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Are China's capital controls still binding?

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Abstract:

The scale of China's gross current and capital account flows has risen significantly since the 1980s, testing the effectiveness of official controls. Evidently, China's capital controls have been rather leaky. The acceleration of China's official reserves accumulation in 2003 and 2004 reflected non-FDI capital flows that respond to relative yields as well as currency expectations. Such capital flows have been partly financed by Chinese banks drawing down their overseas claims on international banks. The corporate and household sector has brought in dollars via the more liberalised current account through such channels as leads and lags in trade payments and remittances. However, the large and persistent spread between the onshore yield on the renminbi and its offshore counterpart indicates that China's existing official capital controls remain substantial and binding, effectively segmenting the onshore and offshore markets. Moreover, money market yields seem to suggest that China enjoys no less monetary independence than the euro area. Thus, the big leaks on the capital account are not yet sufficient to deprive China of its independent monetary policy.

1. Introduction

Since 2003, the Chinese authorities have responded to rapid growth, especially in investment, with a tight policy stance (Ma and McCauley 2004b). One concern of the Chinese policy makers is said to have been the perceived risk of triggering further capital inflows by expectations of exchange rate appreciation and/or higher domestic interest rates.[2] To what extent does the prospect of larger capital inflows constrain the Chinese authorities from setting domestic interest rates? To answer this question, we need to assess the effectiveness of China's capital controls.

We do this in five steps. First, we show how the growing openness of the Chinese economy has widened opportunities for evasion of capital controls. Second, we show that non-FDI capital flows paced the accelerated growth of official reserves in 2003-04. Third, we show how cross-border bank flows accommodated these flows. Fourth, we perform the classic test for the efficacy of capital controls, showing in effect that covered interest parity does not hold for the renminbi. Finally, we perform a side test of the implication that China retains monetary independence by virtue of effective capital controls. We find that interest rate settings in China have been no more similar to those of the United States than those in the euro area.

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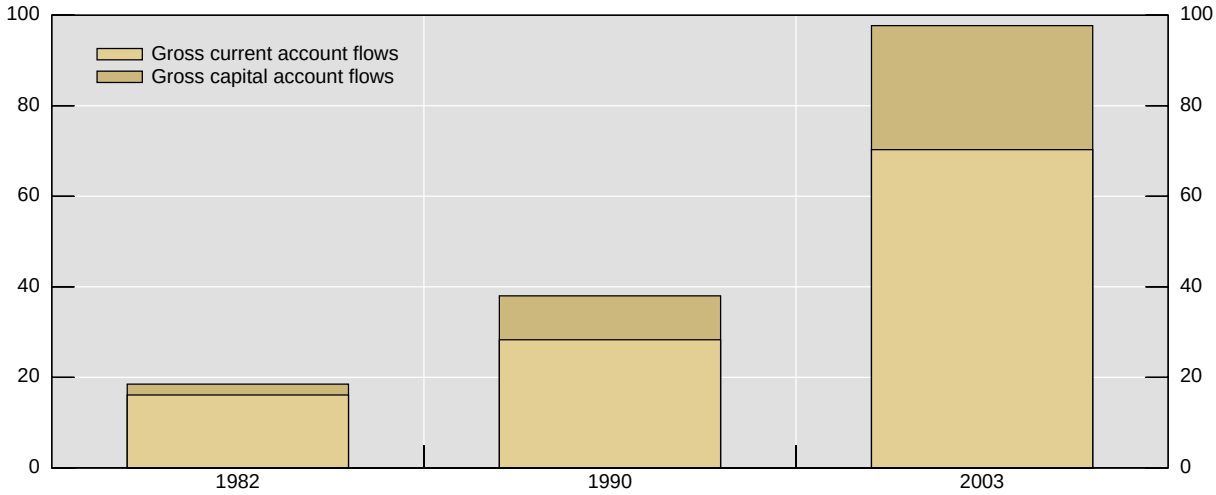
[2] For a discussion of the choices of exchange rate regime and appropriate levels, see Anderson (2003), Bosworth (2004), Eichengreen (2004), Frankel (2004), Goldstein (2004), Liu (2004) and Wang (2004).

2. Growing cross-border flows in China

One factor influencing the potential efficacy of capital controls is the size of the external flows. The past two decades have witnessed rapid rises in China's cross-border flows via the current and capital accounts. As a share of GDP, China's gross cross-border flows grew five-fold to some 100% in 2003 from less 20% in 1982 (Graph 1). Furthermore, the pace of growth in China's cross-border flows picked up considerably in the 1990s. Finally, despite the remarkable expansion of the gross current account flows, China's gross capital account flows have been gaining relative importance. In 2003, gross capital account flows represented 28% of China's total gross cross-border flows, compared with 13% in 1982 and 25% in 1990. In all likelihood, the Chinese official statistics underestimate the size of the underlying gross capital flows relative to the gross current flows.[3] The large and growing size of cross-border flows would suggest limited effectiveness of capital controls in China (for a more general discussion of efficacy of capital controls, see Kawai and Tagagi (2001)).

Graph 1 **China's gross cross-border flows[1]**

As a percentage of GDP



[1] Defined as the sum of debit and credit flows on China's balance of payments, excluding errors and omissions.

Source: CEIC.

3. It's the capital account

The underlying growth of China's official foreign exchange reserves has recently accelerated. They grew by some $206 billion in 2004 or 13% of the country's GDP (if one removes the valuation effects, official reserves would rise by some $194 billion). This growth of foreign assets reflects strong cross-border inflows into the Chinese economy. Even with double-digit growth in the stock of broad money that is well over the size of GDP and 7½% reserve requirements, this growth of foreign assets implied a need to reduce domestic net assets to sterilise the unwarranted increase in the money base.

