Foreign exchange market operations: the recent experience of Hong Kong

Peter Pang[1]

Introduction

This note reviews the experience of the Hong Kong Monetary Authority (HKMA)'s foreign exchange market operations under the currency board arrangement since September 2003. During this period, the Hong Kong dollar (HK$) exchange rate against the US dollar (US$) experienced some unusual movements relative to the pattern in recent years. After staying very close to the level of HK$ 7.8 per US dollar for a number of years, in late September 2003 the Hong Kong dollar appreciated against the US dollar. The exchange rate at one point reached HK$ 7.7050 per US dollar, about 10 basis points (or 1.23%) away from 7.8. To stabilise the exchange rate, the HKMA purchased US dollars against Hong Kong dollars from banks, which resulted in a sizeable increase in interbank liquidity and led interbank interest rates to fall below US dollar interest rates. During the spring of 2004, the Hong Kong dollar exchange rate weakened gradually and reached the 7.8 level at which the HKMA stands ready to sell US dollars for Hong Kong dollars in response to requests from banks. More recently, since early October 2004, there has been renewed appreciating pressure on the Hong Kong dollar.

The recent episode of appreciation pressures on the Hong Kong dollar raises some interesting issues. What are the main factors that have contributed to the strong inflows of funds into the Hong Kong dollar? How has the HKMA conducted market operations to stabilise the exchange rate under the currency board arrangement? What are the implications of these operations on domestic monetary conditions and therefore the wider economy? To address these questions, the next section provides a brief description of the currency board arrangement in Hong Kong. Section 2 summarises recent market developments and considers factors that may have contributed to the upward pressures on the Hong Kong dollar, including a weakening of US dollar against other major currencies, market speculation about a revaluation of the renminbi, and improvements in economic conditions in Hong Kong. Section 3 outlines some policy considerations, including the HKMA's strategy for market operations, and implications for monetary and financial conditions in Hong Kong. Section 4 concludes.

1. Hong Kong's currency board arrangement

The monetary policy framework in Hong Kong is that of a currency board, under which the Hong Kong dollar is linked to the US dollar at a rate of 7.8 (hence the Linked Exchange Rate System). Under this system, the HKMA seeks to stabilise the Hong Kong dollar/US dollar exchange rate by buying and selling Hong Kong dollars on bank offers in the face of capital outflows and inflows. Foreign exchange market operations by the HKMA lead to changes in banks' clearing balances held with the HKMA (the aggregate balance). As a result of changes in the interbank liquidity, which is a key element of the monetary base, interbank interest rates will move in the direction that is conducive for a reversal of fund flows. The interest rate arbitrage activity is a key part of the automatic adjustment process that maintains exchange rate stability.

Currency board principles require that changes in the monetary base can only be brought about by corresponding changes in foreign exchange reserves. Thus, operations by the currency board in the foreign exchange market can have immediate impact on domestic monetary conditions, and no sterilisation is allowed. Under normal conditions, interest rates in Hong Kong would follow closely those in the US, due to interest rate arbitrage activity. However, when there are strong inflows or

[1] Deputy Chief Executive, Hong Kong Monetary Authority.

outflows of funds, Hong Kong dollar interest rates can deviate substantially from their US dollar counterparts.

As to the exact level of the exchange rate at which the HKMA is committed to buy and sell Hong Kong dollars, the current system involves an asymmetric arrangement. Specifically, the HKMA undertakes to convert banks' Hong Kong dollar clearing balances to US dollars at the rate HK$ 7.8/US$ when there are pressures on the weak side.[2] When this so-called "convertibility undertaking" (CU) is triggered, the Aggregate Balance will contract, leading to an increase in domestic interest rates. By contrast, the HKMA does not announce an explicit exchange rate at which it will stand ready to convert US dollars to Hong Kong dollars, although it is clear that it will undertake HKD sales if the exchange rate strengthens materially from 7.8. The absence of such a "strong-side" undertaking implies that the HKMA can determine at which level and under what circumstances it will accept offers from banks to purchase US dollars. This gives the HKMA some very limited technical discretion. It is noted that the absence of an explicit CU on the "strong side" is well-known among market participants and has been discussed publicly on a number of occasions by the HKMA.[3] The rationale of this arrangement is set out in Section 3.

