	0.24
3	**Kuwait**	0.07	**Gabon**	0.01	**Malaysia**	0.16	**Singapore**	0.21
4	**Algeria**	0.02	**Malaysia**	0.01	**Saudi Arabia**	0.16	**Japan**	0.18
5	**Singapore**	0.01	**Trinidad**	0.01	**Canada**	0.15	**Canada**	0.14
6	**Venezuela**	0.01	**Hong Kong SAR**	0.00	**Algeria**	0.13	**Trinidad**	0.13
7	**Malaysia**	0.01	**Japan**	0.00	**Nigeria**	0.10	**Germany**	0.08
8	**Russia**	0.01	**Canada**	0.00	**Venezuela**	0.09	**Gabon**	0.06
9	**Japan**	0.00	**Switzerland**	0.00	**Kuwait**	0.08	**Taiwan, Province of China**	0.05
10	**Canada**	0.00	**Germany**	0.00	**Russia**	0.08	**Egypt**	0.04

[1] Excludes Algeria, Kuwait, Mexico, Nigeria, Norway, Russia, Saudi Arabia, United Arab Emirates and Venezuela.

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Table 7: Countries with highest probabilities over 1988-2006 (dichotomous dependent variable)

	Probability of being reported as "manipulating" exchange rate						Probability policy changes recommended or conducting discussions					
	Full sample			Excluding major oil exporters[1]			Full sample			Excluding major oil exporters[1]		
Rank		Report	Prob.		Report	Prob.		Report	Prob.		Report	Prob.
1	China	04/06	0.44	China	04/06	0.40	China	04/06	0.99	China	04/06	0.99
2	Nigeria	12/92	0.16	Singapore	10/03	0.35	Japan	10/88	0.45	Japan	10/88	0.42
3	Kuwait	04/90	0.12	Argentina	05/03	0.16	Canada	05/02	0.18	Singapore Taiwan, Province of	04/04	0.40
4	Japan	12/92	0.08	Malaysia	10/03	0.15	Nigeria	05/05	0.17	China	10/88	0.25
5	Saudi Arabia	04/06	0.08	Japan	12/92	0.12	Malaysia	05/05	0.17	Malaysia	10/03	0.25
6	UAE	05/91	0.07	Colombia	12/92	0.10	Venezuela	05/91	0.17	Canada	05/02	0.21
7	Algeria	12/92	0.06	Gabon	05/02	0.10	Kuwait	04/90	0.16	Argentina	10/03	0.16
8	Russia	12/92	0.06	South Africa	12/92	0.09	Saudi Arabia Taiwan, Province of	04/06	0.16	Thailand	10/03	0.15
9	Colombia	12/92	0.06	Trinidad	12/92	0.08	China	10/88	0.15	Egypt	12/92	0.14
10	Venezuela	05/91	0.06	Egypt	12/92	0.08	Algeria	04/06	0.13	Gabon	06/01	0.14

[1] Excludes Algeria, Kuwait, Mexico, Nigeria, Norway, Russia, Saudi Arabia, United Arab Emirates and Venezuela.

Table 8: Ordered Probit Results

	(1) full	(2) no_oil	(3) asian15	(4) asian8
US bilateral goods trade balance with partner country (tb)	-2.695*** (0.546)	-2.695*** (0.618)	-1.850** (0.853)	-1.406* (0.766)
Partner country's Current account/GDP ratio (ca)	0.063*** (0.021)	0.121*** (0.032)	0.093** (0.038)	0.060 (0.038)
Partner's Exchange rate relative to PPP (ppp)	-0.824* (0.428)	-1.071** (0.468)	-0.546 (0.763)	-0.925 (0.698)
Partner country's change in reserves/GDP ratio (res)	0.027 (0.017)	-0.005 (0.023)	-0.021 (0.028)	-0.022 (0.029)
Period Dummies	Yes	Yes	Yes	Yes
Observations	2009	1721	473	281
Pseudo R2	0.24	0.29	0.17	0.13

Notes:
a) Robust standard errors in parentheses (clustered by country)
b) * significant at 10%; ** significant at 5%; *** significant at 1%
(1) Using all the 63 countries;
(2) Excludes Algeria, Kuwait, Mexico, Nigeria, Norway, Russia, Saudi Arabia, United Arab Emirates and Venezuela;
(3) Includes Bangladesh, China, Hong Kong SAR, India, Indonesia, Japan, South Korea, Malaysia, Pakistan, Philippines, Russia, Singapore, Sri Lanka, Taiwan, Province of China and Thailand;
(4) Includes China, Hong Kong SAR, Japan, South Korea, Malaysia, Russia, Singapore and Taiwan, Province of China.

Table 9a: Ordered Probit Results, Adding Previous Report's Findings

	(1) full	(2) no_oil	(3) asian15	(4) asian8
US bilateral goods trade balance with partner country (tb)	-0.960*** (0.341)	-1.213*** (0.294)	-0.810*** (0.269)	
Partner country's Current account/GDP ratio (ca)	0.050*** (0.016)	0.082*** (0.030)	0.063** (0.031)	not converged
Partner's Exchange rate relative to PPP (ppp)	-0.573*** (0.222)	-0.686*** (0.227)	-0.500* (0.265)	
Partner country's change in reserves/GDP ratio (res)	0.069*** (0.017)	0.056*** (0.019)	0.041** (0.021)	
Lastpos	4.012*** (0.352)	4.025*** (0.389)	3.618*** (0.353)	
Period Dummies	Yes	Yes	Yes	
Observations	2009	1721	473	
Pseudo R2	0.70	0.71	0.61	

Notes:

a) Robust standard errors in parentheses (clustered by country).

b) * significant at 10%; ** significant at 5%; *** significant at 1%.

(1) Using all the 63 countries;

(2) Excludes Algeria, Kuwait, Mexico, Nigeria, Norway, Russia, Saudi Arabia, United Arab Emirates and Venezuela;

(3) Includes Bangladesh, China, Hong Kong SAR, India, Indonesia, Japan, South Korea, Malaysia, Pakistan, Philippines, Russia, Singapore, Sri Lanka, Taiwan, Province of China and Thailand;

(4) Includes China, Hong Kong SAR, Japan, South Korea, Malaysia, Russia, Singapore and Taiwan, Province of China;

(5) "lastpos" is a dummy which equals to one if a country was investigated during last report.

Table 9b: Ordered Probit Results, Adding More Interaction Terms

	(1) full	(2) no_oil	(3) asian15	(4) asian8
US bilateral goods trade balance with partner country (tb)	-3.479*** (0.898)	-3.742*** (1.118)	-3.280*** (1.183)	-2.797** (1.272)
Partner country's Current account/GDP ratio (ca)	0.076*** (0.022)	0.134*** (0.051)	0.124** (0.051)	0.102* (0.053)
Partner's Exchange rate relative to PPP (ppp)	-1.500*** (0.502)	-1.900*** (0.671)	-1.831*** (0.601)	-1.876*** (0.599)
Partner country's change in reserves/GDP ratio (res)	0.109*** (0.023)	0.088*** (0.021)	0.083*** (0.022)	0.070*** (0.025)
lastpos	5.209*** (0.428)	5.039*** (0.496)	4.808*** (0.564)	4.402*** (0.687)
lastpos*tb	3.644*** (0.959)	3.667*** (1.100)	3.311*** (1.213)	2.904** (1.300)
lastpos*ca	-0.094*** (0.019)	-0.140*** (0.037)	-0.139*** (0.042)	-0.118*** (0.046)
lastpos*ppp	0.444 (0.572)	0.851 (0.723)	0.803 (0.651)	0.802 (0.689)
lastpos*res	-0.087*** (0.026)	-0.063*** (0.019)	-0.059*** (0.018)	-0.050** (0.021)
Period Dummies	Yes	Yes	Yes	Yes
Observations	2009	1721	473	281
Pseudo R2	0.70	0.71	0.61	0.55

Notes:
a) Robust standard errors in parentheses (clustered by country)
b) * significant at 10%; ** significant at 5%; *** significant at 1%
(1) Using all the 63 countries;
(2) Excludes Algeria, Kuwait, Mexico, Nigeria, Norway, Russia, Saudi Arabia, United Arab Emirates and Venezuela;
(3) Includes Bangladesh, China, Hong Kong SAR, India, Indonesia, Japan, South Korea, Malaysia, Pakistan, Philippines, Russia, Singapore, Sri Lanka, Taiwan, Province of China and Thailand;
(4) Includes China, Hong Kong SAR, Japan, South Korea, Malaysia, Russia, Singapore and Taiwan, Province of China;
(5) "lastpos" is a dummy which equals to one if a country was investigated during last report.

Table 10: In-sample prediction for the 8 Asian countries: two reports at the end of sample

Country	Period	Report (RT)	Estimated Probability Full Sample Table 14, Column (1),				Estimated Probability 8 Asian Countries Table 14, Column (4)			
			RT=0	RT=1	RT=2	RT=3	RT=0	RT=1	RT=2	RT=3
China	Nov 2005	2	0.109	0.188	0.634	0.068	0.068	0.182	0.684	0.066
	May 2006	2	0.020	0.068	0.660	0.251	0.005	0.035	0.627	0.332
Hong Kong, SAR	Nov 2005	0	1.000	0.000	0.000	0.000	0.998	0.002	0.000	0.000
	May 2006	0	0.999	0.001	0.000	0.000	0.974	0.023	0.003	0.000
Japan	Nov 2005	0	0.998	0.002	0.000	0.000	0.996	0.004	0.000	0.000
	May 2006	0	0.970	0.025	0.005	0.000	0.923	0.065	0.013	0.000
South Korea	Nov 2005	0	1.000	0.000	0.000	0.000	0.999	0.001	0.000	0.000
	May 2006	0	0.999	0.001	0.000	0.000	0.989	0.010	0.001	0.000
Malaysia	Nov 2005	2	0.115	0.193	0.627	0.064	0.083	0.202	0.662	0.054
	May 2006	2	0.038	0.103	0.686	0.173	0.013	0.066	0.699	0.222
Russia	Nov 2005	0	0.983	0.014	0.002	0.000	0.924	0.063	0.012	0.000
	May 2006	2	0.932	0.053	0.014	0.000	0.686	0.217	0.096	0.000
Singapore	Nov 2005	0	0.948	0.042	0.010	0.000	0.755	0.179	0.066	0.000
	May 2006	0	0.960	0.033	0.007	0.000	0.586	0.263	0.150	0.001
Taiwan Prov. of China	Nov 2005	0	0.998	0.001	0.000	0.000	0.991	0.008	0.001	0.000
	May 2006	0	0.993	0.006	0.001	0.000	0.934	0.056	0.010	0.000

Notes:

RT = 0: not investigated

RT = 1: examined as potential manipulator

RT = 2: policy changes recommended/conducting discussions

RT = 3: manipulating exchange rate

DATA APPENDIX for Part 2

<u>**Treasury Department Report to Congress on International Economic and Exchange Rate Policy**</u>: 31 reports have been released since 1988. Recent reports are available on the Treasury website while older reports were obtained from the American Statistics Index (ASI) Microfiche Library held in the Government Documents section of the Lamont Library at Harvard. They are catalogued under the number 8002-14 for each year.

We classify as zero countries that are not identified in the Treasury reports as having been examined at all. Potential exchange rate manipulators can be broken into three categories. (1) "economies were closely examined as potential exchange rate manipulators if they had significant global current account surpluses and bilateral surpluses with the United States and maintained a fixed or actively managed exchange rate system during the period of this report" (this is the language used in the reports from 1999-2001). For some of these economies, (2) Treasury recommends policy changes or indicates that it has commenced discussions with their governments. Finally, (3) Treasury can escalate to officially designating an economy as a currency "manipulator". These categories have been applied to eight economies since publication of the reports commenced in 1988: China, Taiwan, Province of China, South Korea, Singapore, Hong Kong SAR, Malaysia, Japan and Russia. The data are included in the following table:

Economies Examined as Potential Currency Manipulators

1 = *examined as potential manipulator*

2 = *policy changes recommended/conducting discussions*

3 = *"manipulating" exchange rate*

Date of release	China	Taiwan Prov of China	South Korea	Singapore	Hong Kong SAR	Malaysia	Japan	Russia
Oct 1988	0	**3**	**3**	2	2	0	0	0
Apr 1989	0	**3**	**3**	0	0	0	0	0
Oct 1989	0	2	**3**	0	0	0	0	0
Apr 1990	0	2	2	0	0	0	0	0
Nov 1990	2	2	2	0	0	0	0	0
May 1991	2	2	2	0	0	0	0	0
Nov 1991	2	2	2	0	0	0	0	0
May 1992	**3**	**3**	2	0	0	0	0	0
Dec 1992	**3**	**3**	2	0	0	0	0	0
May 1993	**3**	2	2	0	0	0	0	0
Nov 1993	**3**	2	2	0	0	0	0	0
Jul 1994	**3**	2	2	0	0	0	0	0
Jan 1995	2	2	2	0	0	0	0	0
Aug 1995	2	2	2	0	0	0	0	0
Dec 1995	2	2	2	0	0	0	0	0
Aug 1996	1	1	0	1	0	0	0	0

Feb 1997	2	1	0	1	0	0	0	0
Jan 1999	1	1	0	1	0	2	0	0
Sep 1999	1	1	1	1	0	1	0	0
Mar 2000	1	1	1	0	0	1	0	0
Jan 2001	2	2	2	0	0	2	0	0
Jun 2001	2	2	2	0	0	2	0	1
Oct 2001	1	1	1	0	0	1	0	1
May 2002	0	0	0	0	0	0	0	0
Oct 2002	0	0	0	0	0	0	0	0
May 2003	0	0	0	0	0	0	0	0
Oct 2003	2	0	0	0	0	0	2	0
Apr 2004	2	0	0	0	0	0	2	0
Dec 2004	2	0	0	0	0	0	2	0
May 2005	2	0	0	0	0	2	0	0
Nov 2005	2	0	0	0	0	2	0	0

In the Probit specification in Table 6, the limited dependent variable is defined in two ways. In the first two columns of the table, the dependent variable is whether the economy has been named as an exchange rate manipulator (mapping from the classification in the data appendix table: value of 0 if 0, 1 or 2; value of 1 if 3). In the last two columns of the table, the dependent variable is whether Treasury has at least recommended policy changes or is conducting discussions with the government (value of 0 if 0 or 1; value of 1 if 2 or 3). The ranks for April 2006 are based on the predicted values using data for the period up to December 2005. The probability next to each ranked country refers to the probability of a positive outcome in April 2006. Table 7 reports that China is generally a higher probability target than any other country.