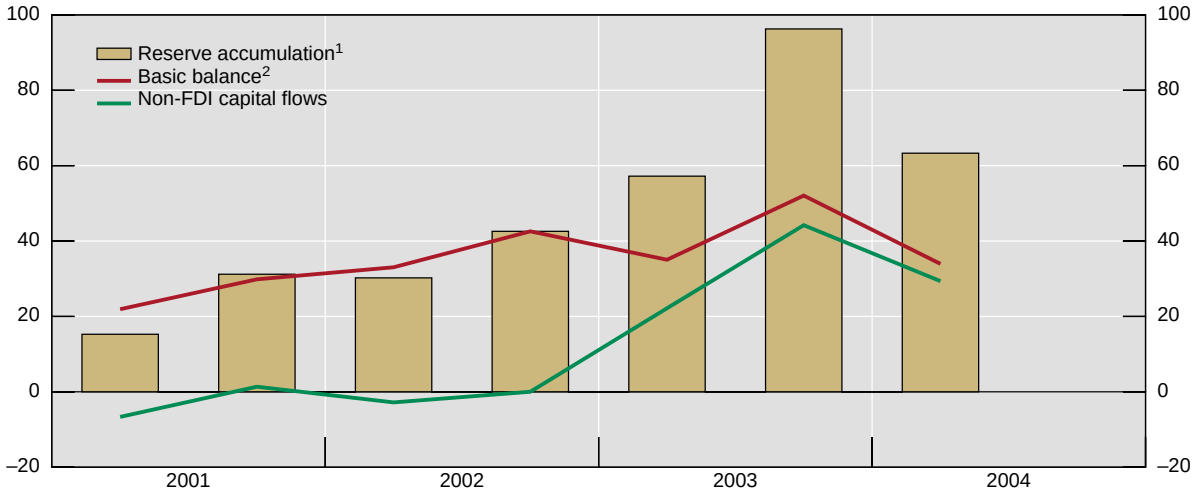
At the outset, it is important to recognise that the proximate cause of the latest acceleration in China's foreign exchange reserves has increasingly been an inflow of capital other than foreign direct investment (FDI). Since 2003, China's accumulation of foreign reserves has less and less to do with the surplus of the basic balance (defined as the sum of current account and net foreign direct investment balances), than with non-FDI capital inflows. Whereas the basic balance surplus contributed the entire reserve accumulation in 2001 and 2002, the large non-FDI capital inflows have fuelled nearly half of the reserve accumulation since 2003 (Graph 2). Because official policies continue

[3] There are two reasons to expect that gross capital account flows are underestimated relative to gross current account flows. First, as discussed below, capital flows in via the current account in order to avoid official restrictions. Second, most reported bank-related gross flows represent changes between two dates and do not capture the intervening gross flows.

to restrict non-FDI capital flows while a variety of policies encourage FDI inflows, the surge in non-FDI capital inflows suggests that China's capital account controls are leaky or incomplete.

Graph 2 **China's basic balance, non-FDI capital flows and reserve accumulation**

In billions of US dollars

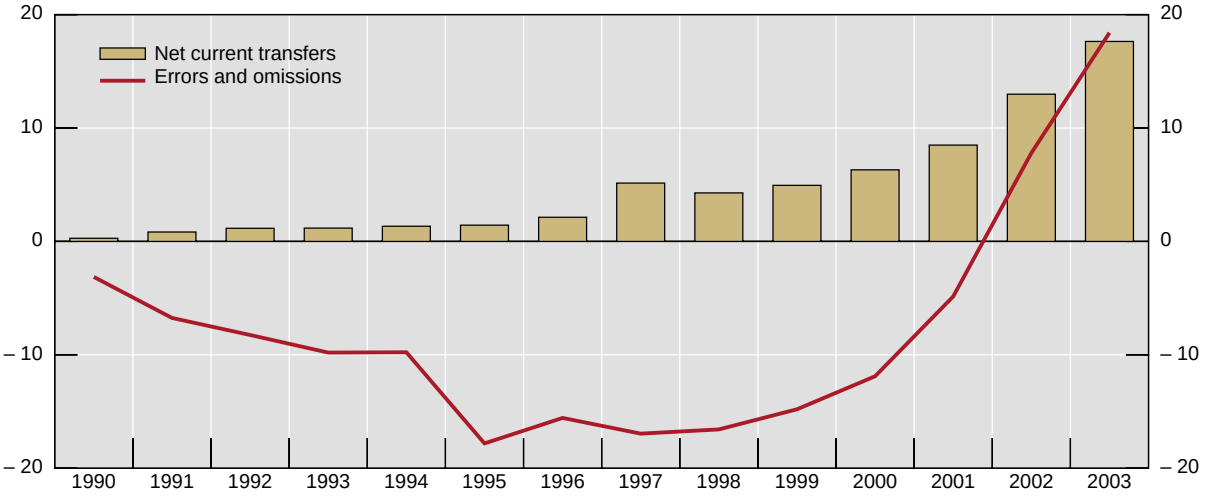


[1] Adjusted for valuation effect and the $45bn bank recapitalisation in 2003H3. [2] Sum of current account balance (adjusted for net current transfers) and net FDI balance. [3] Includes net current transfers and errors & omissions.

Sources: CEIC; BIS estimates.

Graph 3 **China's balance of payments: net current transfers and errors and omissions**