The HKMA tries to keep its market operations as simple and easily understandable as possible. The HKMA conducts its foreign exchange operations only in the spot Hong Kong dollar market across different time zones, and as noted above, all currency board transactions are unsterilised. The HKMA has been disclosing the records of discussion of the Exchange Fund Advisory Committee's (EFAC's) subcommittee on currency board operations since November 1998 to promote public understanding of its market operations.[4] Immediately after the completion of market operations, the HKMA releases real time data on its net injection or withdrawal of funds in the interbank market and the corresponding forecast changes in the aggregate balance via Reuters contribution page. This measure enables market participants to anticipate changes in interbank liquidity and facilitates a more efficient adjustment in interbank interest rates. Moreover, detailed information on the monetary base and interbank liquidity are released daily on the HKMA website and its Reuters page.

2. Recent market developments and HKMA's operations

In late September 2003, the Hong Kong dollar appreciated against the US dollar, and reached an intraday high of HK$ 7.705 to the US$ in early October 2003. This marked a deviation from the usual trading range of 7.797 and 7.8. Under the currency board arrangements, the HKMA carried out 104 strong-side operations, at which it sold Hong Kong dollars for US dollars, between 23 September 2003 and 10 February 2004. A total of HK$ 54.17 billion was sold by the HKMA during this period.

Chart 1 shows the Hong Kong dollar spot exchange rate during this period together with the HKMA's strong-side operations, as well as the operations conducted as a consequence of the exchange rate reaching the CU. It shows that the level of the exchange rate at which strong-side operations take place vary over time. For instance, while such operations in 2002 were conducted at levels above 7.79, during the episode under consideration they typically took place between 7.75 and 7.77. Since October 2004, strong-side operations have typically been conducted at levels above 7.75. It is noted that under normal market conditions, strong-side operations are conducted in a passive manner. However, when there are strong inflows or when the exchange rate strengthens sharply, a more proactive approach is desirable (see below).

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[2] Following the massive speculative attack in August 1998, a number of changes to the currency board mechanism, the "seven technical measures", were adopted in September 1998. Among these was the announcement of an explicit CU by the HKMA to banks to convert on request Hong Kong dollars to US dollars at the fixed rate of 7.75, which served to put a limit on the exchange rate on the "weak side". It was subsequently decided that the CU would be shifted gradually from 7.75 to 7.8 by HK$ 0.0001 per day over the period from 1 April 1999 to 14 August 2000, in order to bring the CU rate in line with the official linked rate of 7.8.

[3] Joseph Yam (2004).

[4] The subcommittee was established in 1998 as part of the reform package to strengthen the currency board arrangement. It convenes on a regular basis to review Currency Board Operations and considers related policy issues.

In accordance with currency board principles, the sales of Hong Kong dollars by the HKMA were matched by corresponding increases in the aggregate balance, which rose to an unprecedented level of HK$ 54.54 billion on 18 March 2004. Chart 2 plots the daily aggregate balance, with the period from late September 2003 to early February 2004 highlighted. In the 12 months preceding this episode, the average level of the aggregate balance was HK$ 370 million. Thus, interbank liquidity rose much beyond what banks previously had required for interbank payment purposes.