Explanatory variables:

The 63 countries/economies included in the dataset are: Algeria, Argentina, Australia, Austria, Bangladesh, Belgium, Brazil, Canada, Chile, China, Colombia, Costa Rica, Denmark, Dominican Republic, Ecuador, Egypt, El Salvador, Germany, Finland, France, Gabon, Greece, Guatemala, Honduras, Hong Kong SAR, Hungary, India, Indonesia, Ireland, Israel, Italy, Ivory Coast, Jamaica, Japan, Korea, Kuwait, Malaysia, Mexico, Netherlands, New Zealand, Nigeria, Norway, Pakistan, Panama, Peru, Philippines, Poland, Portugal, Russia, Saudi Arabia, Singapore, South Africa, Spain, Sri Lanka, Sweden, Switzerland, Taiwan, Province of China, Thailand, Trinidad and Tobago, Turkey, United Arab Emirates, United Kingdom and Venezuela.

The data are for the period reviewed by a particular report rather than the release date of the report to acknowledge the lags in real time data release. For example, the November 2005 report covers the first half of 2005, so the data corresponding to this report are for the period ending June 2005.

US bilateral goods trade balance with partner country: US goods exports minus US goods imports by country over 12 months as a ratio to US GDP. The trade data are obtained from the U.S.

Census Bureau and the GDP data from Global Financial Data. The series for Russia includes data for the USSR prior to 1993.

Partner country's current account: The current account (surplus is positive) of the partner country over 12 months as a ratio to the partner country's GDP. The Current account data was obtained from the IMF's International Financial Statistics (IFS) Database. Where data were unavailable in the IFS, data from the IMF's World Economic Outlook (WEO) Database were used. The series for Russia prior to 1992 is a Commonwealth of Independent States and Mongolia series from the WEO Database.

Partner's Exchange rate relative to PPP: The PPP conversion rate to official exchange rate ratio, so a number less than 1 reflects undervaluation relative to PPP. The PPP conversion rate data were obtained from the WEO Database. The national currency per US dollar official exchange rate were obtained from the IFS Database. The official exchange rate for Taiwan, Province of China was obtained from Global Financial Data. Data for Argentina (prior to 1991), Brazil (prior to 1996), Ecuador (prior to 2005) and Peru (prior to 1993) are the PPP conversion factor to official exchange rate ratio from the World Bank's World Development Indicators (WDI) Database.

Partner country's change in reserves: The 12 month change in the stock of foreign exchange reserves of the partner country. The foreign exchange reserves data were obtained from the IFS Database. Data for Taiwan, Province of China are for total reserves minus gold, also from the IFS database. Data for Russia prior to 1992 are for the USSR from BIS Annual Reports 1989-1994. Data for Hong Kong SAR are unavailable prior to 1990.

Partner country's GDP and GDP (PPP): The data were obtained from the WEO Database. The series for Russia prior to 1992 is a Commonwealth of Independent States and Mongolia series from the WEO database.

Partner country's imports: Imports C.I.F. data were obtained from the IFS database. The series for Russia prior to 1992 is a USSR/Commonwealth of Independent States merchandise imports series from the WTO.

US unemployment rate: data obtained from BLS.

US GDP growth: Year ended growth in US real GDP. Data obtained from BEA.

Presidential election year: A dummy variable where the two reports prior to a Presidential Election receive a 1 while other reports receive a zero.

Figures and Tables for Part 3:
Estimating the Implicit Weights in the Chinese RMB Basket

Figure 3: Fluctuations in CNY/USD exchange rate

Changes in CNY per USD over Time: 07/22/05-1/8/2007
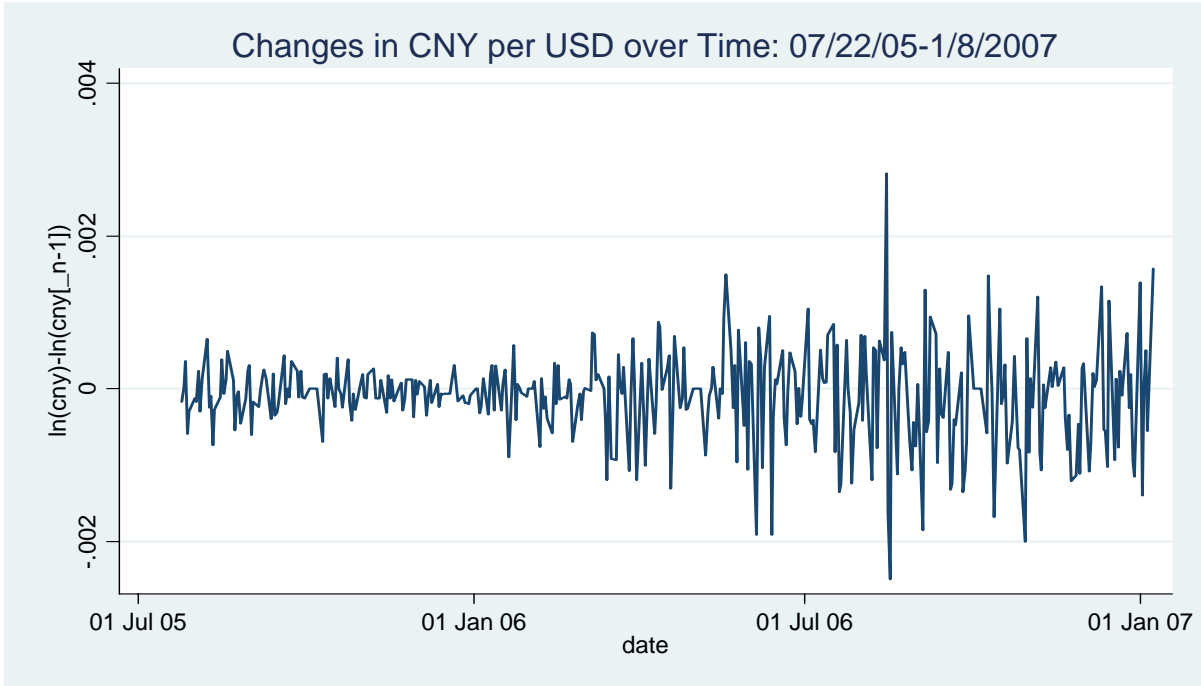
Figure 4: Variability in Yuan/Dollar Exchange Rate

Std. Dev. of Changes in CNY/USD
Every 20 days over 07/01/05-01/08/07
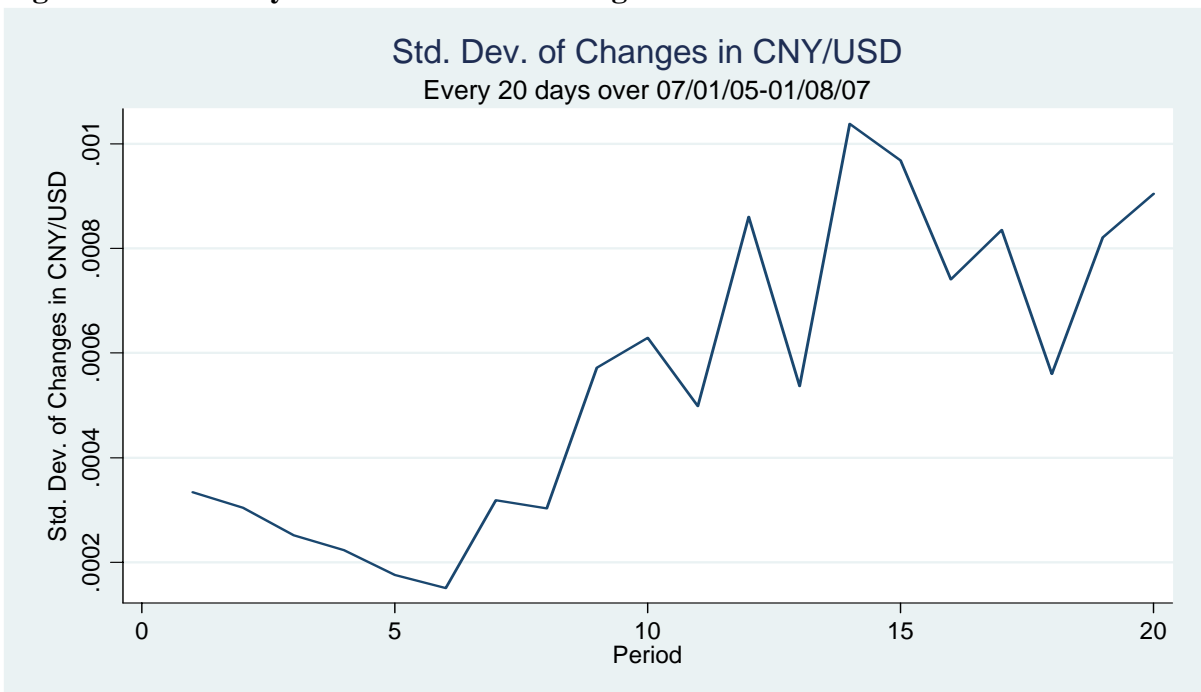
Figure 5: Cumulative Complaints by US Treasury and other Government Officials

Time plots of cumulative US Treasury and Non-Treasury Complaints

Legend:
- cumulative non-treasury report
- cumulative treasury report
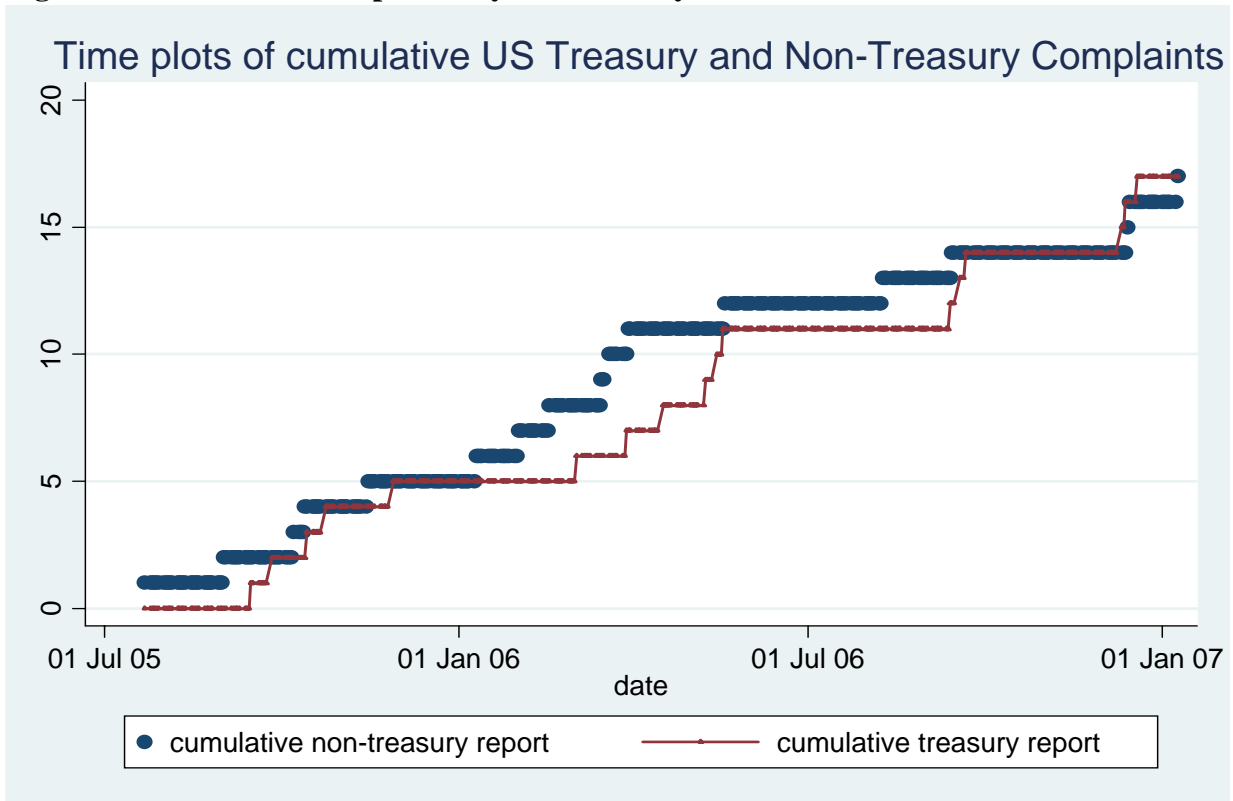
Table 11: Estimating the Implicit Basket Weights