In billions of US dollars

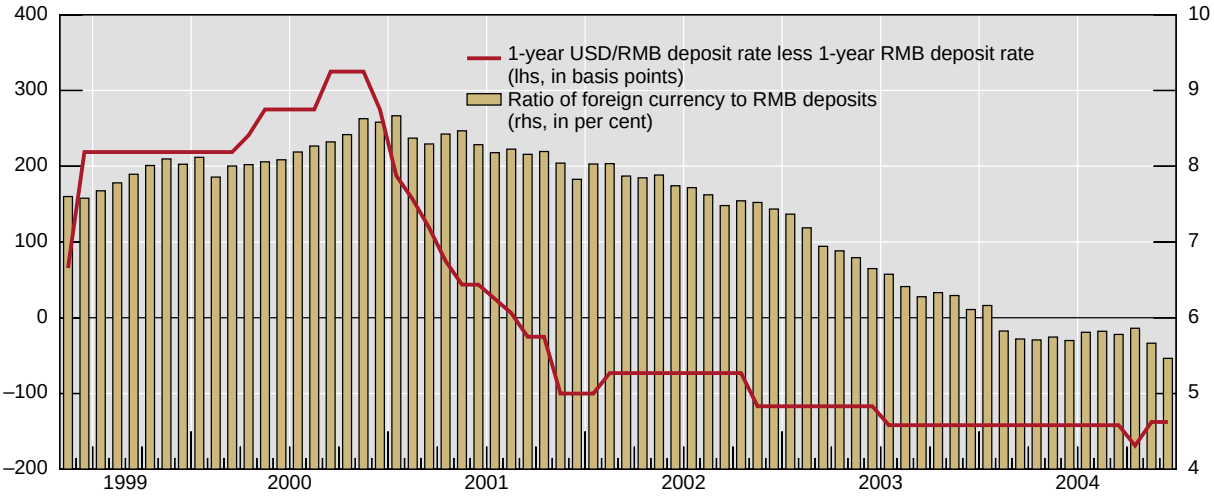


Source: CEIC.

Several accounts give evidence of the increased pressure from capital inflows (Graph 3). Errors and omissions on China's balance of payments reached $18 billion in 2003, reversing the earlier pattern of similarly large outflows. Also, remittance inflows, predominantly private, jumped by more than 40% each year in both 2002 and 2003, suggesting that capital inflows through overseas relatives are showing up in this current account item. Over the past three years, net current transfers have amounted to some 40% of China's overall current account surplus and have shown more volatility. The Chinese government, which had traditionally encouraged such dollar inflows, moved in late 2004 to require banks to report unusually large remittance inflows and the related dollar sales, should daily conversion of dollars into the renminbi exceed $10,000 (SAFE, 2004b). Substantial cross-border flows

through the channels of errors and omissions and the more liberalised current account are indications that the effectiveness of China's capital controls is limited.[4]

Graph 4 **China's foreign currency deposits and relative dollar deposit yields**

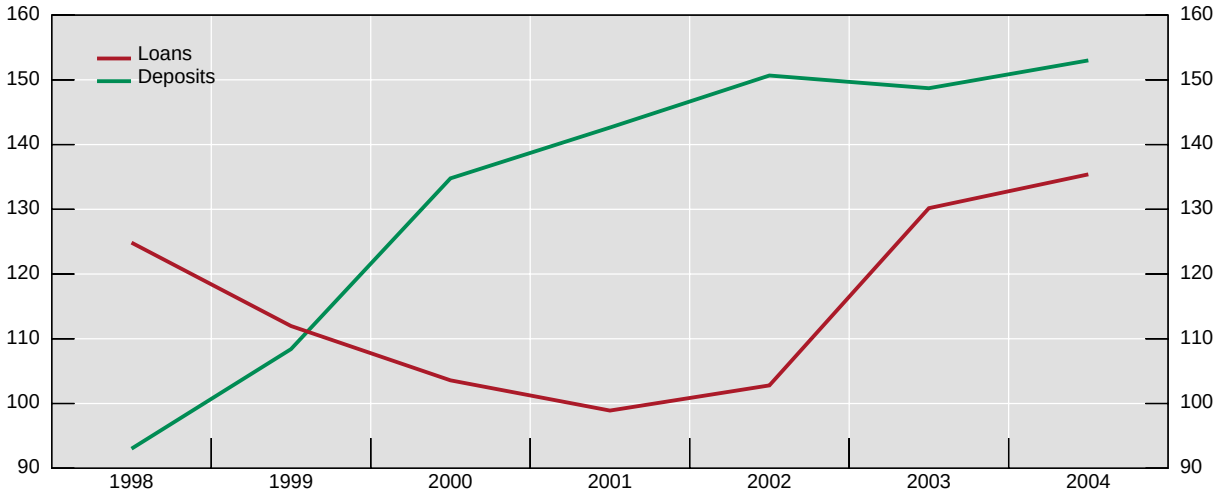


Note: The onshore dollar deposit rate is for small deposits (USD 3 millions of less).

Sources: The People's Bank of China; authors' own estimates.

Graph 5 **Foreign currency loans and deposits at banks in China**

In US$ billions; end-of-period figures



Note: Data for 2004 refer to June.

Sources: The People's Bank of China; authors' own estimates.

[4] Prasad and Wei (2005), p 11, note "that, given the apparent one-way bet on the renminbi, the fact that these flows are not larger than they are suggests that capital controls may be at least partially effective". Consistent with our interpretation, we have estimated the exceptional part of the remittance inflows from the current account balance by regressing remittance inflows against global commercial services trade and then comparing the out-of-sample forecast with the actual inflows. The difference is excluded from the current account and added, together with the errors and omission, to the non-FDI capital inflows as shown in Graph 2.

4. Responsiveness of bank flows to interest rate differentials

Another indication of limited effectiveness of China's capital controls is the response of some flows to expected return differentials. In particular, net flows related to foreign currency bank deposits and loans through the banking system react to relative yields and currency expectations. This responsiveness became evident in the previous US Federal Reserve tightening cycle of 1999-2000. In the spring of 1999, as the US dollar Libor rose in anticipation of a tightening of policy rates, dollar deposit rates in China were raised above 4%, to a level higher than renminbi rates for the first time (Graph 4). In mid-year, the renminbi one-year deposit rate was dropped almost to 2%, in an attempt to fight deflation and stimulate weak domestic demand. At its widest, the gap between onshore dollar and renminbi deposit rates reached over 3% (McCauley and Mo, 2000; Ma and McCauley, 2002b).

Higher yields on the dollar, reinforced by expectation of renminbi depreciation at the time, resulted in a dollarisation of deposits and repayment of dollar loans in China (Graph 5). Both contributed to capital outflows. (The appendix details the empirical estimation of responsiveness of dollar deposits held by Chinese households and firms to interest rate differentials and to exchange rate expectations.)

