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The Hong Kong Currency Board: Crisis, Reform and Future Prospects

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(DRAFT)

Summary:

I will review the evolution of the institutional arrangements of the Hong Kong currency board, which gave the Exchange Fund an increasing control of the monetary base, and discuss how the short term liquidity was managed. A problem with the currency board was that, as shown in the October 1997 crisis, an attack on the Hong Kong dollars would lead to very a sharp increase in the interest rate.

I will review the criticism of the currency board operations and the policy concerns of the government. The debate concerns the efficacy of using the interest rate weapon to fight speculators, and the amount of foreign reserves that should be put at risk. The debate and the continuing speculative activities after October 1997 culminated in the unprecedented government foray into the stock market. But more importantly, they led to the introduction of the so-called Seven Technical Measures, which committed the government to a more rule-based and transparent currency board, that had much to do in restoring the financial stability in Hong Kong.

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A Brief Overview of the Hong Kong's currency board up to October 1997

The Hong Kong's currency board was evolved from the institutional arrangements that existed prior to the adoption of the linked exchange system in 1983. In 1983, when the linked exchange rate system was adopted, the only new arrangement that was introduced was that the issuance of banknotes must be backed by Certificates of Indebtedness, which were redeemable at a fixed rate of 7.80 Hong Kong dollar to the US dollar. The inter-bank clearing function continued to be performed by Hong Kong and Shanghai Banking Corporation (HSBC), through the Hong Kong dollar balance accounts maintained by other banks with HSBC. The Exchange Fund can affect inter-bank liquidity by conducting transactions with the banks through their account at the HSBC. This gives the Exchange Fund only a loose control on the aggregate clearing balances in the system, as HSBC remains another provider of liquidity to the banking system.

In the early days of the linked exchange rate system it was hard to give a definition of the monetary base. Banknotes were backed by the U.S. dollars, which made them part of the monetary base of a currency board system. But there was no requirement that the clearing balances (including HSBC's credit to other banks) in the system be backed by U.S. dollars. The maintenance of the pegged exchange rate was achieved not so much by currency board disciplines but by market intervention in the foreign exchange market. Both the exchange rate and the interest rate exhibited a high degree of volatility in this period. While these were partly due to the high degree of uncertainty concerning Hong Kong's political future at the time, they could also be explained by the difficulties of the Exchange Fund to affect inter-bank liquidity.

In 1998, new accounting arrangements were introduced to give the Exchange Fund a more direct means to provide inter-bank liquidity. Under these arrangements, the HSBC was required to maintain a balance at the Exchange Fund at least as large as the aggregate clearing balances of other banks deposited with the HSBC. The size of the HSBC's account at the Exchange Fund was under full control by the Fund through market operations and fiscal account transfers. Thus the new accounting arrangements gave the

Exchange Fund a tool to set the ceiling on inter-bank liquidity. And, for the first time, it was possible to define the monetary base – it would be logical to define it to be consisting of banknotes and the HSBC's clearing account. Although there were no rules governing how the Exchange Fund should provide inter-bank liquidity, the Exchange Fund began to operate as a currency board. The size of foreign currency assets held by the Exchange Fund would grow large enough to back up this definition of monetary base many times over.

Into the early 1990's, Exchange Fund papers were issued in order to promote the Hong Kong debt market. At around the same time, the Liquidity Adjustment Facility (LAF) was set up to provide last minute liquidity to the inter-bank market. Banks holding Exchange Fund papers could adjust their clearing positions by lending to or borrowing from the Exchange Fund. Bid and offer rates were set by the Exchange Fund which in effect defined the corridor for the inter-bank rate. The Exchange Fund reserved the right to alter, or remove, the bid and offer rates during the course of a trading day. The LAF was not intended as a regular source of liquidity, and banks are warned against visiting it repeatedly. As we shall see, banks were often reluctant to make use of the LAF, as there was a fear among banks that repeated use of it would amount to admitting imprudent liquidity management, or worse, aiding speculators.