Whole Sample (07/22/2005 – 01/08/2007, Numeraire currency = SDR)

	(1) CNY	(2) JPY	(3) HKD	(4) SGD	(5) MYR	(6) KRW
US Dollar	0.904**	-0.406**	0.970**	0.335**	0.507**	-0.209**
	(0.021)	(0.126)	(0.008)	(0.044)	(0.055)	(0.096)
Euro	-0.006	0.268**	-0.008	0.123**	-0.039	-0.111
	(0.014)	(0.081)	(0.005)	(0.048)	(0.059)	(0.100)
Japanese Yen	0.008		0.010**	0.162**	0.045	0.041
	(0.009)		(0.003)	(0.020)	(0.027)	(0.046)
Korean Won	0.002	0.052	0.004	0.064**	0.033	
	(0.009)	(0.055)	(0.004)	(0.025)	(0.031)	
Singapore Dollar	-0.018	0.913**	0.009		0.004	0.305**
	(0.021)	(0.113)	(0.008)		(0.065)	(0.103)
British Pound	-0.004	0.172**	0.005	-0.003	0.030	-0.146**
	(0.011)	(0.064)	(0.004)	(0.029)	(0.035)	(0.059)
Malaysia Ringgit	0.053**	0.079	0.001	0.036		0.125
	(0.015)	(0.091)	(0.006)	(0.041)		(0.086)
Russia Ruble	-0.018	0.000	-0.002			
	(0.021)	(0.128)	(0.008)			
Australian Dollar	-0.003	0.014	-0.002	0.075**	-0.000	0.060
	(0.008)	(0.048)	(0.003)	(0.018)	(0.023)	(0.039)
Thailand Baht	0.006	0.011	0.003	0.151**	-0.022	
	(0.010)	(0.058)	(0.004)	(0.023)	(0.030)	
Canadian Dollar	0.003	-0.057	0.003			
	(0.008)	(0.045)	(0.003)			
Swiss Franc				-0.044	-0.034	0.078
				(0.045)	(0.056)	(0.094)
Taiwan Dollar				0.051	0.141**	0.496**
				(0.036)	(0.044)	(0.070)
Philippines Peso					0.095**	0.034
					(0.017)	(0.030)
Indian Rupee				0.034	0.123**	
				(0.028)	(0.034)	
Indonesia Rupiah				0.039	-0.006	
				(0.032)	(0.039)	
Constant	0.00009**	-0.00048**	-0.00001	0.00012	0.00016*	0.00020
	(0.00003)	(0.00017)	(0.00001)	(0.00007)	(0.00009)	(0.00015)
Observations	382	382	382	382	382	382
Root MSE	0.00055	0.00331	0.00021	0.00139	0.00171	0.0029
R-squared	0.95	0.54	0.99	0.76	0.62	0.32

Notes: 1). Standard errors in parentheses; * significant at 10%; ** significant at 5%;
2). Change in the log foreign exchange value of the target currency is regressed on changes in the log foreign exchange values of other currencies;
3). Data Source: Bloomberg daily closing price, New York.

Table 12: First Subperiod (07/22 – 10/31/2005, numeraire currency = SDR)

	(1) CNY	(2) JPY	(3) HKD	(4) SGD	(5) MYR	(6) KRW
US Dollar	0.997**	-0.208	1.002**	0.468**	0.964**	0.559*
	(0.034)	(0.348)	(0.030)	(0.149)	(0.127)	(0.294)
Euro	-0.008	0.053	-0.013	0.085	-0.057	0.172
	(0.015)	(0.154)	(0.013)	(0.111)	(0.126)	(0.234)
Japanese Yen	0.010		0.015	0.088	-0.058	0.179
	(0.013)		(0.011)	(0.057)	(0.065)	(0.120)
Korean Won	-0.001	0.255**	0.016	-0.001	-0.050	
	(0.013)	(0.127)	(0.011)	(0.061)	(0.068)	
Singapore Dollar	-0.043	0.547*	0.005		-0.098	-0.157
	(0.028)	(0.282)	(0.025)		(0.146)	(0.245)
British Pound	-0.007	0.415**	0.005	-0.028	0.042	-0.242*
	(0.013)	(0.127)	(0.012)	(0.063)	(0.071)	(0.128)
Malaysia Ringgit	-0.015	-0.251	-0.021	-0.077		-0.186
	(0.026)	(0.261)	(0.023)	(0.117)		(0.240)
Russia Ruble	0.005	0.055	-0.029			
	(0.027)	(0.276)	(0.024)			
Australian Dollar	0.012	-0.014	-0.004	0.005	-0.008	0.212**
	(0.010)	(0.107)	(0.009)	(0.044)	(0.049)	(0.086)
Thailand Baht	0.010	0.310	-0.011	0.365**	0.119	
	(0.019)	(0.192)	(0.017)	(0.087)	(0.112)	
Canadian Dollar	-0.011	0.003	-0.002			
	(0.008)	(0.082)	(0.007)			
Swiss Franc				0.111	0.029	-0.048
				(0.110)	(0.127)	(0.234)
Taiwan Dollar				0.084	0.013	0.386**
				(0.089)	(0.100)	(0.169)
Philippines Peso					0.005	0.012
					(0.023)	(0.042)
Indian Rupee				-0.092	0.069	
				(0.079)	(0.090)	
Indonesia Rupiah				0.087	-0.066	
				(0.081)	(0.091)	
constant	0.00005	-0.00058	0.00004	-0.00017	-0.00007	0.00028
	(0.00003)	(0.00035)	(0.00003)	(0.00017)	(0.00020)	(0.00034)
Observations	72	72	72	72	72	72
Root MSE	0.00027	0.00276	0.00024	0.00124	0.00138	0.00262
R-squared	0.99	0.65	0.99	0.81	0.83	0.46

Notes: 1). Standard errors in parentheses; * significant at 10%; ** significant at 5%;
2). Change in the log value of the target currency is regressed on changes in the log values of other currencies;
3). Data Source: Bloomberg daily closing price, New York.

Table 13: Second Subperiod (11/1/2005 – 1/31/2006, numeraire currency = SDR)

	(1)	(2)	(3)	(4)	(5)	(6)
	CNY	JPY	HKD	SGD	MYR	KRW
US Dollar	0.968**	-1.056	0.965**	0.634**	0.794**	-0.718
	(0.031)	(0.634)	(0.016)	(0.178)	(0.084)	(0.473)
Euro	-0.006	0.653**	0.006	0.048	0.048	0.123
	(0.011)	(0.212)	(0.006)	(0.115)	(0.079)	(0.271)
Japanese Yen	-0.008		0.004	0.098**	0.060*	0.042
	(0.006)		(0.003)	(0.043)	(0.031)	(0.109)
Korean Won	0.019**	0.054	-0.006	0.017	0.003	
	(0.007)	(0.145)	(0.004)	(0.056)	(0.038)	
Singapore Dollar	-0.005	0.937**	0.021*		-0.084	0.291
	(0.021)	(0.415)	(0.011)		(0.095)	(0.329)
British Pound	0.010	-0.011	-0.007	0.024	0.104**	-0.253
	(0.009)	(0.186)	(0.005)	(0.063)	(0.041)	(0.151)
Malaysia Ringgit	0.032	0.904	0.022	-0.135		0.464
	(0.028)	(0.574)	(0.015)	(0.198)		(0.449)
Russia Ruble	-0.016	-0.171	-0.003			
	(0.013)	(0.276)	(0.007)			
Australian Dollar	-0.006	-0.111	-0.004	0.102**	0.026	0.119
	(0.007)	(0.154)	(0.004)	(0.046)	(0.033)	(0.116)
Thailand Baht	-0.014	-0.083	0.000	0.181**	0.162**	
	(0.012)	(0.241)	(0.006)	(0.076)	(0.050)	
Canadian Dollar	0.005	-0.179	-0.001			
	(0.008)	(0.156)	(0.004)			
Swiss Franc				-0.019	-0.182**	-0.074
				(0.126)	(0.083)	(0.276)
Taiwan Dollar				-0.035	0.070	0.760**
				(0.083)	(0.056)	(0.164)
Philippines Peso					0.036	-0.011
					(0.024)	(0.088)
Indian Rupee				-0.002	0.056	
				(0.052)	(0.035)	
Indonesia Rupiah				0.024	-0.055	
				(0.077)	(0.053)	
Constant	0.00004	-0.00077	-0.00002	0.00052**	-0.00008	0.00036
	(0.00003)	(0.00060)	(0.00002)	(0.00018)	(0.00013)	(0.00048)
Observations	66	66	66	66	66	66
Root MSE	0.0002	0.00415	0.0001	0.00133	0.00091	0.00333
R-squared	1.00	0.56	1.00	0.82	0.93	0.42

Notes: 1). Standard errors in parentheses; * significant at 10%; ** significant at 5%;
2). Change in the log value of the target currency is regressed on changes in the log values of other currencies;
3). Data Source: Bloomberg daily closing price, New York.

Table 14: Third Subperiod (2/1/2006 – 4/28/2006, numeraire currency = SDR)

	(1) CNY	(2) JPY	(3) HKD	(4) SGD	(5) MYR	(6) KRW
US Dollar	0.695**	-0.589	0.975**	0.259	0.563**	-0.523
	(0.050)	(0.544)	(0.018)	(0.176)	(0.079)	(0.453)
Euro	-0.049**	-0.015	-0.018**	-0.005	0.027	-0.127
	(0.023)	(0.248)	(0.008)	(0.100)	(0.059)	(0.238)
Japanese Yen	-0.017		0.001	0.135**	-0.013	-0.039
	(0.013)		(0.004)	(0.041)	(0.026)	(0.109)
Korean Won	0.033**	0.026	-0.003	0.113**	-0.008	
	(0.016)	(0.171)	(0.006)	(0.055)	(0.034)	
Singapore Dollar	-0.065*	1.212**	0.021		0.118	0.629*
	(0.037)	(0.361)	(0.013)		(0.081)	(0.318)
British Pound	0.012	0.336*	0.017**	-0.145*	-0.031	-0.159
	(0.018)	(0.191)	(0.006)	(0.078)	(0.048)	(0.191)
Malaysia Ringgit	0.239**	0.009	-0.008	0.387*		0.078
	(0.058)	(0.636)	(0.021)	(0.227)		(0.563)
Russia Ruble	0.126**	0.304	-0.003			
	(0.040)	(0.437)	(0.014)			
Australian Dollar	-0.008	0.034	0.000	0.012	0.024	0.029
	(0.012)	(0.133)	(0.004)	(0.040)	(0.023)	(0.096)
Thailand Baht	0.047**	0.122	0.007	0.106*	-0.025	
	(0.016)	(0.173)	(0.006)	(0.058)	(0.035)	
Canadian Dollar	-0.005	-0.280	0.005			
	(0.016)	(0.168)	(0.006)			
Swiss Franc				0.170	-0.024	0.046
				(0.104)	(0.063)	(0.250)
Taiwan Dollar				0.193*	0.064	0.426*
				(0.096)	(0.058)	(0.231)
Philippines Peso					0.059**	0.140
					(0.028)	(0.116)
Indian Rupee				-0.094	0.039	
				(0.065)	(0.040)	
Indonesia Rupiah				-0.085	0.134**	
				(0.112)	(0.063)	
Constant	-0.00008	-0.00027	0.00000	0.00000	0.00047**	-0.00010
	(0.00006)	(0.00060)	(0.00002)	(0.00022)	(0.00011)	(0.00050)
Observations	63	63	63	63	63	63
Root MSE	0.00037	0.00404	0.00013	0.00133	0.00078	0.00327
R-squared	0.98	0.44	1.00	0.76	0.91	0.37

Notes: 1). Standard errors in parentheses; * significant at 10%; ** significant at 5%;
2). Change in the log value of the target currency is regressed on changes in the log values of other currencies;
3). Data Source: Bloomberg daily closing price, New York.