Once the US interest rates began to fall in early 2001, transactions of Chinese residents with Chinese banks in foreign currency shifted from building up net long dollar positions to reducing them. Households and firms slowed their accumulation of foreign currency deposits and in 2003 and early 2004 even reduced them. For their part, firms in China started in 2002 to step up their borrowing in foreign currency (Graph 5). These shifts responded to the decline of US short-term interest rates to levels below their Chinese equivalents. Any consideration of possible currency revaluation gains on long renminbi/short dollar positions only added to the interest rate incentives to acquire renminbi deposits and to borrow dollars. The latest convergence between the renminbi and USD interest rates since the Federal Reserve began tightening in 2004 appears to have provided little support for added foreign currency deposits, in part because the onshore dollar deposit rates seem to have been capped.[5]

5. Cross-border bank flows

BIS area banks accommodated these shifts within the Chinese banking system. The global banking system went from acting as an outlet for surplus dollars in China to serving as a source of dollars needed to fund foreign currency loan growth in the country, given the lack of growth of foreign-currency deposits by Chinese residents (Table 1). In particular, China swung from providing $6 billion to the international banking system in 2002 to withdrawing $23 billion in the first three quarters of 2003 (both figures are adjusted for exchange rate changes).

More generally, since late 2002, the rapid growth in official reserves has had as its counterpart China's shift from building up claims on the international banking system to drawing them down.[6] The renewed inflow from international banks into China funded more foreign currency loans as US dollar interest rates fell below their renminbi counterparts and as market expectations of renminbi appreciation intensified. These borrowed dollars fuelled sales of dollars by the Chinese private sector to the authorities, helping to accelerate official foreign exchange growth (Ma and McCauley, 2003 and 2004b). In short, official restrictions on cross-border bank flows in China have not prevented sizable accommodating bank flows.

Increased dollar borrowing by Chinese residents can increase official reserves in two ways. The Chinese non-bank sector can sell dollars against renminbi directly. Or, more indirectly, firms can use borrowed dollars to delay selling renminbi to settle payments for imports or to accelerate selling dollars received from exports for renminbi. We estimate that a two-month shift of such leads and lags in trade

[5] It is a bit puzzling that the Chinese authorities have raised the benchmark rates for onshore dollar deposits only once in the current Fed tightening cycle, even though doing so would serve well China's policy objective of slowing dollar sales by households and firms. Meanwhile the foreign currency book of the Chinese banks is enjoying an enhanced spread.

[6] One complication in reading the interbank flows is that the official reserve managers can invest in bank deposits abroad, and such deposits should be reported as liabilities to Chinese banks.

payments could give rise to a capital inflow of nearly $200 billion, as large as the accumulation of foreign reserves in 2004.

Table 1 **Changes in China's foreign currency liquidity flows**

	1999	2000	2001	2002	2003[1]	1999–2003[1]
	In billions of US dollars					
Sources[2]	38.0	45.7	58.8	67.9	71.3	281.7
Foreign exchange reserves	9.7	10.9	46.6	74.3	97.5	239.0
Deposits in onshore banks[3]	15.4	26.4	7.9	15.8	–2.6	62.9
Less loans of onshore banks[3]	12.9	8.4	4.3	–22.2	–23.6	–20.2
Uses[2]	25.7	55.0	45.4	73.5	33.2	232,8
Net claims on BIS reporting banks	10.7	33.6	–4.2	5.8	–22.8	23.1
of which: on banks in Hong Kong SAR	*3.8*	*14.4*	*–4.2*	*2.2*	*–7.2*	*9.0*
Net purchases of US debt securities[4]	15.0	20.4	44.1	65.3	56.0	200.8
Treasury bonds and notes	8.2	–4.0	19.1	24.1	19.1	66.5
Agency bonds	8.3	18.8	26.0	29.3	24.3	106.7
Corporate bonds	0.5	0.8	6.7	6.0	3.5	17.5
Money market instruments	–2.0	4.8	–7.7	5.9	9.1	10.1
Net purchases of German securities[5]	1.4	2.0	1.8	2.3	0.9	8.4
Net purchases of Japanese securities[5]	–1.4	–1.0	3.7	0.1	-0.9	0.5

[1] To September 2003. [2] Sources do not include the corporate and non-deposit finance sectors; uses are also incomplete. [3] At both domestic and foreign banks. A decline of onshore loans adds to sources, while an increase, as in 2002–03, subtracts from sources. [4] Latest US Treasury data suggest that for the full year 2003, Chinese official and banking sectors continued their net purchases of US Treasury ($30.5 billion), agency ($29.6 billion) and corporate ($4.6 billion) debt securities. [5] Full-year data for 2003.

Sources: The People's Bank of China; Deutsche Bundesbank; Hong Kong Monetary Authority; Bank of Japan; US Treasury; BIS; authors' estimates; Ma and McCauley (2004b).

In response to increased demand for dollar loans from foreign-invested enterprises and foreign individual investors, foreign banks operating in China appear to have raised funds offshore and brought dollars onshore, particularly during the first half of 2004. This could help explain the move by the Chinese government in July 2004 to impose a quota on offshore borrowing by foreign banks operating in China, which is in line with the existing restrictions on Chinese banks (SAFE (2004b)). This latest measures could well have played a role in the reduction in the growth of offshore borrowing by banks in China evident in the third quarter of 2004 data (McGuire (2005)).

In sum, a supportive official policy towards foreign direct investment flows and the seemingly rather relaxed official restrictions on cross-border bank flows allow substantial capital mobility between China and the rest of the world on these two accounts. China's capital controls on cross-border portfolio flows involving securities and derivatives seem tougher. Even here, the Chinese authorities have started permitting longer-term portfolio inflows in a managed manner through the so-called "qualified foreign institutional investors" scheme. The big swing of capital flows to China seems to date largely the result of firms and individuals in China reducing their dollar holdings and increasing their dollar borrowing.