Chart 1

Strong-side operations and the triggering of the CU

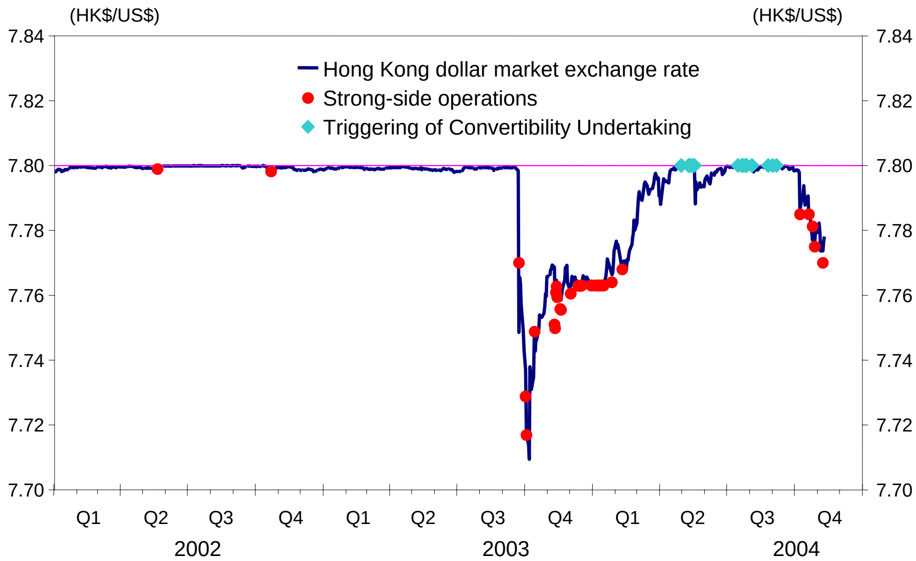
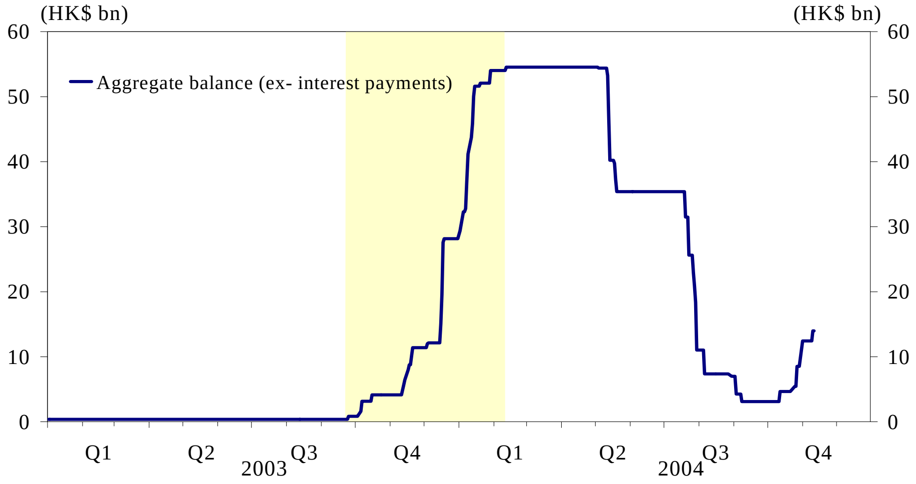