Table 15: Fourth Subperiod (5/1/2006 – 7/31/2006, numeraire currency = SDR)

	(1) CNY	(2) JPY	(3) HKD	(4) SGD	(5) MYR	(6) KRW
US Dollar	0.947**	-0.419*	0.970**	0.232**	0.423**	-0.199
	(0.045)	(0.222)	(0.014)	(0.077)	(0.142)	(0.187)
Euro	0.005	0.193	-0.013	0.271**	-0.242	-0.027
	(0.040)	(0.203)	(0.012)	(0.134)	(0.196)	(0.250)
Japanese Yen	0.052*		0.021**	0.236**	0.035	-0.068
	(0.026)		(0.008)	(0.057)	(0.096)	(0.127)
Korean Won	-0.076**	-0.117	-0.006	0.102	0.027	
	(0.029)	(0.148)	(0.009)	(0.072)	(0.105)	
Singapore Dollar	0.002	0.909**	0.007		-0.059	0.510**
	(0.055)	(0.256)	(0.017)		(0.195)	(0.243)
British Pound	-0.043	0.285*	-0.007	-0.019	0.096	-0.188
	(0.032)	(0.162)	(0.010)	(0.081)	(0.116)	(0.157)
Malaysia Ringgit	0.076**	-0.177	0.010	-0.029		0.171
	(0.033)	(0.166)	(0.010)	(0.087)		(0.183)
Russia Ruble	-0.030	-0.127	0.024			
	(0.053)	(0.273)	(0.016)			
Australian Dollar	0.003	0.013	-0.001	0.090*	-0.036	-0.049
	(0.020)	(0.104)	(0.006)	(0.045)	(0.068)	(0.093)
Thailand Baht	0.036	0.203	-0.004	0.149**	0.040	
	(0.031)	(0.157)	(0.009)	(0.073)	(0.109)	
Canadian Dollar	-0.040**	0.044	0.002			
	(0.017)	(0.090)	(0.005)			
Swiss Franc				-0.168	0.217	0.062
				(0.131)	(0.189)	(0.233)
Taiwan Dollar				0.086	0.247*	0.455**
				(0.096)	(0.138)	(0.178)
Philippines Peso					0.198**	0.026
					(0.055)	(0.074)
Indian Rupee				0.075	0.145	
				(0.075)	(0.107)	
Indonesia Rupiah				0.106	-0.168	
				(0.080)	(0.124)	
constant	0.00009	-0.00027	-0.00003	0.00015	-0.00005	0.00003
	(0.00008)	(0.00039)	(0.00002)	(0.00019)	(0.00027)	(0.00036)
Observations	66	66	66	66	66	66
Root MSE	0.00061	0.00314	0.00018	0.00145	0.00206	0.00283
R-squared	0.97	0.77	1.00	0.89	0.62	0.42

Notes: 1). Standard errors in parentheses;* significant at 10%; ** significant at 5%;
2). Change in the log value of the target currency is regressed on changes in the log values of other currencies;
3). Data Source: Bloomberg daily closing price, New York.

Table 16: Fifth Subperiod (8/1/2006 – 10/31/2006, numeraire currency = SDR)

	(1) CNY	(2) JPY	(3) HKD	(4) SGD	(5) MYR	(6) KRW
US Dollar	0.867**	-1.074**	0.960**	0.210	0.062	-0.121
	(0.134)	(0.386)	(0.045)	(0.138)	(0.135)	(0.263)
Euro	0.005	-0.067	-0.008	0.209	-0.205	-0.210
	(0.100)	(0.309)	(0.034)	(0.159)	(0.152)	(0.324)
Japanese Yen	0.019		0.015	0.198**	0.107	0.065
	(0.044)		(0.015)	(0.067)	(0.069)	(0.148)
Korean Won	-0.024	-0.019	0.001	0.044	0.069	
	(0.040)	(0.123)	(0.014)	(0.069)	(0.066)	
Singapore Dollar	-0.054	0.464**	0.038		0.125	0.078
	(0.077)	(0.229)	(0.026)		(0.132)	(0.271)
British Pound	0.003	0.016	-0.001	0.042	-0.074	-0.116
	(0.041)	(0.125)	(0.014)	(0.072)	(0.069)	(0.144)
Malaysia Ringgit	0.122	0.174	0.011	0.142		0.377
	(0.084)	(0.258)	(0.029)	(0.143)		(0.273)
Russia Ruble	-0.165	1.242*	-0.029			
	(0.217)	(0.649)	(0.074)			
Australian Dollar	-0.013	0.269**	0.000	0.016	0.052	0.093
	(0.033)	(0.096)	(0.011)	(0.056)	(0.054)	(0.111)
Thailand Baht	-0.023	-0.016	-0.010	0.090	0.126*	
	(0.040)	(0.122)	(0.013)	(0.069)	(0.066)	
Canadian Dollar	0.014	-0.243**	0.008			
	(0.034)	(0.098)	(0.011)			
Swiss Franc				-0.071	-0.009	0.137
				(0.125)	(0.120)	(0.252)
Taiwan Dollar				0.031	0.104	-0.002
				(0.119)	(0.113)	(0.235)
Philippines Peso					0.012	0.229
					(0.079)	(0.156)
Indian Rupee				0.161**	0.064	
				(0.079)	(0.081)	
Indonesia Rupiah				0.014	0.172*	
				(0.099)	(0.093)	
Constant	0.00022**	-0.00047	-0.00001	0.00011	-0.00012	0.00028
	(0.00010)	(0.00031)	(0.00004)	(0.00019)	(0.00018)	(0.00036)
Observations	66	66	66	66	66	66
Root MSE	0.0008	0.00245	0.00027	0.00137	0.00131	0.00279
R-squared	0.81	0.63	0.98	0.70	0.62	0.24

Notes: 1). Standard errors in parentheses; * significant at 10%; ** significant at 5%;
2). Change in the log value of the target currency is regressed on changes in the log values of other currencies;
3). Data Source: Bloomberg daily closing price, New York.

Table 17: Sixth Subperiod (10/1/2006 – 01/08/2007, numeraire currency = SDR)

	(1) CNY	(2) JPY	(3) HKD	(4) SGD	(5) MYR	(6) KRW
US Dollar	0.886**	-0.566	0.938**	0.331**	0.207	-0.348
	(0.087)	(0.371)	(0.043)	(0.137)	(0.183)	(0.255)
Euro	0.039	0.302	-0.005	0.073	0.136	-0.537*
	(0.064)	(0.275)	(0.032)	(0.143)	(0.185)	(0.299)
Japanese Yen	0.007		0.015	0.156**	0.290**	0.009
	(0.030)		(0.015)	(0.071)	(0.090)	(0.160)
Korean Won	-0.002	0.013	0.024*	0.085	0.085	
	(0.029)	(0.125)	(0.014)	(0.060)	(0.079)	
Singapore Dollar	-0.108*	0.636**	-0.009		-0.164	0.447*
	(0.061)	(0.251)	(0.030)		(0.171)	(0.254)
British Pound	-0.026	0.003	0.022	0.021	0.008	0.262
	(0.041)	(0.180)	(0.020)	(0.091)	(0.124)	(0.199)
Malaysia Ringgit	0.057	0.304*	0.014	-0.035		0.191
	(0.041)	(0.171)	(0.020)	(0.091)		(0.215)
Russia Ruble	-0.108	0.345	-0.034			
	(0.124)	(0.537)	(0.062)			
Australian Dollar	0.012	0.083	-0.004	0.094	-0.167**	-0.049
	(0.028)	(0.120)	(0.014)	(0.059)	(0.080)	(0.132)
Thailand Baht	0.017	-0.085	0.014	0.082**	0.036	
	(0.020)	(0.086)	(0.010)	(0.039)	(0.054)	
Canadian Dollar	0.025	0.008	0.019			
	(0.028)	(0.123)	(0.014)			
Swiss Franc				-0.030	-0.221	0.156
				(0.126)	(0.162)	(0.277)
Taiwan Dollar				-0.067	0.302**	0.265
				(0.090)	(0.110)	(0.192)
Philippines Peso					0.350**	0.222
					(0.091)	(0.166)
Indian Rupee				0.263**	0.098	
				(0.103)	(0.140)	
Indonesia Rupiah				-0.008	-0.157*	
				(0.072)	(0.092)	
Constant	0.00015*	-0.00072*	-0.00001	0.00023	0.00065**	-0.00030
	(0.00009)	(0.00037)	(0.00004)	(0.00018)	(0.00023)	(0.00039)
Observations	71	71	71	71	71	71
Root MSE	0.00064	0.00278	0.00032	0.00135	0.00175	0.00297
R-squared	0.90	0.50	0.98	0.72	0.63	0.28

Notes: 1). Standard errors in parentheses; * significant at 10%; ** significant at 5%;
2). Change in the log value of the target currency is regressed on changes in the log values of other currencies;
3). Data Source: Bloomberg daily closing price, New York.

Table 11A: Estimating the Implicit Weights

Whole Sample (07/22/2005 – 01/08/2007, Numeraire currency =gold)

	(1) CNY	(2) JPY	(3) HKD	(4) SGD	(5) MYR	(6) KRW
US Dollar	0.910**	-0.444**	0.970**	0.328**	0.555**	-0.113
	(0.022)	(0.127)	(0.008)	(0.044)	(0.053)	(0.097)
Euro	-0.004	0.282**	-0.008	0.125**	-0.056	-0.150
	(0.014)	(0.082)	(0.005)	(0.048)	(0.060)	(0.102)
British Pound	0.006	0.162**	0.006	-0.005	0.045	-0.119*
	(0.011)	(0.063)	(0.004)	(0.029)	(0.035)	(0.061)
Australian Dollar	-0.007	0.036	-0.002	0.077**	-0.024	0.031
	(0.009)	(0.049)	(0.003)	(0.019)	(0.024)	(0.042)
Japanese Yen	0.006		0.010**	0.163**	0.044	0.033
	(0.009)		(0.003)	(0.020)	(0.027)	(0.047)
Swiss Franc				-0.048	-0.012	0.158*
				(0.045)	(0.055)	(0.095)
Taiwan Dollar				0.045	0.181**	0.624**
				(0.035)	(0.042)	(0.066)
Singapore Dollar	-0.019	0.906**	0.009		0.002	0.319**
	(0.021)	(0.113)	(0.008)		(0.065)	(0.105)
Indian Rupee					0.090**	0.030
					(0.017)	(0.030)
Malaysia Ringgit	0.072**	0.088	0.003	0.034		0.177**
	(0.016)	(0.090)	(0.006)	(0.041)		(0.088)
Korean Won	0.020**	0.044	0.006*	0.061**	0.049	
	(0.009)	(0.051)	(0.003)	(0.024)	(0.030)	
Thailand Baht	0.009	0.010	0.003	0.150**	-0.019	
	(0.010)	(0.058)	(0.004)	(0.023)	(0.030)	
Philippines Peso				0.036	0.116**	
				(0.028)	(0.034)	
Indonesia Rupiah				0.035	0.012	
				(0.031)	(0.039)	
Russia Ruble	0.005	-0.013	0.000			
	(0.022)	(0.125)	(0.008)			
Canadian Dollar	0.004	-0.048	0.003			
	(0.008)	(0.045)	(0.003)			
Constant	0.00008**	-0.00046**	-0.00001	0.00012	0.00015*	0.00021
	(0.00003)	(0.00017)	(0.00001)	(0.00007)	(0.00009)	(0.00016)
Observations	382	382	382	382	382	382
Root MSE	0.00057	0.0033	0.00021	0.00139	0.00172	0.00297
R-squared	1.00	0.94	1.00	0.99	0.98	0.95

Notes: 1). Standard errors in parentheses;* significant at 10%; ** significant at 5%;
2). Change in the log value of the target currency is regressed on changes in the log values of other currencies;
3). Data Source: Bloomberg daily closing price, New York.