6. Onshore/offshore interest rate spreads

However, China's porous capital account itself is neither sufficient nor necessary to demonstrate capital mobility or the ineffectiveness of capital controls. A more unbiased, direct and quantified test of the degree of capital mobility and ineffectiveness of capital control is the cross-border arbitrage condition (Frankel (1992)). The strength of cross-border arbitrage provides a measure of the market segmentation imposed by capital controls and related regulations. Moreover, cross-border, short-term money market arbitrage is particularly relevant to the question of whether China retains some degree of independent monetary policy, which many observers assume is sacrificed to maintaining a tight link of the renminbi to the US dollar (Eichengreen (2004)).

Ma, Ho and McCauley (2004) show wide and persistent spreads between onshore money-market yields on the renminbi and their offshore counterparts, suggesting that capital controls in China have so far effectively segmented the onshore and offshore money markets. This approach is based on the data of offshore non-deliverable forwards (NDFs). Furthermore, the signs of these spreads seem to reflect the direction of the underlying market pressure on these Asian currencies in the presence of capital controls. Finally, these spreads have generally narrowed somewhat but widened again for the renminbi into 2004.

Construction, interpretation and limitation of onshore spreads

One way to measure the degree of cross-border market segmentation caused by capital controls is the spread between the onshore interest rate and the NDF-implied offshore interest rate on the home currency (Box 1). Using US dollar Libor, the NDF exchange rate and the bilateral dollar spot rate (of the same maturity and annualised), one may derive the offshore interest rate on the home currency as implied by covered interest parity. This NDF-implied offshore yield on the home currency could be substantially negative, as it is not constrained by the zero lower bound for nominal interest rates. A substantial onshore/offshore yield gap would suggest that capital controls effectively segment onshore and offshore markets.

In addition, the sign of the onshore/offshore yield spread can signal underlying market pressure on the currency. When the onshore interest rate is above its offshore NDF-implied counterpart, it indicates underlying appreciation pressure on the currency but effective capital controls limiting capital inflows into the home currency. When the onshore rate is below its offshore counterpart, it indicates depreciation pressure but effective restraints on capital outflows. Finally, the volatility of the spread may also contain information about the depth of the spot, NDF and onshore money markets, and the ease of transacting across them.

Some qualifications

Interpretations of onshore/offshore interest spreads are qualified, however, by a number of limitations. Ideally, the comparison should be between a liquid onshore bank interest rate and a similarly liquid offshore implied rate. But the fact that the domestic money market is most liquid at very short maturities, while NDF markets tend to be more liquid at longer maturities of three months or one year, makes it hard to find good liquidity at matching maturities. Since NDFs involve global banks with higher credit rating than onshore banks or even sovereigns, and in any case start out with only potential credit risk, onshore yields could exceed offshore implied yields even with full capital mobility. This implies that evolving credit and country risk premia complicate the interpretation of variations in the onshore/offshore interest spreads.

Findings

Capital controls in Asia bind to varying degrees

Estimates by Ma, Ho and McCauley (2004) of the three-month onshore/offshore interest spread for the six Asian currencies traded in NDF markets suggest that capital controls in Asia are binding to varying degrees, preventing smooth cross-border arbitrage that might constrain domestic short-term interest rates most relevant for monetary policy (Graph 6). The estimated spreads for the five of the six Asian currencies appear to be generally larger than what could be accounted for by other factors (such as transaction costs). The main exception is the Korean won. The estimated onshore/offshore yield spreads of the Chinese renminbi averaged some 250-300 basis points (bps). For the less volatile

period of 2002-2004, the average spread for the renminbi was the second largest in emerging Asia. This onshore-offshore yield gap for China is larger than the mean deviation from interest rate parity in Tokyo at its widest quarter in the 1978-81 period. This mean reached 83.7 basis points in the first quarter of 1978, when "expectations of a yen appreciation were very strong, and …the authorities introduced various measures to reduce capital inflows and to encourage outflows (Otani and Tiwari (1981), pp 808-9).

Swings in underlying market pressure

The relationship between the onshore and implied offshore yields also seems to reflect the swings in the underlying market pressure on the Asian currencies in question (Graph 7). In the wake of the Asian crisis, offshore NDF-implied interest rates were higher than onshore rates, reflecting ongoing depreciation pressure in the offshore trading at the time. Since 2001-02, however, offshore positioning on further Asian currency appreciation has driven offshore implied interest rates below onshore rates. This development is most obvious in the case of the Chinese renminbi, where the estimated onshore/offshore interest rate spread swung widely from a negative 400-1,000 bps in 1999-2001 to a positive 400-1,000 bps by late 2003 and early 2004.

In other words, despite considerable sanctioned or unsanctioned leaks on China's capital account, official capital and foreign exchange restrictions have so far remained a binding and substantial barrier to cross-border flows. In the short term, this barrier could provide the Chinese authorities some scope to use domestic interest rate adjustments to achieve their desired mix of external and internal policy objectives, despite the fact that active cross-border flows are sensitive to relative yields as well as expected exchange rate.

Spreads have narrowed but persisted over time

Ma, Ho and McCauley (2004) also show that the estimated absolute spreads for all six Asian currencies have narrowed somewhat from the late 1990s to more recently, and their variability has also diminished (Graph 6). In addition to the possibility that pressure for appreciation is weaker or more consistent than the depreciation pressure in previous years, two possible reasons for these observations can be offered. First, liquidity in the NDF markets and the quality of data on them may have improved in the latter period. Second, controls on capital flows may have diminished or may be consistently less effective against the recent incipient inflows. For instance, until recently, most regulations on cross-border transactions in Korea and China had been biased against capital outflows.

Box 1

The spread between onshore yields and NDF-implied offshore yields

In the absence of capital controls, the forward exchange rate of the home currency is linked by arbitrage to its spot rate and the interest rate differential between the home currency and the dollar through the covered interest parity

$$F = S(1+r)/(1+r^{\$})$$

where F is the forward rate, S the spot rate, r the interest rate on the home currency and $r^{\$}$ the dollar interest rate. When there are no cross-border restrictions, borrowing and lending ensure that the above holds.