One significant development in the management of inter-bank liquidity was the introduction of the Real Time Gross Settlement (RTGS) in late 1996. Under the RTGS, all banks keep a clearing account with the Exchange Fund, as opposed to the HSBC, and settlements are done through the clearing account on a real-time gross basis. Banks can obtain intra-day financing with no cost through the Exchange Fund's repo facilities with Exchange Fund papers or other eligible papers. The intra-day borrowings must be settled by the end of the day, at which point they may access the LAF for overnight financing, under terms set by the Hong Kong Monetary Authority (HKMA).

The RTGS allows banks to forecast their liquidity needs quite accurately, and the banking sector as a whole can reduce the size of the clearing balances kept at the HKMA. Indeed,

if not for covering possible errors in calculating liquidity positions, and the needs of smaller banks not holding sufficient Exchange Fund papers, the size of the clearing balances can be even smaller.

With the many developments introduced since the adoption of the linked exchange rate, the HKMA has adopted a set of operational rules loosely consistent with the currency board. The monetary base was defined to be the sum of banknotes and the clearing balances. By this definition, the monetary base was very small relative to the total money supply of Hong Kong, because technology has reduced the needs for the clearing balances.

The size of the clearing balances of the banking sector as a whole can be changed only through actions taken by the HKMA, either through foreign exchange market operations, or transfer of the government treasury account to and from commercial banks. A purchase of Hong Kong dollars against the US dollars to support the exchange rate will decrease the aggregate clearing balance. The resultant tight inter-bank liquidity will cause the inter-bank interest rate to increase. Under the currency board disciplines, the HKMA will not directly inject liquidity into the inter-bank market. Rather, the interest rate must rise enough to entice funds to be shifted from foreign currency into Hong Kong dollars. Since the Hong Kong dollar liquidity can only be created by the HKMA, the Hong Kong dollars must ultimately be bought from the HKMA, and the clearing balances will increase and the inter-bank liquidity will improve. As can be seen from this example, the operations of the Hong Kong's currency board, and the defense of the linked exchange rate, relies heavily on the interest rate channel which is affected by changes in inter-bank liquidity

The Speculative Attack on Hong Kong Dollars, October 1997

The speculative attack on the Hong Kong dollars in October 1997 unveiled a year long crisis for the Hong Kong dollars and a prolonged recession that would last even longer. A

review of the attack in October 1997 and the HKMA's responses illustrated how the Hong Kong currency board worked at the time.

The speculative attack on the Hong Kong dollars began soon after Taiwan devaluated its currency on October 20, 1997. Between HK\$4 to HK\$5 billion were sold short on October 21, and more on the following day. According to the Hong Kong government's *Report on Financial Market Review*, published in April 1998, "there were signs that the banks reportedly were also jumping onto the bandwagon, without bothering as to how they could fund these short positions, on their own accounts and on behalf of their customers. In these two days, the HKMA sold a substantial amount of US dollars in the foreign exchange market." I quote from RFMR again a description of how the speculative attack was fought off:

3.6 The foreign exchange transactions conducted on 21 and 22 October were due to be settled on 23 and 24 October respectively. Insofar as the sale of US dollars by the HKMA was concerned, the settlement would involve the HKMA debiting the clearing accounts of the banks which had sold the Hong Kong dollars to the HKMA. Surprisingly, the banking sector at large did not seem to be aware of the impending shortage of interbank liquidity, notwithstanding repeated reminders by the HKMA to the counterparties on the need to consider how they would make sure that they had adequate funds in their clearing accounts to effect settlement of the deals done with the HKMA. They were also reminded that, in accordance with the discipline of the currency board system, Hong Kong dollars sold to the HKMA could only be recycled on a permanent basis into the market through sales of US dollars to the HKMA. The alternative would be for banks to borrow through LAF on a repeated basis, which was not encouraged, as was clearly laid down in the circular announcing the establishment of LAF on 27 May 1992 (Annex 3.1). Yet overnight HIBOR remained fairly stable and closed at around 5.75% on 22 October.

3.7 In the morning of 23 October, the HKMA issued a circular to all licensed banks reminding them, in very much the same spirit as the earlier circular in 1992, of the need to organize their Hong Kong dollar funding prudently and not be overly dependent upon the LAF for last resort liquidity support. The circular also warned them that the HKMA might impose penal interest rates for repeated borrowers to discourage the use of LAF to fund a short Hong Kong dollar position (Annex 3.2).