Table 12A: First Subperiod (07/22 – 10/31/2005, numeraire currency = gold)

	(1) CNY	(2) JPY	(3) HKD	(4) SGD	(5) MYR	(6) KRW
US Dollar	1.003**	-0.172	1.001**	0.502**	0.998**	0.533*
	(0.036)	(0.351)	(0.032)	(0.151)	(0.129)	(0.294)
Euro	-0.012	0.013	-0.010	0.076	-0.076	0.204
	(0.016)	(0.158)	(0.014)	(0.113)	(0.127)	(0.235)
British Pound	0.005	0.428**	0.008	-0.016	0.060	-0.272**
	(0.014)	(0.130)	(0.013)	(0.066)	(0.074)	(0.131)
Australian Dollar	0.005	-0.023	-0.006	-0.006	-0.021	0.232**
	(0.011)	(0.109)	(0.010)	(0.046)	(0.051)	(0.088)
Japanese Yen	0.002		0.012	0.096*	-0.078	0.176
	(0.013)		(0.012)	(0.057)	(0.064)	(0.118)
Swiss Franc				0.080	0.065	-0.010
				(0.108)	(0.122)	(0.226)
Taiwan Dollar				0.048	0.057	0.445**
				(0.082)	(0.092)	(0.143)
Singapore Dollar	-0.056*	0.527*	0.003		-0.131	-0.121
	(0.030)	(0.286)	(0.027)		(0.146)	(0.247)
Indian Rupee					0.003	0.003
					(0.022)	(0.041)
Malaysia Ringgit	-0.017	-0.290	-0.018	-0.104		-0.141
	(0.027)	(0.262)	(0.024)	(0.117)		(0.238)
Korean Won	0.009	0.245*	0.021*	-0.002	-0.034	
	(0.013)	(0.126)	(0.012)	(0.062)	(0.069)	
Thailand Baht	0.025	0.268	-0.001	0.350**	0.149	
	(0.019)	(0.188)	(0.017)	(0.087)	(0.109)	
Philippines Peso				-0.090	0.044	
				(0.079)	(0.090)	
Indonesia Rupiah				0.046	-0.055	
				(0.081)	(0.090)	
Russia Ruble	0.038	-0.034	-0.008			
	(0.026)	(0.258)	(0.024)			
Canadian Dollar	-0.013	-0.004	-0.002			
	(0.008)	(0.083)	(0.008)			
constant	0.00001	-0.00063*	0.00004	-0.00024	-0.00009	0.00041
	(0.00004)	(0.00036)	(0.00003)	(0.00018)	(0.00020)	(0.00034)
Observations	72	72	72	72	72	72
Root MSE	0.00028	0.00277	0.00025	0.00124	0.00139	0.00261
R-squared	1.00	0.88	1.00	0.98	0.98	0.91

Notes: 1). Standard errors in parentheses; * significant at 10%; ** significant at 5%;
2). Change in the log value of the target currency is regressed on changes in the log values of other currencies;
3). Data Source: Bloomberg daily closing price, New York.

Table 13A: Second Subperiod (11/1/2005 – 1/31/2006, numeraire currency = gold)

	(1) CNY	(2) JPY	(3) HKD	(4) SGD	(5) MYR	(6) KRW
US Dollar	0.980**	-1.089*	0.966**	0.644**	0.774**	-0.623
	(0.032)	(0.623)	(0.016)	(0.176)	(0.081)	(0.479)
Euro	-0.011	0.688**	0.006	0.038	0.040	0.084
	(0.012)	(0.211)	(0.006)	(0.114)	(0.077)	(0.278)
British Pound	0.014	-0.034	-0.007	0.025	0.106**	-0.244
	(0.009)	(0.183)	(0.005)	(0.063)	(0.040)	(0.156)
Australian Dollar	-0.009	-0.065	-0.004	0.105**	0.013	0.101
	(0.008)	(0.159)	(0.004)	(0.048)	(0.033)	(0.124)
Japanese Yen	-0.007		0.004	0.089**	0.065**	0.040
	(0.007)		(0.003)	(0.044)	(0.030)	(0.112)
Swiss Franc				0.005	-0.187**	-0.024
				(0.123)	(0.078)	(0.280)
Taiwan Dollar				-0.038	0.081	0.844**
				(0.083)	(0.056)	(0.160)
Singapore Dollar	0.002	0.897**	0.021*		-0.068	0.400
	(0.021)	(0.409)	(0.011)		(0.093)	(0.330)
Indian Rupee					0.025	-0.002
					(0.025)	(0.093)
Malaysia Ringgit	0.019	1.024*	0.022	-0.115		0.433
	(0.030)	(0.578)	(0.015)	(0.204)		(0.470)
Korean Won	0.023**	0.048	-0.005	0.023	0.001	
	(0.007)	(0.138)	(0.003)	(0.055)	(0.037)	
Thailand Baht	-0.008	-0.064	0.001	0.190**	0.152**	
	(0.012)	(0.231)	(0.006)	(0.075)	(0.049)	
Philippines Peso				-0.004	0.050	
				(0.052)	(0.035)	
Indonesia Rupiah				0.050	-0.070	
				(0.074)	(0.049)	
Russia Ruble	-0.010	-0.184	-0.002			
	(0.013)	(0.267)	(0.007)			
Canadian Dollar	0.006	-0.170	-0.001			
	(0.008)	(0.155)	(0.004)			
Constant	0.00002	-0.00062	-0.00002	0.00053**	-0.00011	0.00025
	(0.00003)	(0.00061)	(0.00002)	(0.00019)	(0.00013)	(0.00050)
Observations	66	66	66	66	66	66
Root MSE	0.00021	0.00411	0.0001	0.00133	0.00088	0.00339
R-squared	1.00	0.91	1.00	0.99	1.00	0.94

Notes: 1). Standard errors in parentheses; * significant at 10%; ** significant at 5%;
2). Change in the log value of the target currency is regressed on changes in the log values of other currencies;
3). Data Source: Bloomberg daily closing price, New York.

Table 14A: Third Subperiod (2/1/2006 – 4/28/2006, numeraire currency = gold)

	(1) CNY	(2) JPY	(3) HKD	(4) SGD	(5) MYR	(6) KRW
US Dollar	0.683**	-0.499	0.971**	0.249	0.591**	-0.628
	(0.051)	(0.557)	(0.018)	(0.179)	(0.079)	(0.444)
Euro	-0.053**	0.029	-0.020**	-0.007	0.030	-0.257
	(0.023)	(0.250)	(0.008)	(0.101)	(0.060)	(0.233)
British Pound	0.009	0.304*	0.018**	-0.157*	-0.016	-0.172
	(0.016)	(0.177)	(0.006)	(0.078)	(0.049)	(0.186)
Australian Dollar	-0.011	0.041	-0.000	0.008	0.031	-0.063
	(0.012)	(0.135)	(0.004)	(0.042)	(0.025)	(0.101)
Japanese Yen	-0.016		0.001	0.137**	-0.017	-0.003
	(0.013)		(0.004)	(0.041)	(0.027)	(0.108)
Swiss Franc				0.167	-0.018	0.226
				(0.104)	(0.064)	(0.241)
Taiwan Dollar				0.194*	0.065	0.617**
				(0.097)	(0.059)	(0.223)
Singapore Dollar	-0.064*	1.216**	0.021		0.117	0.541*
	(0.036)	(0.361)	(0.013)		(0.082)	(0.313)
Indian Rupee					0.062**	0.145
					(0.029)	(0.113)
Malaysia Ringgit	0.250**	-0.145	-0.002	0.376		0.506
	(0.057)	(0.633)	(0.020)	(0.225)		(0.539)
Korean Won	0.027*	0.016	-0.003	0.100*	0.012	
	(0.015)	(0.164)	(0.005)	(0.058)	(0.035)	
Thailand Baht	0.052**	0.095	0.008	0.109*	-0.030	
	(0.016)	(0.179)	(0.006)	(0.059)	(0.036)	
Philippines Peso				-0.093	0.037	
				(0.065)	(0.041)	
Indonesia Rupiah				-0.087	0.141**	
				(0.112)	(0.064)	
Russia Ruble	0.130**	0.207	0.001			
	(0.038)	(0.424)	(0.014)			
Canadian Dollar	-0.010	-0.240	0.004			
	(0.016)	(0.176)	(0.006)			
Constant	-0.00009*	-0.00014	-0.00000	-0.00001	0.00049**	-0.00038
	(0.00006)	(0.00062)	(0.00002)	(0.00022)	(0.00011)	(0.00049)
Observations	63	63	63	63	63	63
Root MSE	0.00037	0.00404	0.00013	0.00133	0.00079	0.0032
R-squared	1.00	0.95	1.00	0.99	1.00	0.96

Notes: 1). Standard errors in parentheses; * significant at 10%; ** significant at 5%;
2). Change in the log value of the target currency is regressed on changes in the log values of other currencies;
3). Data Source: Bloomberg daily closing price, New York.

Table 15A: Fourth Subperiod (5/1/2006 – 7/31/2006, numeraire currency = gold)

	(1) CNY	(2) JPY	(3) HKD	(4) SGD	(5) MYR	(6) KRW
US Dollar	0.941**	-0.341	0.959**	0.183**	0.447**	-0.051
	(0.046)	(0.234)	(0.013)	(0.079)	(0.139)	(0.181)
Euro	0.006	0.182	-0.011	0.297**	-0.256	-0.112
	(0.040)	(0.206)	(0.011)	(0.136)	(0.196)	(0.250)
British Pound	-0.041	0.305*	-0.008	-0.021	0.104	-0.178
	(0.033)	(0.163)	(0.009)	(0.082)	(0.116)	(0.161)
Australian Dollar	0.008	-0.031	0.005	0.122**	-0.066	-0.117
	(0.021)	(0.110)	(0.006)	(0.048)	(0.072)	(0.099)
Japanese Yen	0.061**		0.021**	0.233**	0.033	-0.065
	(0.026)		(0.007)	(0.058)	(0.096)	(0.130)
Swiss Franc				-0.205	0.225	0.162
				(0.130)	(0.186)	(0.227)
Taiwan Dollar				0.041	0.284**	0.607**
				(0.093)	(0.127)	(0.158)
Singapore Dollar	-0.013	0.919**	0.003		-0.064	0.523**
	(0.056)	(0.260)	(0.016)		(0.192)	(0.250)
Indian Rupee					0.182**	0.016
					(0.056)	(0.077)
Malaysia Ringgit	0.107**	-0.133	0.014	-0.018		0.193
	(0.032)	(0.162)	(0.009)	(0.090)		(0.186)
Korean Won	-0.047*	-0.070	-0.003	0.094	0.020	
	(0.028)	(0.141)	(0.008)	(0.074)	(0.105)	
Thailand Baht	0.022	0.204	-0.008	0.141*	0.060	
	(0.032)	(0.160)	(0.009)	(0.076)	(0.110)	
Philippines Peso				0.050	0.174	
				(0.076)	(0.105)	
Indonesia Rupiah				0.092	-0.157	
				(0.081)	(0.120)	
Russia Ruble	0.003	-0.082	0.028*			
	(0.053)	(0.272)	(0.015)			
Canadian Dollar	-0.039**	0.035	0.004			
	(0.018)	(0.091)	(0.005)			
Constant	0.00010	-0.00024	-0.00003	0.00010	-0.00002	0.00015
	(0.00008)	(0.00040)	(0.00002)	(0.00019)	(0.00026)	(0.00036)
Observations	66	66	66	66	66	66
Root MSE	0.00062	0.00317	0.00018	0.000147	0.00205	0.00288
R-squared	1.00	0.97	1.00	0.99	0.99	0.98

Notes: 1). Standard errors in parentheses; * significant at 10%; ** significant at 5%;
2). Change in the log value of the target currency is regressed on changes in the log values of other currencies;
3). Data Source: Bloomberg daily closing price, New York.

Table 16A: Fifth Subperiod (8/1/2006 – 12/5/2006, numeraire currency = gold)

	(1) CNY	(2) JPY	(3) HKD	(4) SGD	(5) MYR	(6) KRW
US Dollar	1.027**	-0.990**	0.952**	0.192	0.166	-0.040
	(0.145)	(0.394)	(0.045)	(0.136)	(0.141)	(0.266)
Euro	0.119	0.024	-0.009	0.168	-0.062	-0.145
	(0.104)	(0.298)	(0.032)	(0.159)	(0.165)	(0.332)
British Pound	0.033	0.040	-0.001	0.021	0.006	-0.078
	(0.043)	(0.124)	(0.013)	(0.071)	(0.074)	(0.146)
Australian Dollar	-0.059*	0.240**	0.002	0.046	-0.056	0.078
	(0.035)	(0.095)	(0.011)	(0.060)	(0.063)	(0.125)
Japanese Yen	0.038		0.016	0.193**	0.135*	0.040
	(0.047)		(0.015)	(0.068)	(0.075)	(0.154)
Swiss Franc				-0.043	-0.094	0.221
				(0.134)	(0.138)	(0.276)
Taiwan Dollar				-0.009	0.295**	0.083
				(0.117)	(0.113)	(0.236)
Singapore Dollar	-0.061	0.447*	0.033		0.126	0.035
	(0.085)	(0.235)	(0.026)		(0.142)	(0.277)
Indian Rupee					0.001	0.180
					(0.085)	(0.159)
Malaysia Ringgit	0.257**	0.323	0.020	0.121		0.650**
	(0.077)	(0.218)	(0.024)	(0.134)		(0.256)
Korean Won	0.001	0.010	0.003	0.031	0.143**	
	(0.042)	(0.121)	(0.013)	(0.068)	(0.067)	
Thailand Baht	-0.043	-0.029	-0.009	0.100	0.111	
	(0.043)	(0.124)	(0.013)	(0.069)	(0.073)	
Philippines Peso				0.166**	0.052	
				(0.078)	(0.087)	
Indonesia Rupiah				0.025	0.149	
				(0.098)	(0.101)	
Russia Ruble	-0.358	1.147*	-0.018			
	(0.238)	(0.664)	(0.074)			
Canadian Dollar	0.042	-0.204**	0.013			
	(0.036)	(0.100)	(0.011)			
Constant	0.00023**	-0.00049	-0.00002	0.00009	-0.00007	0.00026
	(0.00011)	(0.00032)	(0.00004)	(0.00019)	(0.00020)	(0.00037)
Observations	66	66	66	66	66	66
Root MSE	0.00086	0.00248	0.00027	0.00137	0.00141	0.00285
R-squared	1.00	0.97	1.00	0.99	0.99	0.96

Notes: 1). Standard errors in parentheses; * significant at 10%; ** significant at 5%;
2). Change in the log value of the target currency is regressed on changes in the log values of other currencies;
3). Data Source: Bloomberg daily closing price, New York.