However, when capital controls bind, non-residents may not have full access to onshore credit or placements, giving rising to NDFs.

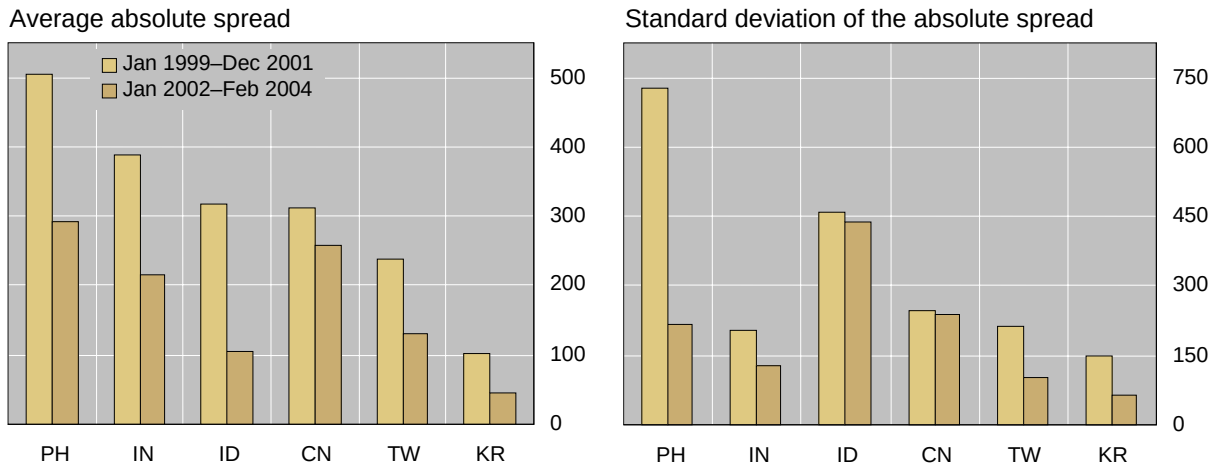
$$NDF = S(1+i)/(1+r^{\$})$$

where i is the NDF-implied yield on the home currency offshore. To the extent that the arbitrage between the onshore money market and offshore NDF market is effectively constrained by capital controls, the NDF-implied offshore interest rate, i, can differ considerably from the interest rate prevailing in the onshore money market, r. A large and persistent onshore/offshore spread $(r - i)$ indicates the presence of effective cross-border restrictions.

Note: See Ma, Ho and McCauley (2004).

Spreads between onshore and offshore NDF-implied yields

In basis points



PH = Philippines; IN = India; ID = Indonesia; CN = China; TW = Taiwan (China); KR = Korea.

Note: The spread is calculated as the difference between a representative three-month onshore money yield and the NDF-implied offshore yield of the same maturity. The NDF-implied offshore yield is inferred from the spot rate, the NDF rate and USD Libor rate. The onshore yield is: for Korea, the CD rate; for Taiwan (China), the secondary CP rate; for Indonesia, the Bank Indonesia certificate rate; for China, the Chibor; for India, the 91-day T-bill auction yield; and for the Philippines, the secondary 91-day T-bill rate. For Taiwan, data start in April 2000; for Indonesia, March 2001.

Sources: Bloomberg; CEIC; authors' estimates. Graph 6

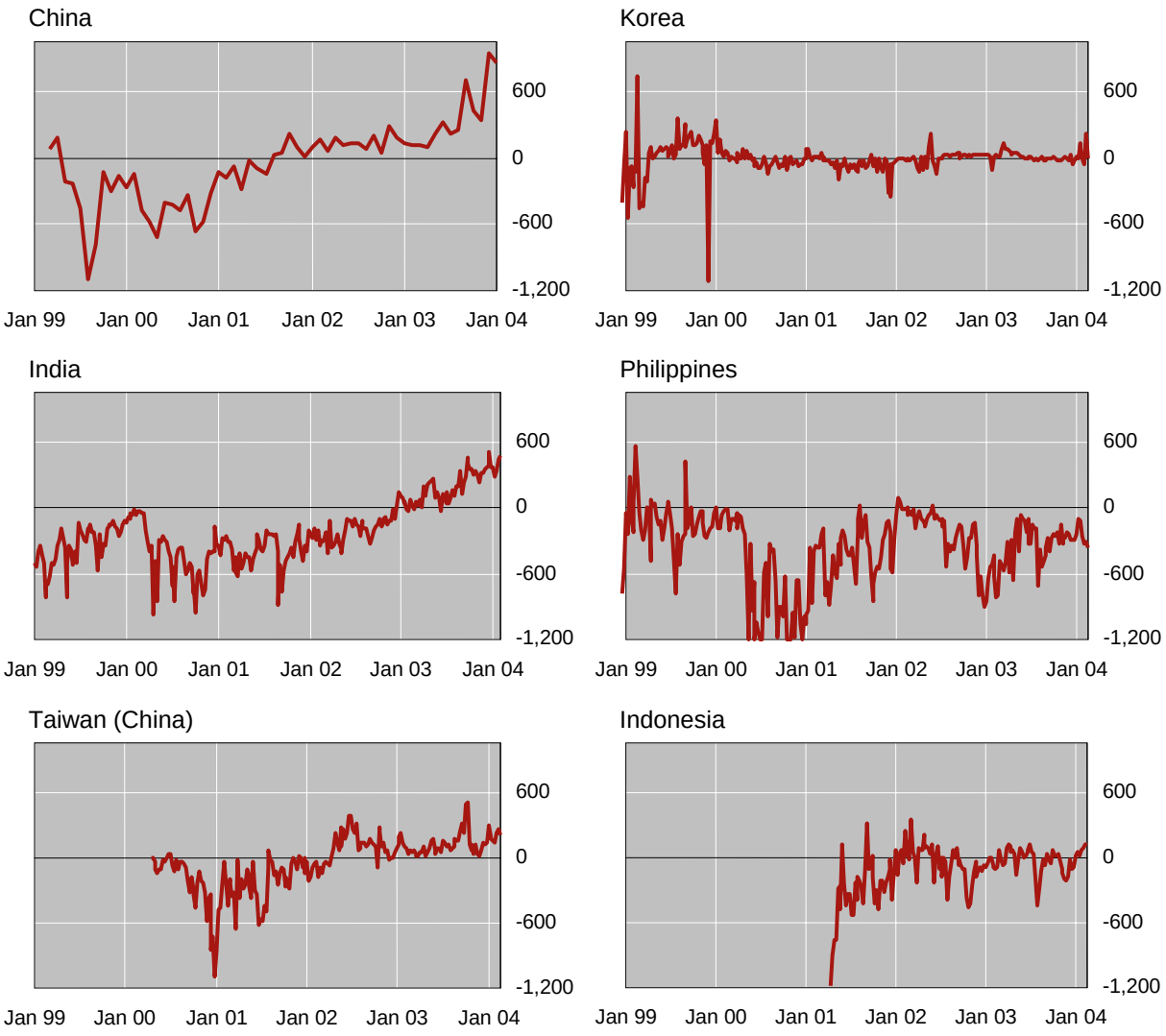
Prasad et al (2005) argue that the generalisation that the effectiveness of capital controls diminishes over time, which draws on Latin American and Japanese experience, applies to China. Several considerations incline us to agree. The greater openness of the Chinese current and capital accounts has offered more opportunities. Non-FDI capital flows have responded to interest rate differentials and expectations of a renminbi appreciation.[7] As noted, the shift from outward pressure to inward pressure of capital flows weakened the effectiveness of capital controls, because much of the structure of regulations was focused on preventing outflows. This factor has lost importance, though, as the authorities have moved to make the regulations more symmetric. It may even be that the cost of capital controls is rising, so that attaining a given result is getting more expensive, and, in that sense, controls are losing effectiveness.