3.8 As the banks collectively had sold more Hong Kong dollars to the HKMA than they could settle by using their credit balances in their clearing accounts with the HKMA, the banking system was seriously short of Hong Kong dollar liquidity for the purpose of interbank clearing. Given that the HKMA does not normally allow overdraft and the banks did not wish to resort to LAF on a repeated basis, interbank interest rates shot up very quickly as banks were bidding very aggressively for funds in the interbank market. The market was rather one-sided as the major interbank lenders held on to their surplus liquidity in such tense market conditions. There was also a rumour spreading in the market that the HKMA would charge an exorbitant penal rate of 1000% on LAF borrowing. In the absence of offers, the overnight interbank rate kept on rising and reached 280% around noon time in a nervous and thinly traded market. At that time, the Hong Kong dollar exchange rate began to rebound sharply as the exceptionally high interest rates forced many speculators, who required Hong Kong dollar funding, to unwind their short positions. There were also some local corporates selling US dollars to acquire Hong Kong dollar funding either to avoid borrowing at, or to take advantage of the high return available from, the high Hong Kong dollar interest rates. Some corporates also switched US dollars into Hong Kong dollars to buy back their shares in the stock market.

3.9 Under the influence of high interest rates and reversal of outflows, the spot Hong Kong dollar exchange rate rebounded sharply from 7.7500 in the late morning of 23 October to 7.60. Although the exchange rate in the forward

market was still on the weaker side of 7.80, with the substantial interest rate premium, it was quite clear that the speculative tide was beginning to turn. The HKMA started picking up US dollars in the spot market. Some of these were for same day value which gave some immediate relief to the tightness in the interbank market. Thus, when the market reopened after lunch, interbank rates soon eased and overnight HIBOR came down to close at 100% - 150%. The HKMA continued to pick up US dollars during the night in London and New York, a clear indication that more speculators were closing out their short positions. On 24 October, the HKMA continued to buy US dollars spot and for same day value. As Hong Kong dollars were reinjected into the system, overnight HIBOR softened to around 7.0% by 10:00 a.m. and closed at 5.0% at the end of the day. The Best Lending Rate (BLR) and interest rates for deposits covered by the Interest Rate Rules of the Hong Kong Association of Banks (HKAB) were nevertheless adjusted upwards by 0.75% on this day.

It is apparent that the HKMA was very concerned with banks selling the HK dollars short either on their own accounts or on behalf of others. It was not pleased to see that, even after the massive short sale activities, the inter-bank rate remained relatively low prior to October 23. Banks should have known that the inter-bank liquidity would be very tight when these short positions were to settle on October 23, and the inter-bank rate should have risen to reflect the demand for liquidity. But, instead, the inter-bank rate remained low, which in the government's opinion, had made it attractive for speculators to establish short positions.

During an earlier, albeit much smaller, attack in August 1997, the HKMA publicly expressed displeasure that banks were using the LAF to fund their short positions. In the morning of October 23, the HKMA issued the circular warning banks against making repeated uses of the LAF. This was interpreted to be aimed at banks who were short of HK dollars. It was believed by many that the circular contributed to a scramble for funds on that day (including one major Hong Kong bank not letting their customers withdraw term deposits), with the interbank rate rising briefly to 280% during the day.

Although the government called the interest rate response on October 23 a result of the automatic adjustment of the currency board, this description is debatable. While the Hong Kong's currency board was mostly rule-based when it came to explaining the liquidity squeeze, there was some discretionary power at the disposal of the HKMA to decide how to inject liquidity back to the system. A bank short of Hong Kong dollars could go to the LAF, but the HKMA could use discretion to set a punitive interest rate. The bank had the alternative of selling US dollars to the HKMA for HK dollars, but the exchange rate would be determined by the HKMA. From the public statements issued by the HKMA at the time, the HKMA seemed intent on using these discretionary powers to levy penalty on banks short of HK dollars.