Chart 2

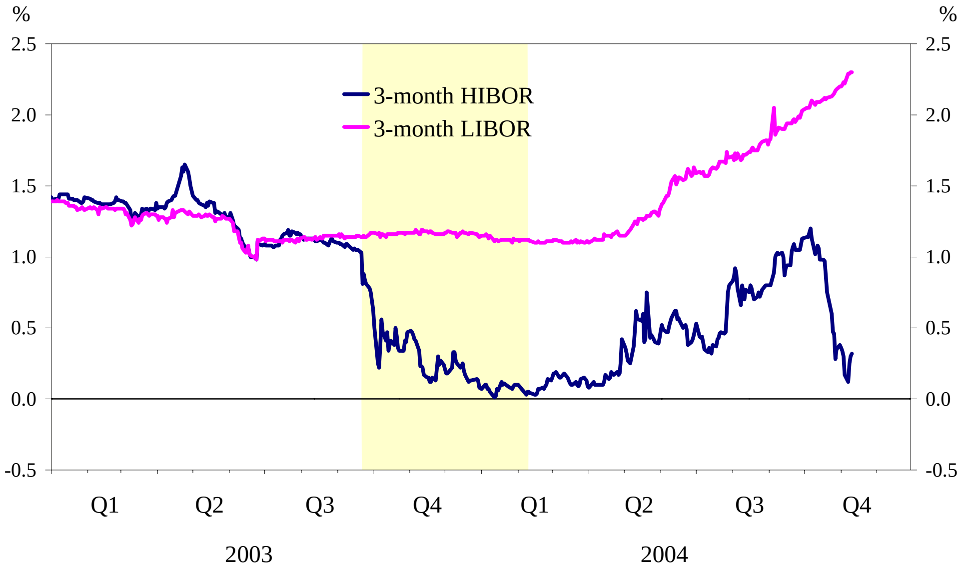
Aggregate balance



With ample liquidity in place, Hong Kong dollar interest interest rates fell, especially at the shorter end of the yield curve. In particular, the overnight HIBOR declined quickly to near-zero levels between late September and early October 2003, and remained at those levels until late August 2004. Chart 3 shows the level of the 3-month Hong Kong dollar and US dollar interest rates, with the same period highlighted as in Chart 2. While the US dollar rate was stable at a level somewhat above one percent, the Hong Kong dollar rate fell sharply towards zero.

Chart 3

HK$ and US$ interest rates



During the spring of 2004, signs of capital outflows appeared and the Hong Kong dollar depreciated towards the 7.8 level. Between late April and the end of September 2004, the CU was triggered repeatedly, causing the HKMA to purchase some HK$ 51.45 billion from the market. Interbank interest rates rose along with the US interest rates, reflecting the monetary tightening by the US Federal Reserve. However, there was renewed appreciation pressure on the Hong Kong dollar exchange rate in October 2004, prompting the HKMA to conduct a number of strong-side operations by selling HK$ 10.9 billion to the market, leading to matched increases in the aggregate balance. As a result, Hong Kong dollar interbank interest rates fell to near-zero levels again, increasing the negative spreads against US rates.

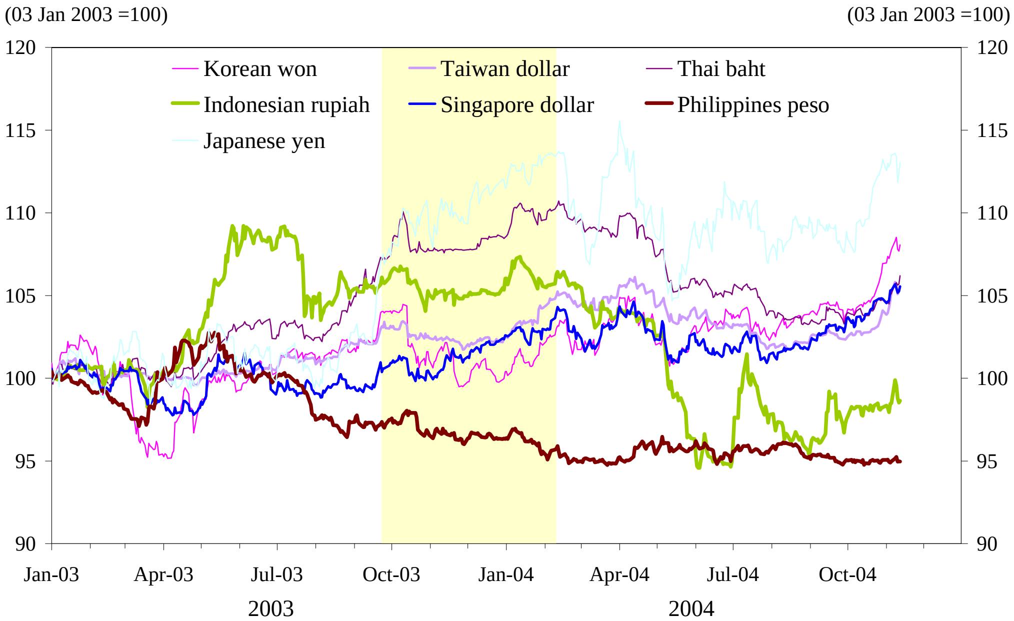
Both external and domestic factors may have played a role in the strengthening of the Hong Kong dollar exchange rate in this episode. These include a weaker US dollar, speculative pressures for an appreciation of the renminbi and improved economic conditions in Hong Kong. In addition, market dynamics including an unwinding of Hong Kong dollar short positions is likely to have played a role as well.