The evidence of onshore and offshore interest rate differentials, however, remains the most direct test of the effectiveness of capital controls. Here the evidence in Graph 6 for the reduced effectiveness of Chinese controls is not strong. Moreover, early 2004 saw some very extreme readings in the form of highly negative offshore renminbi interest rates as global hedge funds bet on renminbi revaluation. Thus, the argument that the effectiveness of Chinese capital controls is waning awaits conclusive evidence.

[7] Prasad et al (2005) also cite Cheung et al (2003) as corroborating formal empirical work. The most relevant strand of evidence examined by these latter analysts is the short-term interest rate differential between the US and China, with which we deal next.

Onshore less offshore NDF-implied yields

Three-month rates, in basis points



Note: See Graph 3. For China, monthly data; for all others, weekly.

Sources: Bloomberg; CEIC; BIS estimates.

Graph 7

7. Monetary independence

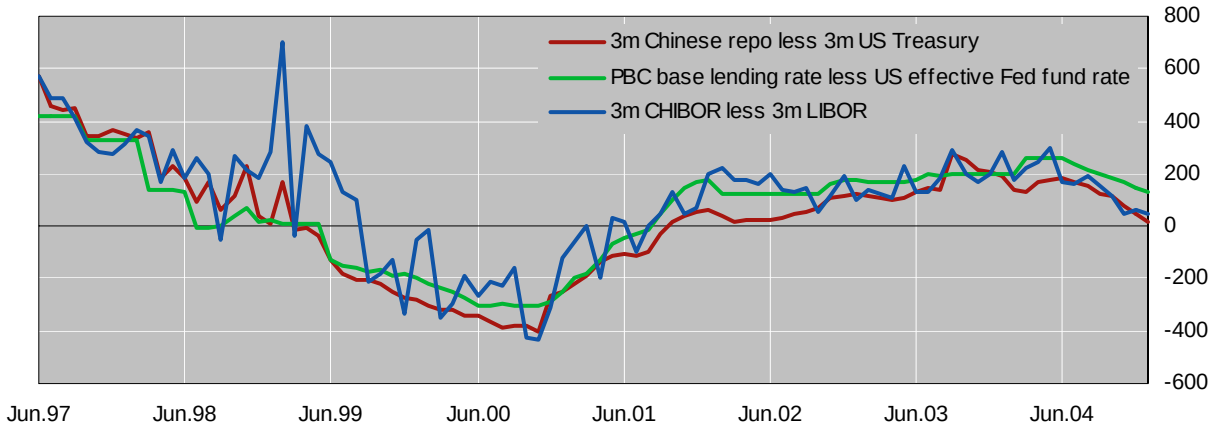
The failure for the onshore and offshore renminbi yields to equalise through cross-border arbitrage indicates that capital controls bite. This in turn points to a degree of monetary independence in China. Another piece of evidence that points in the same direction is the very distinct interest rate cycles in China and in the US during 1997-2005, despite the de facto dollar peg of the Chinese renminbi. Graph 8 reveals sizable and sustained albeit varying differentials between renminbi money-market yields in China and the US dollar yields in the United States and London. Yield differentials, whether measured in terms of policy rates or short-term money market rates, have generally been 100 basis points or more in absolute value. While at writing these differentials are narrowing toward zero, experience since the tightening of the peg to the dollar in 1997 suggests that the Chinese monetary authorities can still pursue their independent domestic policy settings, even in the face of capital flows responsive to the resulting yield gap.