The event on October 23, 1997 changed banks' management of their liquidity positions. After seeing how a currency attack could cause the banking sector to run a negative clearing balance with the HKMA, and that the LAF was not a reliable source of funding, banks responded by building up their liquidity. The aggregate Hong Kong dollar balance in the clearing accounts, rose significantly from around HK\$3-4 billion in mid-October to HK\$12 billion by the end of the month, and further to HK\$26 billion by end-November. In future episodes of speculative activity against the HK dollars, the inter-bank interest rate became very sensitive to changes in the level of the aggregate clearing balances.

The sharp increase in the interest rate on October 23, and the plunge of the Hang Seng Index by 10.4% on that day put Hong Kong on the front pages of news across the world. As the most solid economy in Asia to that date, the severity of the effects of the currency attack on Hong Kong's financial markets caught many investors by surprise, and set off a contagion across the world's markets, with New York falling by 2.3% on that day. A casual observer might look at what happened in the Hong Kong market, and drew the conclusion that the speculators' attack was very massive, causing the authorities to increase the interest rate very much to defend the exchange rate. If one believed what happened was a result of the automatic adjustment under a currency board, one might wonder whether Hong Kong could take the pain for very long.

If these were how the world interpreted what happened to Hong Kong, the interpretation was not based on a correct understanding of how the currency board worked in Hong Kong – a subject the HKMA would be asked again and again to explain. Most observers probably did not realize that in the Hong Kong currency board, the monetary base was defined over a very small part of the money supply – consisting of only banknotes and the clearing balances. Given the impracticality of banknotes arbitrage, the clearing balances were left to absorb all the capital movement. In mid-October of 1997, the clearing balances stood at about HK\$3-4 billion. It was small in comparison with the M3 of over HK\$1,660 billion, or the Exchange Fund foreign assets of about US\$74 billion, or the total foreign reserves (including Land Fund's assets) of about US\$96 billion. The small size of the monetary base, as well as the warning about the use of the LAF, were the main reason behind the sharp interest rate increases on those days.

After the speculative attack in October, the HKMA injected liquidity into the banking system to lower the inter-bank rate. While this move was necessary to meet the increase in banks' demand for clearing balances, the HKMA was accused now of creating money, violating the currency board because that it could not stand the high interest rate pain. This criticism is misplaced. The sharp interest rate increase on October 23 was not the necessary feature of the currency board, and calming down the banks was necessary to restore the confidence in the system. But unfortunately, the confusion over the operations of the currency board did not help improve the credibility of the system.

Debate over the Currency Board Arrangements

Soon after the October attack, there were a number of proposals, mainly from the academics, on modifying the currency board system. Although these proposals were initially rejected by the HKMA, a number of the features in these proposals were later adopted in September 1998, in a set of changes named as “Seven Technical Measures”. The discussion of these proposals by the government and academics were often conducted in the open, with the government’s rebuttal of these proposals printed in the *Report on the Financial Market Review*. A review of these arguments is useful to understand the government’s concerns and its strategy taken to defend the peg.

US\$LAF/HK\$ Put Option

This proposal was put forth by Nai-fu Chen, Alex Chan, and a number of colleagues (including myself) from the Hong Kong University of Science and Technology (HKUST) in mid-November, 1997. Under this proposal, banks can access a US dollar LAF provided if they have the eligible collateral, such as Exchange Fund bills. They borrow US dollars but can choose to repay the loan with interest in US dollars, or Hong Kong dollars at the guaranteed pegged exchange rate of HK\$7.8/US\$. The interest rate should be set to a level slightly higher than the Euro-dollar borrowing rates consistent with the Hong Kong risk.

During a speculative attack, when the HK dollar exchange rate is on the soft side of the pegged rate, banks can borrow the US dollars from the LAF, sell them on the spot exchange market to obtain HK dollars, and repay the loan at the official rate. This is an arbitrage trade with no risk because of the exchange rate guarantee given on the borrowing. For a number of reasons, under the currency board to date, the HKMA was the only player engaged in foreign exchange transactions to restore the value of the HK dollars. Under the proposed scheme, banks have incentives to participate in these arbitrage activities. The key feature is the exchange rate guarantee extended by the

HKMA on the borrowings from the LAF, which turns the Exchange Fund bills (or whatever eligible papers) into assets fully backed by US dollars and convertible at a fixed price of HK\$7.8 to US\$1. The banknotes arbitrage envisioned in the classical currency board is extended into inter-bank funds backed up with the exchange rate guarantee.