Weakened sentiment towards the US dollar

The strong inflows of funds took place against the background of market concerns about the sustainability of the current account deficit in the US and a weak US dollar. Moreover, the US administration had been calling for more exchange rate flexibility, especially on the part of its major trading partners in Asia. The G7 communiqué issued on 20 September 2003 reiterated this position, leading to market expectations of a depreciation of the US dollar against Asian currencies. Chart 4 illustrates that most of the Asian currencies that floated, particularly the yen, appreciated against the US dollar in this period.

Chart 4

Exchange rates of Asian currencies against the US$



The G-7 statement led to renewed speculation that the renminbi would be revalued and the discount of the renminbi in the non-deliverable forward (NDF) market widened markedly. Chart 5 shows the renminbi /US dollar NDF rate and the size of the HKMA's foreign exchange operations. Positive values denote the amount of Hong Kong dollars sold by the HKMA for US dollars on the strong side and negative values denote the amount of Hong Kong dollars purchased by the HKMA as a consequence of the exchange rate reaching the 7.8 limit. Chart 6 provides a similar comparison between the Japanese yen/US dollar spot exchange rate and the HKMA's market operations. These two charts indicate that strong-side operations, which were prompted by inflows of funds, were associated with a sharp widening of the 12-month renminbi NDF points as well as the weakening of the US dollar against the yen. The subsequent triggering of the CU due to outflows took place when the yen exchange rate and renminbi forward points reversed markedly.

There are a number of explanations for why the weaker US dollar and upward pressures on the renminbi led to inflows of funds into Hong Kong. First, the weaker US dollar, to which the Hong Kong dollar is linked, implies a depreciation of the Hong Kong dollar against other major currencies including floating Asian currencies. This improves Hong Kong's external competitiveness and thus the economic outlook, which in turn increases the potential return on Hong Kong assets. Because the renminbi is also pegged to the US dollar, Hong Kong could also benefit from an increased intermediation of exports originating from Mainland China. Second, the speculative pressures on the renminbi attract inflows into Hong Kong dollars, because some Hong Kong dollar denominated assets, including H and red-chip shares listed in Hong Kong, would benefit from a higher valuation should the renminbi appreciate. Furthermore, some market participants perceive a link between the Hong Kong dollar and the renminbi given the increasing economic integration between the two economies and the stable exchange rate between the two currencies in the past decade. Thus, they expect that a change in the renminbi exchange rate regime will also lead to a change in the Hong Kong dollar exchange rate system (even though this is ungrounded speculation).