Table 17A: Sixth Subperiod (11/1/2006 – 01/08/2007, numeraire currency =gold)

	(1)	(2)	(3)	(4)	(5)	(6)
	CNY	JPY	HKD	SGD	MYR	KRW
US Dollar	0.949**	-0.571	0.939**	0.321**	0.280	-0.246
	(0.096)	(0.365)	(0.042)	(0.130)	(0.179)	(0.250)
Euro	0.031	0.327	-0.008	0.095	0.144	-0.569*
	(0.076)	(0.290)	(0.033)	(0.142)	(0.189)	(0.304)
British Pound	0.033	-0.018	0.025	0.005	0.067	0.426**
	(0.044)	(0.171)	(0.020)	(0.087)	(0.121)	(0.186)
Australian Dollar	-0.005	0.095	-0.005	0.118*	-0.184**	-0.123
	(0.032)	(0.123)	(0.014)	(0.061)	(0.086)	(0.140)
Japanese Yen	0.005		0.015	0.139*	0.300**	0.040
	(0.033)		(0.015)	(0.071)	(0.092)	(0.164)
Swiss Franc				-0.002	-0.229	0.103
				(0.126)	(0.168)	(0.287)
Taiwan Dollar				-0.055	0.346**	0.321*
				(0.087)	(0.107)	(0.190)
Singapore Dollar	-0.120*	0.625**	-0.008		-0.169	0.465*
	(0.069)	(0.256)	(0.031)		(0.176)	(0.259)
Indian Rupee					0.379**	0.287*
					(0.091)	(0.166)
Malaysia Ringgit	0.115**	0.289*	0.016	-0.037		0.258
	(0.043)	(0.160)	(0.019)	(0.087)		(0.215)
Korean Won	0.029	0.010	0.025*	0.090	0.111	
	(0.031)	(0.120)	(0.014)	(0.058)	(0.078)	
Thailand Baht	0.018	-0.080	0.013	0.085**	0.037	
	(0.023)	(0.088)	(0.010)	(0.039)	(0.055)	
Philippines Peso				0.258**	0.071	
				(0.100)	(0.141)	
Indonesia Rupiah				0.010	-0.149	
				(0.072)	(0.095)	
Russia Ruble	-0.104	0.327	-0.032			
	(0.140)	(0.541)	(0.062)			
Canadian Dollar	0.045	0.007	0.019			
	(0.031)	(0.122)	(0.014)			
Constant	0.00014	-0.00072*	-0.00001	0.00021	0.00066**	-0.00033
	(0.00010)	(0.00037)	(0.00004)	(0.00018)	(0.00023)	(0.00040)
Observations	71	71	71	71	71	71
Root MSE	0.00072	0.00278	0.00032	0.00133	0.00177	0.00301
R-squared	1.00	0.94	1.00	0.99	0.98	0.94

Notes: 1). Standard errors in parentheses; * significant at 10%; ** significant at 5%;
2). Change in the log value of the target currency is regressed on changes in the
log values of other currencies;
3). Data Source: Bloomberg daily closing price, New York.

Table 18: Trend appreciation and trend change in the dollar weight

Whole Sample (07/22/2005 – 01/08/2007, Numeraire currency =SDR)

	(1) CNY	(2) CNY	(3) CNY	(4) CNY	(5) CNY	(6) CNY	(7) CNY	(8) CNY	(9) CNY
US Dollar	0.904**	0.990**	0.991**	0.926**	1.017**	1.017**	0.891**	0.979**	0.980**
	(0.021)	(0.029)	(0.029)	(0.011)	(0.020)	(0.020)	(0.015)	(0.026)	(0.026)
Euro	-0.006	-0.006	-0.006	-0.022**	-0.015**	-0.015**	-0.018**	-0.014**	-0.014**
	(0.014)	(0.013)	(0.013)	(0.008)	(0.006)	(0.006)	(0.008)	(0.006)	(0.006)
Japanese Yen	0.009	0.009	0.009	0.009			0.005		
	(0.009)	(0.008)	(0.008)	(0.008)			(0.008)		
Korean Won	0.003	0.000	0.001				0.001	0.001	0.001
	(0.009)	(0.009)	(0.009)				(0.009)	(0.008)	(0.008)
Singapore Dollar	-0.020	-0.017	-0.019						
	(0.020)	(0.020)	(0.020)						
British Pound	-0.004	-0.008	-0.008						
	(0.011)	(0.011)	(0.011)						
Malaysia Ringgit	0.052**	0.036**	0.035**				0.050**	0.036**	0.034**
	(0.015)	(0.015)	(0.015)				(0.015)	(0.015)	(0.015)
Russia Ruble	-0.017	-0.014	-0.013						
	(0.021)	(0.021)	(0.021)						
Australian Dollar	-0.004	-0.001	-0.002						
	(0.008)	(0.008)	(0.008)						
Thailand Baht	0.006	0.008	0.008						
	(0.010)	(0.009)	(0.009)						
Canadian Dollar	0.004	0.001	0.003						
	(0.008)	(0.007)	(0.007)						
Trend	0.004		0.004	0.004		0.004	0.004		0.004
	(0.003)		(0.003)	(0.003)		(0.002)	(0.003)		(0.002)
dollar * Trend		-4.473**	-4.459**		-5.106**	-5.089**		-4.407**	-4.409**
		(1.058)	(1.056)		(1.007)	(1.005)		(1.041)	(1.040)
Constant	0.00001	0.00009**	0.00001	0.00002	0.00009**	0.00001	0.00001	0.00008**	0.00001
	(0.00006)	(0.00003)	(0.00006)	(0.00006)	(0.00003)	(0.00006)	(0.00006)	(0.00003)	(0.00006)
Observations	383	383	383	383	383	383	383	383	383
Root MSE	0.00055	0.00054	0.00054	0.00056	0.00054	0.00054	0.00055	0.00054	0.00054
R-squared	0.954	0.955	0.956	0.952	0.954	0.955	0.953	0.955	0.955

Note: Trend =observation/10,000

Notes: 1). Standard errors in parentheses; * significant at 10%; ** significant at 5%;
2). Change in the log value of the target currency is regressed on changes in the log values of other currencies;
3). Data Source: Bloomberg daily closing price, New York.

Table 18A: Trend appreciation and trend change in the dollar weight

Whole Sample (07/22/2005 – 01/08/2007, Numeraire currency =Gold)

	(1) CNY	(2) CNY	(3) CNY	(4) CNY	(5) CNY	(6) CNY	(7) CNY	(8) CNY	(9) CNY
US Dollar	0.911**	0.910**	0.910**	0.993**	0.998**	0.997**	0.911**	0.910**	0.911**
	(0.022)	(0.023)	(0.023)	(0.007)	(0.008)	(0.008)	(0.015)	(0.016)	(0.016)
Euro	-0.004	-0.004	-0.005	-0.007	0.004	0.003	-0.002	0.001	0.001
	(0.014)	(0.014)	(0.014)	(0.009)	(0.007)	(0.007)	(0.008)	(0.007)	(0.007)
Japanese Yen	0.007	0.006	0.007	0.015*			0.004		
	(0.009)	(0.009)	(0.009)	(0.008)			(0.008)		
Korean Won	0.021**	0.020**	0.021**				0.019**	0.019**	0.019**
	(0.009)	(0.009)	(0.009)				(0.008)	(0.008)	(0.008)
Singapore Dollar	-0.020	-0.019	-0.020						
	(0.021)	(0.021)	(0.021)						
British Pound	0.006	0.006	0.006						
	(0.011)	(0.011)	(0.011)						
Malaysia Ringgit	0.071**	0.072**	0.071**				0.071**	0.073**	0.072**
	(0.016)	(0.016)	(0.016)				(0.015)	(0.015)	(0.015)
Russia Ruble	0.006	0.005	0.006						
	(0.022)	(0.022)	(0.022)						
Australian Dollar	-0.008	-0.007	-0.008						
	(0.009)	(0.009)	(0.009)						
Thailand Baht	0.009	0.009	0.009						
	(0.010)	(0.010)	(0.010)						
Canadian Dollar	0.005	0.004	0.005						
	(0.008)	(0.008)	(0.008)						
Trend	0.004		0.004	0.004		0.004	0.003		0.003
	(0.003)		(0.003)	(0.003)		(0.003)	(0.003)		(0.003)
dollar * Trend		-0.001	0.034		-0.017	0.021		-0.039	-0.008
		(0.267)	(0.268)		(0.276)	(0.277)		(0.263)	(0.264)
Constant	0.00000	0.00008**	0.00000	0.00002	0.00010**	0.00001	0.00001	0.00008**	0.00001
	(0.00006)	(0.00003)	(0.00006)	(0.00006)	(0.00003)	(0.00006)	(0.00006)	(0.00003)	(0.00006)
Observations	383	383	383	383	383	383	383	383	383
Root MSE	0.00057	0.00057	0.00057	0.0006	0.0006	0.0006	0.00057	0.00057	0.00057
R-squared	0.998	0.998	0.998	0.998	0.998	0.998	0.998	0.998	0.998

Note: Trend=observation/10,000

Notes: 1). Standard errors in parentheses; * significant at 10%; ** significant at 5%;
2). Change in the log value of the target currency is regressed on changes in the log values of other currencies;
3). Data Source: Bloomberg daily closing price, New York.

Table 19: Pressure from the US as a Determinant of the Chinese Exchange Rate

Whole Sample (07/22/2005 – 01/08/2007, Numeraire currency =SDR)

	(1) CNY	(2) CNY	(3) CNY	(4) CNY	(5) CNY	(6) CNY
US Dollar	0.904**	0.978**	0.979**	0.904**	0.983**	0.983**
	(0.021)	(0.033)	(0.033)	(0.021)	(0.030)	(0.030)
Euro	-0.006	-0.006	-0.006	-0.006	-0.006	-0.006
	(0.014)	(0.014)	(0.014)	(0.014)	(0.014)	(0.014)
Japanese Yen	0.009	0.009	0.010	0.009	0.009	0.010
	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)
Korean Won	0.003	0.000	0.001	0.003	0.000	0.001
	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)
Singapore Dollar	-0.020	-0.018	-0.020	-0.020	-0.018	-0.019
	(0.021)	(0.020)	(0.020)	(0.020)	(0.020)	(0.020)
British Pound	-0.004	-0.008	-0.007	-0.004	-0.008	-0.007
	(0.011)	(0.011)	(0.011)	(0.011)	(0.011)	(0.011)
Malaysia Ringgit	0.053**	0.037**	0.037**	0.053**	0.037**	0.037**
	(0.015)	(0.016)	(0.016)	(0.015)	(0.016)	(0.016)
Russia Ruble	-0.017	-0.015	-0.014	-0.017	-0.015	-0.014
	(0.021)	(0.021)	(0.021)	(0.021)	(0.021)	(0.021)
Australian Dollar	-0.004	-0.001	-0.002	-0.004	-0.001	-0.002
	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)
Thailand Baht	0.006	0.009	0.009	0.006	0.009	0.009
	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)
Canadian Dollar	0.004	0.001	0.003	0.004	0.002	0.003
	(0.008)	(0.007)	(0.008)	(0.008)	(0.007)	(0.007)
Treasury Complaint	0.010		0.009			
	(0.024)		(0.024)			
Other Complaint	-0.001		-0.001			
	(0.025)		(0.025)			
Treasury* US Dollar		-7.541	-7.309			
		(9.198)	(9.229)			
Other* US Dollar		-1.354	-1.621			
		(9.471)	(9.502)			
US Complaint				0.004		0.004
				(0.003)		(0.003)
US Complaint* USD					-4.493**	-4.508**
					(1.219)	(1.217)
Constant	0.00002	0.00009**	0.00002	0.00002	0.00009**	0.00001
	(0.00007)	(0.00003)	(0.00007)	(0.00006)	(0.00003)	(0.00006)
Observations	383	383	383	383	383	383
Root MSE	0.00055	0.00054	0.00054	0.00055	0.00054	0.00054
R-squared	0.95	0.95	0.96	0.95	0.95	0.96