The major difference between this proposed scheme and the currency board as implemented at that time is how the inter-bank rate will behave during a speculative attack. Under the proposed scheme, the inter-bank rate does not surge so easily, as there is a large buffer of liquidity in the system. Banks have access to the LAF, limited only by the amount of eligible collateral they hold. During a speculative attack on the HK dollars, when HK dollars are bought up by the HKMA to support their value, HK dollar liquidity will be tight, but banks can borrow US dollars from the LAF and sell them for HK dollars to obtain the needed liquidity. As long as the banking sector is not close to using up its borrowing limits, the inter-bank Hong Kong dollar interest rate should be very close to the borrowing rate charged on the US\$ LAF. In the classical currency board, if more and more of the domestic money supply is converted into a foreign currency, the monetary base shrinks and the interest rate will rise. In this particular case, as the total amount of borrowings from the LAF increase, the inter-bank rate will rise as banks become more cautious in lending out their funds. Thus there is still an automatic mechanism whereby the interest rate increases as a result of foreign reserve depletion, but without the sharp reaction caused by the liquidity tightening as seen in the actual operations of the Hong Kong currency board.

The fundamental difference between the scheme proposed by the HKUST team and the HKMA, lies in their views about the desirability of having a sharp interest rate reaction in the face of a currency attack. The HKMA's position is that the interest rate increase during an attack on the Hong Kong dollars is part of the automatic adjustment of the currency board. This is true, though the monetary base as defined by the HKMA is very small. When the rather small amount of the clearing balance is depleted, the interest rate will increase to induce banks to sell US dollars back to the HKMA. Thus, theoretically,

so long as the system can tolerate a high interest rate, the interest rate can rise so much to induce banks to sell the US dollars back to the HKMA. For the cost of bearing this short-term interest rate pain, the exchange rate is defended without depleting the reserves. Under the proposal by the HKUST team, however, banks were able to obtain the liquidity from the LAF. There will be no sharp interest rate response, but more foreign reserves will be at risk, up to the amount of eligible papers under the LAF.

In the HKMA's view, the interest rate must necessarily increase to discourage speculation, and to "punish" speculators short on Hong Kong dollars. The HKMA saw the US\$-LAF proposal as funding the speculators with a low interest rate, as banks short of Hong Kong dollars can access the US\$-LAF and sell them for Hong Kong dollars to cover their short position. The HKUST team argued that the high rate would not hurt the speculators who came prepared. Before they launch the attack, they would have sold Hong Kong dollars forward, and if the interest rate goes up because of the squeeze in liquidity, their positions would become profitable. If they have also established a short position in the equity futures market, the profits would be even greater, because the interest rate increase would likely cause a fall in the Hong Kong's very interest-rate-sensitive equity market. (This is the so-called "double play" strategy that would later prompt the government's stock market intervention in August 1998.)

If the currency board is programmed to generate a sharp interest rate increase under a speculative attack, this feature will be understood by the market. The interest rate does not just increase during the speculative attack. For the banking sector as a whole, the liquidity squeeze is a risk that needs to be taken into account, and a risk premium must be added to the inter-bank rate. This risk premium is different from the devaluation risk premium as it reflects the technicalities of the currency board operations.

Because the HKUST team's proposal contains an exchange rate guarantee on the borrowings from the LAF, it is described as a put option on HK dollars. Unfortunately, in my view, once this label is stuck, the very public debate about the conduct of the currency board and the HKUST's proposal sometimes gets sidetracked about whether it

is prudent for the government to use derivatives and whether the derivatives can foster confidence on the currency board. The real issues of disagreement between the two approaches to conduct a currency board, namely, how much reserves to commit to defend the exchange rate, and whether to use the interest rate weapon to fight the speculators, should have received more attention in the discussion.