Chart 5

Renminbi non-deliverable forward points and market operations

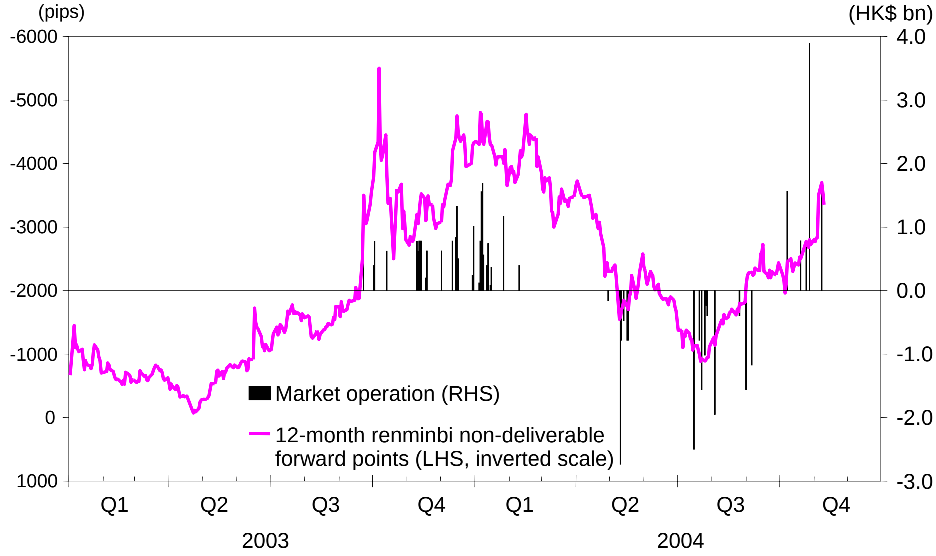
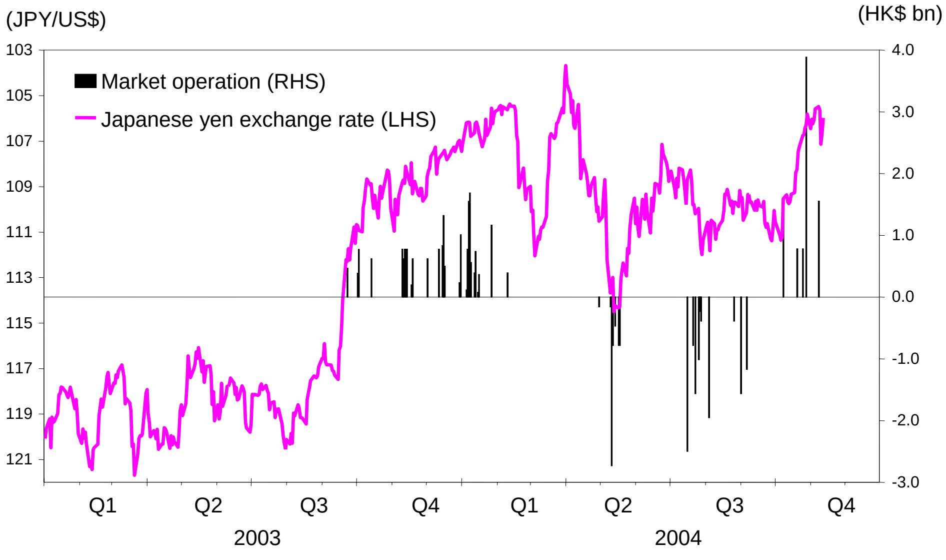


Chart 6

The YEN/US$ exchange rate and market operations



Improved economic conditions in Hong Kong

The second factor was the marked improvement in economic conditions and in the growth outlook for Hong Kong. Several favourable developments appear to have played a role, in particular the strengthening of global economic conditions, the conclusion of a Closer Economic Partnership Agreement (CEPA) with the mainland, and the mainland's relaxation of restrictions for mainland visitors travelling to Hong Kong. Along with the recovery in economic growth, the unemployment rate, which peaked in August 2003 at 8.7%, started declining and reached 6.9% in July 2004, and there, were signs that deflation was coming to an end. In particular, following a number of years of sharp decline after the burst of the bubble in 1997, property prices started to rebound from the summer of 2003.

A recent study by Gerlach, Ho and Leung (2004) finds that pressures on the Hong Kong dollar were mainly determined by the yen/US dollar exchange rate and the 12-month renminbi NDF point, rather than domestic economic variables.[5] This suggests that external factors played a more important role in explaining the inflows of funds in this episode. Furthermore, there is a clear systematic component in HKMA's strong-side operations. In particular, the likelihood of strong-side operations increases with the spreads of the Hong Kong dollar overnight interest rate over its US dollar counterpart, and decreases with the level of the aggregate balance and 12-month Hong Kong dollar forward rate.