Notes: 1. Standard errors in parentheses;* significant at 10%; ** significant at 5%
    2. "Treasury" in columns (1)-(6) ≡ Cumulative Treasury report/1000,
    3. "Other" in Columns (1)-(6) ≡ Cumulative Other report/1000
    4. US Complaint ≡ Treasury Complaint + Other Complaint

Table 19A: Pressure from the US as a Determinant of the Chinese Exchange Rate
Whole Sample (07/22/2005 – 01/08/2007, Numeraire currency =Gold)

	(1) CNY	(2) CNY	(3) CNY	(4) CNY	(5) CNY	(6) CNY
US Dollar	0.910**	0.904**	0.904**	0.910**	0.907**	0.907**
	(0.022)	(0.024)	(0.024)	(0.022)	(0.024)	(0.023)
Euro	-0.004	-0.005	-0.006	-0.004	-0.004	-0.005
	(0.014)	(0.015)	(0.015)	(0.014)	(0.015)	(0.014)
Japanese Yen	0.007	0.006	0.007	0.007	0.006	0.007
	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)
Korean Won	0.021**	0.020**	0.021**	0.021**	0.020**	0.021**
	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)
Singapore Dollar	-0.021	-0.020	-0.022	-0.021	-0.019	-0.021
	(0.021)	(0.021)	(0.021)	(0.021)	(0.021)	(0.021)
British Pound	0.006	0.006	0.007	0.006	0.006	0.007
	(0.011)	(0.011)	(0.011)	(0.011)	(0.011)	(0.011)
Malaysia Ringgit	0.071**	0.073**	0.072**	0.071**	0.072**	0.071**
	(0.016)	(0.016)	(0.016)	(0.016)	(0.016)	(0.016)
Russia Ruble	0.006	0.007	0.008	0.006	0.006	0.007
	(0.022)	(0.022)	(0.022)	(0.022)	(0.022)	(0.022)
Australian Dollar	-0.008	-0.007	-0.008	-0.008	-0.007	-0.008
	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)
Thailand Baht	0.009	0.008	0.008	0.009	0.009	0.009
	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)
Canadian Dollar	0.005	0.004	0.005	0.005	0.004	0.005
	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)
Treasury Complaint	0.004		-0.000			
	(0.025)		(0.025)			
Other Complaint	0.004		0.010			
	(0.026)		(0.026)			
Treasury* US Dollar		-1.777	-1.932			
		(2.004)	(2.040)			
Other* US Dollar		2.035	2.284			
		(2.081)	(2.121)			
US Complaint				0.004		0.004
				(0.003)		(0.003)
US Complaint* USD					0.092	0.134
					(0.305)	(0.306)
Constant	0.00001	0.00008**	-0.00001	0.00001	0.00008**	0.00000
	(0.00007)	(0.00003)	(0.00007)	(0.00006)	(0.00003)	(0.00006)
Observations	383	383	383	383	383	383
Root MSE	0.00057	0.00057	0.00057	0.00057	0.00057	0.00057
R-squared	1.00	1.00	1.00	1.00	1.00	1.00

Notes: 1. Standard errors in parentheses;* significant at 10%; ** significant at 5%
   2. Treasury in columns (1)-(6) are: Cumulative Treasury report/1000,
   3. Other in Columns (1)-(6) are: Cumulative Other report/1000
   4. US Complaint = Treasury Complaint + Other Complaint

Table 20: Weight sum constrained to 1, with trends in dollar weight and appreciation
Whole Sample (07/22/2005 – 01/08/2007, Numeraire currency =SDR)

	(1) CNY	(2) CNY	(3) CNY	(4) CNY	(5) CNY	(6) CNY	(7) CNY	(8) CNY	(9) CNY
Euro	-0.006	-0.006	-0.006	-0.008	-0.015**	-0.015**	-0.005	-0.014**	-0.015**
	(0.014)	(0.013)	(0.013)	(0.008)	(0.006)	(0.006)	(0.008)	(0.006)	(0.006)
Japanese Yen	0.007	0.009	0.009	0.015*			0.004		
	(0.009)	(0.008)	(0.008)	(0.008)			(0.008)		
Korean Won	0.021**	0.000	0.001				0.018**	0.001	0.001
	(0.009)	(0.009)	(0.009)				(0.008)	(0.008)	(0.008)
Singapore Dollar	-0.020	-0.017	-0.019						
	(0.021)	(0.020)	(0.020)						
British Pound	0.007	-0.008	-0.008						
	(0.011)	(0.011)	(0.011)						
Malaysia Ringgit	0.068**	0.036**	0.035**				0.069**	0.036**	0.034**
	(0.015)	(0.015)	(0.015)				(0.015)	(0.015)	(0.015)
Russia Ruble	0.006	-0.013	-0.013						
	(0.022)	(0.021)	(0.021)						
Australian Dollar	-0.010	-0.001	-0.002						
	(0.008)	(0.008)	(0.008)						
Thailand Baht	0.009	0.008	0.008						
	(0.010)	(0.009)	(0.009)						
Canadian Dollar	0.004	0.001	0.003						
	(0.008)	(0.007)	(0.007)						
Trend	0.004		0.004	0.004		0.004	0.004		0.004
	(0.003)		(0.003)	(0.003)		(0.002)	(0.003)		(0.002)
dollar * Trend		-4.500**	-4.483**		-5.045**	-5.031**		-4.376**	-4.372**
		(0.656)	(0.655)		(0.539)	(0.538)		(0.629)	(0.628)
Constant	-0.00000	0.00009**	0.00001	0.00002	0.00009**	0.00001	0.00001	0.00008**	0.00001
	(0.00006)	(0.00003)	(0.00006)	(0.00006)	(0.00003)	(0.00006)	(0.00006)	(0.00003)	(0.00005)
Observations	383	383	383	383	383	383	383	383	383
Root MSE	0.00057	0.00054	0.00054	0.0006	0.00054	0.00054	0.00057	0.00054	0.00054
R-squared	0.111	0.206	0.211	0.016	0.187	0.193	0.103	0.200	0.205

Note: Trend =observation/10,000

Table 20A: Weight sum constrained to 1, with trends in dollar weight and appreciation
Whole Sample (07/22/2005 – 01/08/2007, Numeraire currency =Gold)

	(1) CNY	(2) CNY	(3) CNY	(4) CNY	(5) CNY	(6) CNY	(7) CNY	(8) CNY	(9) CNY
Euro	-0.006	-0.005	-0.005	-0.008	0.003	0.003	-0.005	0.000	-0.000
	(0.014)	(0.014)	(0.014)	(0.008)	(0.007)	(0.007)	(0.008)	(0.006)	(0.006)
Japanese Yen	0.007	0.006	0.007	0.015*			0.004		
	(0.009)	(0.009)	(0.009)	(0.008)			(0.008)		
Korean Won	0.021**	0.020**	0.021**				0.018**	0.019**	0.019**
	(0.009)	(0.009)	(0.009)				(0.008)	(0.008)	(0.008)
Singapore Dollar	-0.020	-0.019	-0.021						
	(0.021)	(0.021)	(0.021)						
British Pound	0.007	0.006	0.007						
	(0.011)	(0.011)	(0.011)						
Malaysia Ringgit	0.068**	0.071**	0.070**				0.069**	0.073**	0.072**
	(0.015)	(0.016)	(0.016)				(0.015)	(0.015)	(0.015)
Russia Ruble	0.006	0.006	0.007						
	(0.022)	(0.022)	(0.022)						
Australian Dollar	-0.010	-0.007	-0.008						
	(0.008)	(0.008)	(0.008)						
Thailand Baht	0.009	0.009	0.009						
	(0.010)	(0.010)	(0.010)						
Canadian Dollar	0.004	0.004	0.005						
	(0.008)	(0.008)	(0.008)						
Trend	0.004		0.004	0.004		0.004	0.004		0.004
	(0.003)		(0.003)	(0.003)		(0.003)	(0.003)		(0.003)
dollar * Trend		0.115	0.108		0.039	0.033		0.131	0.125
		(0.110)	(0.110)		(0.109)	(0.108)		(0.104)	(0.104)
Constant	-0.00000	0.00008**	-0.00000	0.00002	0.00010**	0.00001	0.00001	0.00008**	0.00001
	(0.00006)	(0.00003)	(0.00006)	(0.00006)	(0.00003)	(0.00006)	(0.00006)	(0.00003)	(0.00006)
Observations	383	383	383	383	383	383	383	383	383
Root MSE	0.00057	0.00057	0.00057	0.0006	0.0006	0.0006	0.00057	0.00057	0.00057
R-squared	0.111	0.108	0.114	0.016	0.001	0.007	0.103	0.101	0.106

Note: Trend=observation/10,000

Table 21: Weight sum constrained to 1, with US pressure

Whole Sample (07/22/2005 – 01/08/2007, Numeraire currency =SDR)

	(1) CNY	(2) CNY	(3) CNY	(4) CNY	(5) CNY	(6) CNY
Euro	-0.006	-0.006	-0.006	-0.006	-0.006	-0.006
	(0.014)	(0.014)	(0.014)	(0.014)	(0.014)	(0.014)
Japanese Yen	0.007	0.009	0.010	0.007	0.009	0.010
	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)
Korean Won	0.021**	0.001	0.001	0.021**	0.001	0.001
	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)
Singapore Dollar	-0.020	-0.018	-0.020	-0.020	-0.018	-0.019
	(0.021)	(0.020)	(0.020)	(0.021)	(0.020)	(0.020)
British Pound	0.007	-0.007	-0.007	0.007	-0.007	-0.007
	(0.011)	(0.011)	(0.011)	(0.011)	(0.011)	(0.011)
Malaysia Ringgit	0.069**	0.037**	0.036**	0.069**	0.037**	0.036**
	(0.015)	(0.016)	(0.016)	(0.015)	(0.016)	(0.015)
Russia Ruble	0.006	-0.013	-0.013	0.006	-0.014	-0.013
	(0.022)	(0.021)	(0.021)	(0.022)	(0.021)	(0.021)
Australian Dollar	-0.010	-0.001	-0.002	-0.010	-0.001	-0.002
	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)
Thailand Baht	0.009	0.009	0.009	0.009	0.009	0.009
	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)	(0.009)
Canadian Dollar	0.004	0.001	0.003	0.004	0.001	0.003
	(0.008)	(0.007)	(0.008)	(0.008)	(0.007)	(0.007)
Treasury Complaint	0.005		0.009			
	(0.025)		(0.024)			
Other Complaint	0.004		-0.001			
	(0.026)		(0.025)			
Treasury* US Dollar		-5.953	-5.824			
		(8.502)	(8.530)			
Other* US Dollar		-3.777	-3.884			
		(7.825)	(7.855)			
US Complaint				0.005		0.004
				(0.003)		(0.003)
US Complaint* USD					-4.819**	-4.809**
					(0.742)	(0.740)
Constant	0.00000	0.00009**	0.00002	0.00000	0.00009**	0.00001
	(0.00007)	(0.00003)	(0.00007)	(0.00006)	(0.00003)	(0.00006)
Observations	383	383	383	383	383	383
Root MSE	0.00057	0.00054	0.00054	0.00057	0.00054	0.00054
R-squared	0.11	0.20	0.20	0.11	0.20	0.20

Notes: 1. Standard errors in parentheses;* significant at 10%; ** significant at 5%
2. Treasury in columns (1)-(6) are: Cumulative Treasury report/1000,
3. Other in Columns (1)-(6) are: Cumulative Other report/1000
4. US Complaint = Treasury Complaint + Other Complaint

Table 21A: Weight sum constrained to 1, with US pressure

Whole Sample (07/22/2005 – 01/08/2007, Numeraire currency =Gold)

	(1) CNY	(2) CNY	(3) CNY	(4) CNY	(5) CNY	(6) CNY
Euro	-0.006	-0.005	-0.005	-0.006	-0.005	-0.005
	(0.014)	(0.014)	(0.014)	(0.014)	(0.014)	(0.014)
Japanese Yen	0.007	0.006	0.007	0.007	0.006	0.007
	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)
Korean Won	0.021**	0.020**	0.021**	0.021**	0.020**	0.021**
	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)
Singapore Dollar	-0.020	-0.020	-0.022	-0.020	-0.019	-0.021
	(0.021)	(0.021)	(0.021)	(0.021)	(0.021)	(0.021)
British Pound	0.007	0.006	0.006	0.007	0.006	0.007
	(0.011)	(0.011)	(0.011)	(0.011)	(0.011)	(0.011)
Malaysia Ringgit	0.069**	0.073**	0.072**	0.069**	0.072**	0.071**
	(0.015)	(0.016)	(0.016)	(0.015)	(0.016)	(0.016)
Russia Ruble	0.006	0.007	0.007	0.006	0.007	0.007
	(0.022)	(0.022)	(0.022)	(0.022)	(0.022)	(0.022)
Australian Dollar	-0.010	-0.006	-0.007	-0.010	-0.007	-0.008
	(0.008)	(0.008)	(0.009)	(0.008)	(0.008)	(0.008)
Thailand Baht	0.009	0.008	0.008	0.009	0.009	0.009
	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)
Canadian Dollar	0.004	0.004	0.006	0.004	0.004	0.005
	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)
Treasury Complaint	0.005		0.000			
	(0.025)		(0.025)			
Other Complaint	0.004		0.008			
	(0.026)		(0.026)			
Treasury* US Dollar		-1.604	-1.614			
		(1.894)	(1.922)			
Other* US Dollar		1.718	1.714			
		(1.711)	(1.736)			
US Complaint				0.005		0.004
				(0.003)		(0.003)
US Complaint* USD					0.142	0.135
					(0.121)	(0.121)
Constant	0.00000	0.00008**	0.00000	0.00000	0.00008**	0.00000
	(0.00007)	(0.00003)	(0.00007)	(0.00006)	(0.00003)	(0.00006)
Observations	383	383	383	383	383	383
Root MSE	0.00057	0.00057	0.00057	0.00057	0.00057	0.00057
R-squared	0.11	0.11	0.12	0.11	0.11	0.11