The AEL model

Another proposal for reforming the currency board came from Tsang Shu-Ki of Baptist University. It is termed the AEL model by Tsang, as it adopts the currency board features of Argentina, Estonia and Lithuania. In this proposal, banks are required to maintain reserves with the HKMA to conform to a reserve requirement. Convertibility at the pegged exchange rate of HK\$7.8/US\$1 is extended from banknotes to include these reserves.

With the convertibility extended to bank reserves, banks will have the incentives to conduct arbitrage trades whenever the current exchange rate deviates from the HK\$7.8/US\$1 level. When the Hong Kong dollars are trading on the weak side, banks can buy up the Hong Kong dollars and turn them into the HKMA for US dollars. This has the same effect of the HKMA buying the HK dollars directly and will decrease the total bank reserves kept at the HKMA. But since the total amount of bank reserves are presumably much larger than the clearing balances under the Real Time Gross Settlement, there should not be a sharp increase in the inter-bank rate.

The imposition of a bank reserve requirement, however, may be disliked by banks, as it increases the cost of doing business. Further, the contraction of the reserves, if permanent, will lead to a contraction of loans in the system. Whether this is desirable is debatable. The choice of the reserve requirement is also difficult to decide. If the requirement is too high, it is more costly for banks but it produces a larger buffer against currency attack. If it is too small, it may not be very effective to induce bank arbitrage trading and avoid sharp interest rate increases during the attack.

I have spent more time talking about the HKUST proposal, partly because I am close to that team and have more of an insider appreciation about the debate that took place. Another reason is that the HKMA devoted more efforts to analyze that proposal which allows one to understand what the HKMA's concerns were. It should be noted that, technicalities aside, there are many similarities between the AEL model and the HKUST team proposal.

The Seven Technical Measures

There were more currency attacks in 1998. The plot of the HIBOR rate shown in Figure 1 shows when these took place – as seen in the spikes of the inter-bank rate. Concerned with the liquidity problem banks faced during the currency attack, the HKMA took steps to calm the banks' fears. It clarified the repeated borrower definition for the LAF, trying to assure banks that they would not be denied access to the LAF without cause. But judging from the increase in the Aggregate Balances held by banks after the October 1997 crisis, banks increased their demand for liquidity.

Further, in June 1998, the HKMA announced that it would publish a forecast of the change of the Aggregate Balances attributable to foreign exchange transactions. The forecast shows the projected positions for “Today”, “Tomorrow” and “After Tomorrow”. The effect of this move is to help banks better manage their liquidity and to smooth out the interest rate changes. The HKMA was at that time concerned with another wave of currency. It was hoped that, during another attack, the increased transparency of the liquidity picture would eliminate the panic situation that caused interest rate to surge unreasonably high as in the previous episode.

Greater transparency or not, it was unavoidable that the interest rate would have to increase by a large amount if there were to be a massive currency selling. Indeed this was what the HKMA was faced with in the early part of August, 1998. Speculators had borrowed a large amount of Hong Kong dollars, to the tune of HK\$30 billion according

to the HKMA. They obtained the HK dollars by entering swap transactions, through intermediaries, with a number of supnationals who issued HK dollar debt papers in the past few months. A massive amount of Hong Kong dollars was sold in August, intended to effect a liquidity squeeze and a sharp interest rate increase. The increase in the interest rate would bring profits to their short HK dollar forward positions, and/or short positions in the Hong Kong equity futures.

In a surprise move, the HKMA did not allow the Aggregate Balance to go down after it bought the HK dollars in the foreign exchange market. The government was running a budget deficit in that year, and the deficit must be funded out of the foreign dollar reserves managed by the HKMA. The HK dollars bought to defend the exchange rate were the perfect funds to be put back in the government account kept with the banking sector. Thus the HKMA was able to recycle the liquidity back to the banking system, and there was almost no change in the interest rate. This move was certainly consistent with the past practices of the HKMA, as the government fiscal surplus that was a regular feature of Hong Kong economy throughout much of the nineties were converted into foreign exchange reserves, when the HK dollars were trading on the strong side of the peg. But this move apparently frustrated many speculators, causing, according to rumors, phone calls to the HKMA angrily accusing it of violating the currency board procedures.