Market dynamics: an unwinding of Hong Kong dollar short positions and limited interest rate spreads

In addition to the economic factors noted above, market dynamics have also likely played a role. The abrupt appreciation of the Hong Kong dollar at the beginning of the period considered led to an unwinding of Hong Kong dollar short positions, some of which had been entered into by market participants to hedge against the perceived risks of depreciation of the currency. This probably exacerbated the movements of the Hong Kong dollar. It is noted that banks' net US dollar open position rose to about HK$ 94 billion by end-July 2003 from HK$ 60 billion two years ago, but declined in the episode of appreciating pressures to HK$ 46 billion by end-July 2004.

More generally, the private sector of the Hong Kong economy has accumulated a large amount of net foreign assets, part of which reflects increased savings and limited investment opportunities in Hong Kong during the economic downturn. This is evidenced by the large current account surpluses in the past few years, which reached a high level of over 10% of GDP in 2003. Improved sentiments towards the Hong Kong dollar and its denominated assets have probably caused some repatriation of funds back to Hong Kong.

Finally, interest rate arbitrage activity, which is a key element of the automatic adjustment mechanism under the currency board arrangement, has probably not functioned effectively, because of limited spreads between Hong Kong dollar and US dollar interest rates. This is because US interest rates were at low levels of about 1% pa until recently (still low relative to historical standards, despite the increases in the past few months), and Hong Kong dollar interest rates could not fall below zero. As a result, the strong-side operations could not lead to the development of an interest rate spread sufficiently large to induce outflows.

3. Operation strategy and policy considerations

The strength of the spot exchange rate relative to the linked rate of 7.8 has led some market participants to question the merits of not having an explicit CU on the strong side. It is argued that the HKMA could have maintained the spot exchange rate at a level close to 7.8 by committing to buy US dollars at that level on an unlimited basis. Such an explicit CU would help anchor exchange rate expectations, which should facilitate interest rate arbitrage activity. With expectations of zero change in the exchange rate, even a small interest rate differential should induce an outflow of funds.

It is noted that policy issues concerning strong-side operations have been considered by the currency board subcommittee of the Exchange Fund Advisory Committee on a number of occasions in recent years. The subcommittee is fully aware of the potential benefits and costs of an explicit CU on the strong side. In particular, it is recognised that well-defined and narrow margins for movement in the market exchange rate would increase the predictability and transparency of the system, and thus conceptually would be more congruous with the currency board's objective of providing a firm exchange rate anchor. However, a number of considerations point to potential costs of an explicit strong-side CU. The subcommittee considers that, on balance, the current arrangement is appropriate.

The most important consideration is that the absence of an explicit CU makes it difficult for speculators to calculate the cost of shorting the Hong Kong dollar, as they do not know the precise rate at which Hong Kong dolllars could be bought back to square their positions. Thus, the possibility of a small

[5] Stefan Gerlach, Daryl Ho and Frank Leung (2004).

appreciation of the Hong Kong dollar helps reduce the downward speculative pressures. In this respect, it is noted that it is more difficult to defend a fixed exchange rate on the weak side than on the strong side. On the weak side, a monetary authority's ability to purchase the domestic currency is limited by the size of foreign exchange reserves. The resulting high interest rates depress the economy, and could even threaten financial stability, reducing the political acceptance of maintaining the fixed exchange rate. On the strong side, the monetary authority could buy the US dollar on an unlimited basis by creating Hong Kong dollar liquidity. While the resulting zero interest rate may lead to overheating pressures in the economy, the impact is generally viewed to be more benign than that of high interest rates. Thus, the ambiguity on the strong side is "constructive" in that it helps to redress this asymmetry. By sacrificing a bit of transparency on the strong side, which is relatively easy to defend, it increases the resilience of the system to weak-side pressures, thereby improving the sustainability of the system as a whole. A recent IMF study presents a theoretical model showing that under certain circumstances some ambiguity on the strong side of the linked exchange rate is optimal, because it improves the credibility and resilience of the whole system.[6]