Cheung, Chinn and Fujii (2003) fit autoregressive models to the short-term interest rate differential between China and the United States and find that "the lagged uncovered interest differential variables are positively significant and indicative of strong persistence…If monies are free to move across markets, arbitrage can generate profits based on the pattern of persistent deviation and help restore the parity. However, this kind of arbitrage activity is quite difficult, especially in the short run, given the prevailing capital controls in the PRC".[8]

It might be objected that the yield differentials are not wide enough to indicate monetary independence. This suggests the usefulness of a benchmark. How do the differentials between the domestic renminbi yields and global dollar yields compare to those between the euro and dollar yields? The euro area, after all, is another large economy, but one with a flexible exchange rate and an open capital account. Table 2 compares the differentials between the CHIBOR and the LIBOR with those between EURIBOR and LIBOR.[9] For both the 7-day and 3-month maturities, the average differentials between CHIBOR and LIBOR are roughly as wide as those between EURIBOR and LIBOR. While the range of the yield differentials between the CHIBOR and LIBOR is much wider than those between EURIBOR and LIBOR, this might be ascribed to the lack of development and consequent volatility of the Chinese money market. More tellingly, for the period under consideration, if anything, EURIBOR and LIBOR exhibit greater positive co-movements than CHIBOR and LIBOR. Thus, the evidence on interbank market yields seems to suggest that China, with a fixed exchange rate and continued capital controls, enjoys no less monetary autonomy than the euro area does. This observation is consistent with the view that capital controls in China remain binding.

Domestic CNY yields less US dollar yields

In basis points



Source: CEIC.

Graph 8

[8] In addition, Cheung et al report a statistically significant downtrend in the interest rate differential over the sample period January 1996 to May 2002. This is read by Eichengreen (2004) as indicating that the capital controls are less effective over time. As the authors note (p 6), however, "there is a subtlety involved in using parity conditions to evaluate the level of integration. When a parity condition is rejected, then… diminutions of deviations may be due either to greater economic integration, greater convergence of economic policies, or both". Our interpretation would lean toward the latter: as the Chinese authorities brought down the high inflation of the early 1990s, their interest rate settings converged to US and German/European norms.

[9] Table 3 in the appendix reports even stronger conclusions on the basis of daily data.

Table 2 **Interbank rate differentials: renminbi-dollar and euro-dollar**

	7 days		3 months	
	CHIBOR/LIBOR	EURIBOR/LIBOR	CHIBOR/LIBOR	EURIBOR/LIBOR
Ave of absolute difference (bps)	152.7	142.1	271.2	276.9
Max of the differential (bps)	173.4	190.0	783.5	166.4
Min of the differential (bps)	-429.6	-281.5	-435.2	-283.8
Correlation coefficient	0.405	0.657	0.591	0.744

Note: The interbank market offer rates are CHIBOR for the renminbi, LIBOR for the US dollar and EURIBOR for the euro; monthly data from January 1999 to February 2005.

Source: CEIC.

8. Conclusion

Cross-border flows in China, through either current or capital transactions, rose massively over the past two decades, a testimony to the country's increased openness and integration into the global economy. These stepped up flows cannot make the job of controlling capital flows any easier for the Chinese authorities. The latest acceleration of China's official reserves accumulation was fuelled by rising non-FDI inflows that were sensitive to relative yields as well as currency expectations. Despite the presence of extensive official restrictions, cross-border capital flows still pass through the more liberalised current transactions (via remittances and leads/lags in trade payments) and the leaky capital account. These flows have found reflection in Chinese banks' drawing down their net overseas claims on BIS-reporting banks.

However, current official restrictions appear to have effectively limited cross-border flows and thereby segmented onshore/offshore markets. In particular, the spreads between the onshore yield and offshore NDF-implied yield on the Chinese renminbi suggest that cross-border arbitrage has not equalised onshore and offshore renminbi interest rates. This segmentation questions the view that China has no independent monetary policy. A side test of the short-term independence of short-term interest rate settings shows that the domestic renminbi money market yields differ from dollar Libor no less than short-term rates in the euro area (EURIBOR), while displaying lower correlations.

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Appendix: What determines the Chinese foreign currency deposits: econometric evidence

We rely on regression analysis to explain the monthly change in the ratio of onshore foreign currency deposits to renminbi deposits for a very limited sample from 1999:06 to 2001:12. We test three hypotheses posed by our analysis. First, the ratio would rise in response to wider differentials between onshore dollar deposit rates and local currency deposit rates. Second, the ratio would increase in anticipation of dollar appreciation vis-à-vis the renminbi. Finally, the recent B-share market liberalisation would drain foreign currency deposits from the system on impact. The estimated coefficients reported below are of the right sign and statistically significant. The empirical evidence lends support to the main arguments of our analysis.

(1) $F_t = -0.065 + 0.041R_t + 0.382E_{t-1}$
(–1.96) (2.59) (1.13)

$\bar{R}^2 = 0.190$; $DW = 2.175$; $LLF = 25.14$

(2) $F_t = -0.042 + 0.083R_t + 0.558E_{t-1} - 0.002B_t$
(–1.46) (2.83) (1.93) (–3.54)

$\bar{R} = 0.426$; $DW = 2.203$; $LLF = 31.04$

where

F_t = the change in the ratio of onshore foreign currency deposits to renminbi deposits
R_t = the interest rate differential (onshore USD minus CNY 12-month rate)
E_{t-1} = the lagged percentage changes in the Asian currency index
B_t = the percentage change in the number of B-share investor accounts.

Note: The "Asian currency index" is the trade-weighted index of the bilateral US dollar rates of seven floating Asian currencies: the Indonesian rupiah, Japanese yen, Korean won, Philippine peso, Singapore dollar, New Taiwan dollar and Thai baht. The trade weight is the 1999 total trade value in dollars. For details, see Ma and McCauley (2002b).

Table 3 **7-day interbank rate differentials at the daily frequency: renminbi-dollar and euro-dollar**

	CHIBOR/LIBOR	EURIBOR/LIBOR
Ave of absolute difference (bps)	120.6	107.3
Max of the differential (bps)	770.4	205.4
Min of the differential (bps)	-439.8	-203.4
Correlation coefficient	0.159	0.856

Note: The interbank market offer rates are CHIBOR for the renminbi, Libor for the US dollar and EURIBOR for the euro; daily data from 1 September 2000 to 4 March 2005.

Source: CEIC.