Although the HKMA had by now become concerned with the efficacy of the liquidity squeeze, and had found a convenient way to put liquidity back into the market in a way arguably consistent with the currency board discipline, it decided more action was required. The HKMA intervened heavily in the stock and stock futures market to push up stock prices, to try to hurt the speculators with short positions in the equity market. At the end of August, when the August futures expired, the HKMA would have spent about HK\$120 billion (or around US\$15 billion) in buying Hong Kong stocks and futures.

One week later, on Saturday, September 5, the HKMA surprised the market, again, by announcing a set of measures – known as “Seven Technical Measures” – to reform the currency board. These measures are reprinted below:

1. the HKMA providing a clear undertaking to all licensed banks in Hong Kong to convert Hong Kong dollars in their clearing accounts into US dollars at the fixed exchange rate of HK\$7.75 to US\$1. This explicit Convertibility Undertaking is a clear demonstration of the Government's commitment to the linked exchange rate system. It is the intention of the HKMA to move the rate of the Convertibility Undertaking to 7.80 when market circumstances permit;
2. removing the bid rate of the Liquidity Adjustment Facility (LAF). As the improved efficiency of the interbank payment system has facilitated liquidity management of licensed banks, the need for the LAF deposit facility to facilitate orderly interbank market activities has fallen away;
3. replacing LAF by a Discount Window with the Base Rate (formerly known as the LAF Offer Rate) to be determined from time to time by the HKMA. In determining the Base Rate, the HKMA will ensure that interest rates are adequately responsive to capital flows while allowing excessive and destabilizing interest rate volatility to be dampened;
4. removing the restriction on repeated borrowing in respect of the provision of overnight Hong Kong dollar liquidity through repo transactions using Exchange Fund Bills and Notes. Allowing for freer access to day end liquidity through the use of Exchange Fund paper which is fully backed by foreign currency reserves will make Hong Kong's monetary system less susceptible to manipulation and dampen excessive interest rate volatility without departing from the discipline of the Currency Board arrangement;
5. new Exchange Fund paper to be issued only when there is an inflow of funds. This will ensure that all new Exchange Fund paper will be fully backed by foreign currency reserves;
6. introducing a schedule of discount rates applicable for different percentage thresholds of holdings of Exchange Fund paper by the licensed banks for the purpose of accessing the Discount Window. This will ensure that the interest rate adjustment mechanism to be fully kicked in when the Hong Kong dollar is under significant pressure; and

7. retaining the restriction on repeated borrowing in respect of repo transactions involving debt securities other than Exchange Fund paper. No new issues of paper other than Exchange Fund paper will be accepted at the Discount Window. This will prevent significant liquidity to be provided to licensed banks against paper not backed by foreign currency reserves.

Billed as measures to strengthen the existing currency system, the scheme extends the convertibility guarantee from banknotes to include the Aggregate Balance. Through the set up of a discount window, and the removal of the restriction on repeated borrowings, banks can obtain liquidity through repo transactions using Exchange Fund papers, and Hong Kong dollars thus obtained have the convertibility guarantee since they are part of the Aggregate Balance.

In this way, an indirect convertibility guarantee is extended to the part of the Exchange Fund bills that the banking sector as a whole holds in excess of the amount needed to facilitate intraday liquidity management. As of today, the banking sector holds about \$80 billion of Exchange Fund bills. About HK\$40 billion to HK\$50 billion is estimated to be needed to facilitate intraday repos, so theoretically the banking sector can convert about HK\$30 billion to HK\$40 billion of Exchange Fund papers into interbank funds. The monetary base now includes the banknotes, the Aggregate Balance, and the Exchange Fund papers. Thus in accordance to the currency board discipline, in the fifth measure, the HKMA pledges to issue new Exchange Fund papers will be issued only if there are currency inflows.