Next, by providing some scope for the exchange rate to strengthen in response to capital inflows, it helps absorb pressures and reduce, albeit on a limited basis, the impact on interbank interest rates and reserves. Moreover, an explicit CU with a tight bid-offer spread would not be conducive to the development of a liquid foreign exchange market. Instead of dealing with one another, banks would choose to transact with the HKMA when the bid-offer rates are hit.

In the absence of an explicit CU on the strong side, the HKMA exercises discretion in choosing the precise level of exchange rate at which to sell Hong Kong dollars, taking into consideration the prevailing market conditions. In general, strong-side operations are passive in nature, in that the HKMA responds to bank offers of US dollars at market rates instead of placing out orders in the foreign exchange market. However, a more proactive approach is adopted on occasions when there are strong speculative inflows or when the exchange rate strengthens sharply. This is because banks taking a speculative long position in the Hong Kong dollar have a disincentive to sell US dollars to the HKMA, as the transaction would lead to an increase in interbank liquidity, followed by an easing of interest rates and the exchange rate. To the extent that they constitute a significant force in the market, the exchange rate may strengthen sharply, while banks remain reluctant to approach the HKMA. Under those circumstances, placing an order in the market would be more effective in capping the exchange rate movement, and ensuring that the interest rate adjustment mechanism kicks in when the exchange rate hits the "intervention" rate.

As currency speculation would invariably be associated with rumours about the government's resolve to maintain the link, the "intervention" rate should be set close to 7.8 to remove market uncertainties. This has indeed been the case, although the HKMA has not fixed an implicit target or tolerance level for strong-side operations. Looking forward, systematic operations by the HKMA on the strong side should help anchor the exchange rate. Interest rate arbitrage activity will also be helped by a widening of interest rate spreads, as the US Federal Reserve is generally expected to raise the federal funds target rate further.

Finally, it is noted that currency board operations affect domestic monetary conditions to the extent they change interest rates, and that in the face of capital inflows, the impact would be capped because interest rates have a zero bound. Unlike most other systems, the aggregate balance can only be changed through foreign exchange transactions with the HKMA, and banks cannot withdraw balances with the HKMA to fund lending. In this episode, the impact of near zero interest rates on economic and financial conditions has not been a major concern. This is because the Hong Kong economy is still at an early phase of recovery. It has just emerged from a prolonged period of deflation, and the demand for credit remains subdued. Property prices have increased markedly, but this represents a rebound from a low level following sharp falls in earlier years.

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6 See Paul Gruenwald (2004).

4. Conclusions

This paper reviews the recent experiences of the HKMA's operations in the foreign exchange market. It considers factors underpinning the strong inflow of funds in the latter part of 2003 and the more recent period since October 2004. These include weakened sentiments towards the US dollar, speculations about a renminbi revaluation and an improved outlook for the Hong Kong economy. Furthermore, market dynamics has probably exacerbated the upward pressures on the Hong Kong dollar. Some investors had previously accumulated large Hong Kong dollar short positions that took some time to unwind. Interest rate arbitrage activity was probably limited by the small Hong Kong dollar/US dollar interest rate spreads.

The note also outlines policy considerations in relation to the absence of an explicit CU on the strong side of the linked exchange rate. The current arrangement is considered optimal mainly because the constructive ambiguity on the strong side helps deter speculative pressures against the Hong Kong dollar on the weak side. In choosing the exact level of the exchange rate to sell the Hong Kong dollar, the HKMA has mainly responded to bank offers of the US dollar in a passive manner. Nevertheless, when there are strong speculative pressures or the exchange rate appreciates sharply, a proactive approach is adopted to counter possible strategic behaviour of large market players, and to provide an anchor for the exchange rate.

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