Notes: 1. Standard errors in parentheses;* significant at 10%; ** significant at 5%
    2. Treasury in columns (1)-(6) are: Cumulative Treasury report/1000,
    3. Other in Columns (1)-(6) are: Cumulative Other report/1000
    4. US Complaint = Treasury Complaint + Other Complaint

Table 22: Allowing for trends in level and (nonlinearly) in the currency weights, while imposing throughout the constraints that the weights sum to 1

	(1) OLS	(2) OLS	(3) Non-linear LS	(4) Non-linear LS
USD	0.982**	0.982**	0.982***	0.982***
	(0.042)	(0.042)	(0.042)	(0.042)
Japanese Yen	0.0004	0.0004	0.0004	0.0004
	(0.0165)	(0.0165)	(0.0165)	(0.0165)
Korea Won	0.0114	0.0114	0.0114	0.0114
	(0.0179)	(0.0179	(0.0179)	(0.0179)
Malaysia Ringgit	0.0155	0.0154	0.0155	0.0154
	(0.039)	(0.039)	(0.039)	(0.039)
USD*Trend	-0.00029*	-28.91*	Not identified	-28.9
	(0.00017)	(16.79)		(imposed)
Japanese Yen*Trend	0.00002	1.946	6.874	1.945
	(0.00008)	(8.284)	(29.5)	(8.341)
Korea Won*Trend	0.00004	4.005	14.2	4.003
	(0.00009)	(8.750)	(29.7)	(8.409)
Malaysia Ringgit*Trend	0.0002	20.2	71.5*	20.2*
	(0.0001)	(15.0)	(29.7)	(8.4)
Trend2*10E+6	0.3	0.3	0.3	0.3
	(0.3)	(0.3)	(0.3)	(0.3)
Constant*10E+4	0.167	0.167	0.167	0.167
	(0.592)	(0.592)	(0.592)	(0.592)
d*10E+4			0.028	0.100 **
			(0.016)	(0.058)
Observations	383	383	383	383
R-squared	0.987	0.987	0.987	0.987

Notes: * significant at 10%; ** at 5%; ** at 1%   (Standard errors reported in parentheses.)

The constraint that the weights sum to 1 is imposed by subtracting the change in €from all exchange rates.

Eqn (1). OLS, Trend = Trend2 =t(j), t= 0 (for July 22, 2005), 1, 2, etc

Eqn.(2). OLS, Trend=1-exp(-d *t), where d is set to be 0.00001, Trend2=t

Eqn. (3) Non-linear least squared estimation

Eqn. (4) Non-linear LS. Set the coefficient on USD*trend =-28.9 (which is the point estimate in Column 2)

Table 23: Intra-day Regressions for RMB (15 minute intervals, numeraire currency = SDR)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	All data		7/21-8/25/2005		2/16-3/16/2006		3/17-4/17/2006		4/18-5/17/2006	
US Dollar	0.867**	0.921**	0.702**	1.000**	0.754**	0.842**	1.012	0.954**	0.507*	0.968**
	(0.033)	(0.009)	(0.186)	(0.007)	(0.072)	(0.013)	(1.085)	(0.027)	(0.282)	(0.021)
Euro	-0.048*	-0.010	-0.270	0.004	-0.096*	-0.035**	0.068	-0.026	-0.361	-0.024
	(0.026)	(0.008)	(0.168)	(0.007)	(0.052)	(0.013)	(0.853)	(0.023)	(0.232)	(0.020)
Japanese Yen	-0.024**	-0.010**	-0.102*	-0.002	-0.046**	-0.022**	0.020	-0.011	-0.123*	-0.011*
	(0.009)	(0.003)	(0.061)	(0.003)	(0.018)	(0.005)	(0.268)	(0.007)	(0.073)	(0.006)
Korean Won	0.063**	0.063**	-0.000	-0.000	0.110**	0.110**	0.013**	0.012**	-0.001	0.004
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.005)	(0.005)	(0.003)	(0.003)
Singapore Dollar	-0.000		0.000		-0.014**		-0.006		0.016**	
	(0.003)		(0.002)		(0.005)		(0.007)		(0.005)	
British Pound	-0.015*		-0.092		-0.032*		0.031		-0.113	
	(0.009)		(0.056)		(0.018)		(0.270)		(0.075)	
Malaysia Ringgit	0.010**		-0.008**		0.019**		0.063**		0.036**	
	(0.004)		(0.003)		(0.008)		(0.011)		(0.007)	
Russia Ruble	0.005		0.002		0.011**		0.007		-0.001	
	(0.003)		(0.002)		(0.005)		(0.009)		(0.007)	
Australian Dollar	0.003**		0.001		0.002		0.005*		-0.001	
	(0.001)		(0.001)		(0.003)		(0.003)		(0.003)	
Thailand Baht	-0.003*		-0.000		-0.003		0.001		0.005	
	(0.002)		(0.002)		(0.002)		(0.004)		(0.004)	
Canadian Dollar	-0.002		-0.001		0.001		0.000		-0.001	
	(0.002)		(0.001)		(0.003)		(0.004)		(0.004)	
Observations	12087	12087	3428	3428	2748	2748	2976	2976	2935	2935
R-squared	0.96	0.96	0.99	0.99	0.99	0.99	0.87	0.87	0.93	0.93

Notes: 1). Standard errors in parentheses;
2). * significant at 10%; ** significant at 5%;
3). All currencies are valued in units of SDR;
4). Data Source: Bloomberg intra-day closing price, New York.

Table 23A: Intra-day Regressions for RMB (15 minute intervals, numeraire currency = Swiss franc)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	All data		7/21-8/25/2005		2/16–3/16/2006		3/17–4/17/2006		4/18–5/17/2006	
US Dollar	0.931**	0.937**	1.004**	0.999**	0.895**	0.887**	0.918**	0.987**	0.946**	0.996**
	(0.005)	(0.002)	(0.004)	(0.001)	(0.009)	(0.002)	(0.016)	(0.006)	(0.010)	(0.004)
Euro	0.005	0.006	0.006*	0.006**	0.008	0.006	-0.005	0.001	0.013	0.016**
	(0.004)	(0.004)	(0.003)	(0.003)	(0.007)	(0.006)	(0.008)	(0.008)	(0.009)	(0.008)
Japanese Yen	-0.007**	-0.005**	-0.002*	-0.002*	-0.011**	-0.006**	-0.003	-0.003	-0.008**	-0.003
	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)	(0.002)	(0.004)	(0.004)	(0.003)	(0.003)
Korean Won	0.063**	0.063**	-0.000	-0.000	0.110**	0.110**	0.013**	0.012**	-0.001	0.004
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.005)	(0.005)	(0.003)	(0.003)
Singapore Dollar	-0.002		-0.000		-0.020**		-0.006		0.016**	
	(0.003)		(0.002)		(0.004)		(0.007)		(0.005)	
British Pound	0.002		-0.000		0.002		0.008		0.006	
	(0.003)		(0.002)		(0.004)		(0.006)		(0.005)	
Malaysia Ringgit	0.009**		-0.008**		0.013*		0.063**		0.036**	
	(0.004)		(0.003)		(0.008)		(0.011)		(0.007)	
Russia Ruble	0.003		0.003		0.008		0.007		0.000	
	(0.003)		(0.002)		(0.005)		(0.009)		(0.007)	
Australian Dollar	0.003**		0.001		0.003		0.005*		-0.001	
	(0.001)		(0.001)		(0.003)		(0.003)		(0.003)	
Thailand Baht	-0.004**		-0.000		-0.005**		0.000		0.005	
	(0.002)		(0.002)		(0.002)		(0.004)		(0.004)	
Canadian Dollar	-0.002		-0.000		-0.001		0.000		-0.001	
	(0.002)		(0.001)		(0.003)		(0.004)		(0.004)	
Observations	12087	12087	3428	3428	2748	2748	2976	2976	2935	2935
R-squared	0.99	0.99	1.00	1.00	1.00	1.00	0.97	0.97	0.98	0.98

Notes: 1). Standard errors in parentheses;
2). * significant at 10%; ** significant at 5%;
3). All currencies are valued in units of Swiss franc;
4). Data Source: Bloomberg intra-day closing price, New York.

Figure 6: Extrapolation of the estimated nonlinear time trend in the weight on the dollar in the Chinese basket
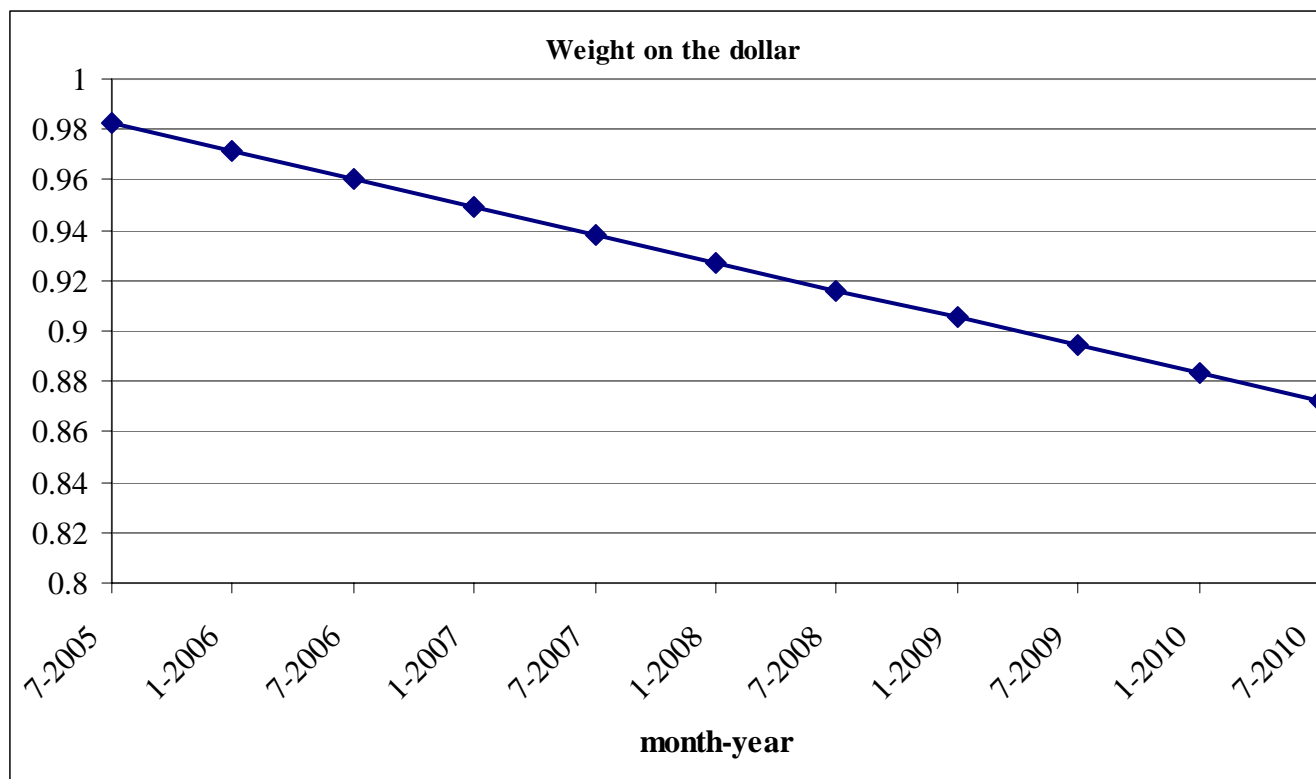
Weight on the dollar over time = *b0(usd) + b1(usd) [1- exp(-d*t)]*
where *b0(usd)* = 0.982, *b1(usd)* = -28.9, and *d* = 0.00001,
based on the estimates from a non-linear regression, reported in the column (4) of Table 22.

Frequency of Chinese Yuan Exchange Rate Quotes, 15 Minute Intervals
(2/16/2006 - 5/17/2006; Data Source: Bloomberg)