The new proposal received universal praise. On Monday, when the market reopened, the interest rate fell across the board, with the 3-month HIBOR falling from the 11.25% at Friday close to 8.25% at Monday close, and the stock market went up 600 points.¹

One obvious question that many would want to put to the HKMA: why not bring out the Seven Technical Measures sooner? Could it have the effect of pushing up the stock market and bringing down the interest rates, and punishing speculators without costing anything and avoiding the risk associated with direct stock market buying? We will not

know the answer. But from the actions taken by the government, one can assume that the government did not believe the Seven Technical Measures alone would do the trick. It might be concerned that a currency board reform in the middle of a crisis could risk sparking charges that the government did not have a will to bear the pain – a reason the government had often cited to justify conservatism. However, in the week after the August buying, it was not clear the confidence in the currency peg was in any way stronger than earlier. (The stock market had retreated since the expiration date of the August 1998 futures contracts.)

The government might also be concerned that they would lose a large amount of reserves if it expanded the monetary base without having defeated the speculators. But, again, in the first week of September, there were no signs that speculators had retreated, and the amount of foreign reserves used by the government to buy up Hong Kong stocks were surely larger than the loss of foreign reserves Hong Kong might see. With some help of hindsight, a strong case can be made for introducing the Seven Measures earlier.

The Seven Technical Measures are very close to the proposals which we have reviewed. Instead of setting up a US\$-LAF, as in the HKUST proposal, the current system relies on the discount window (renamed from the modified LAF) whereby banks can do repo transactions to obtain Hong Kong dollars with an exchange rate guarantee. The HKMA version is operationally simpler but works in a way similar to the proposed US\$ LAF. It also looks like the proposal by Tsang, except that there is no reserve requirement. The HKUST proposal calls for unqualified exchange rate guarantee on the entire amount of papers eligible for the US\$ LAF. Tsang also calls for convertibility given to bank reserves. In the HKMA version, the convertibility guarantee is extended only to the funds in the Aggregate Balance. But to the extent banks can do repos, the convertibility guarantee is extended to a part of the Exchange Fund papers that banks can use in the repo transactions.

However, the HKMA uses a price schedule in setting the borrowing rates from the discount window. Under the third measure, the standard borrowing rate from the

Discount Window is the base rate, which is set according to a formula that takes into account the average of the Hong Kong inter-bank rate rate, as well as a spread over the LIBOR. Under the sixth measure, individual banks borrowing from the Discount Window are charged discount rates increasing with the amount of borrowing by that bank. Under these two measures, the initial borrowing rate for the banking sector as a whole is close to the LIBOR rate, which would be what should be charged under full convertibility. But as the total amount borrowed increase, which could happen only if there were selling of Hong Kong dollars for foreign currency, the banking sector as a whole would pay higher rates.

While the HKMA is committing more foreign reserves to provide a buffer against Hong Kong dollars selling, it does not want to leave the inter-bank rate entirely to the market. It determines the amount of foreign reserves at risk (the amount of Exchange Fund papers in excess of those needed for intra-day liquidity purposes) and sets a discount rate schedule so that the interest rate would increase as this pool of foreign reserves is run down.

Will the New Currency Board work?

After the Seven Technical Measures, there was a general view in Hong Kong that it would be much more difficult for speculators to push up the interest rate in the inter-bank market, thereby removing one loophole in the currency board system which was to blame for the double play strategy – the joint operation of selling HK dollars in order to make money on short positions in the stock market. This view contributed to the fall in the inter-bank interest rate. With the collapse of the LTCM and the deleveraging process which followed, it became very expensive to finance short positions in Hong Kong dollars. The pressure on the Hong Kong dollars gradually dissipated.

While the currency board has worked well in the past year, it must be pointed out that the new currency board has not faced any serious tests.² How will it fare in a future attack? The most critical factor for the success of the currency board is public

confidence. Were the public to lose confidence on the government's commitment to defend the peg, or the viability of the defense, the currency board will collapse on the weight of conversion of domestic savings into foreign currency. The HKMA apparently believes that a large foreign reserve is necessary to keep this confidence, so much so that even after the Seven Technical Measures, it is willing to commit only a small fraction of the reserves to support a rule-based currency board operation. For all intents and purposes, although the current buffer is only a small fraction of Hong Kong's foreign reserves, it will be quite expensive for speculators to mount an attack of that size. Short of a loss of public confidence, the Hong Kong currency board should hold up quite well.

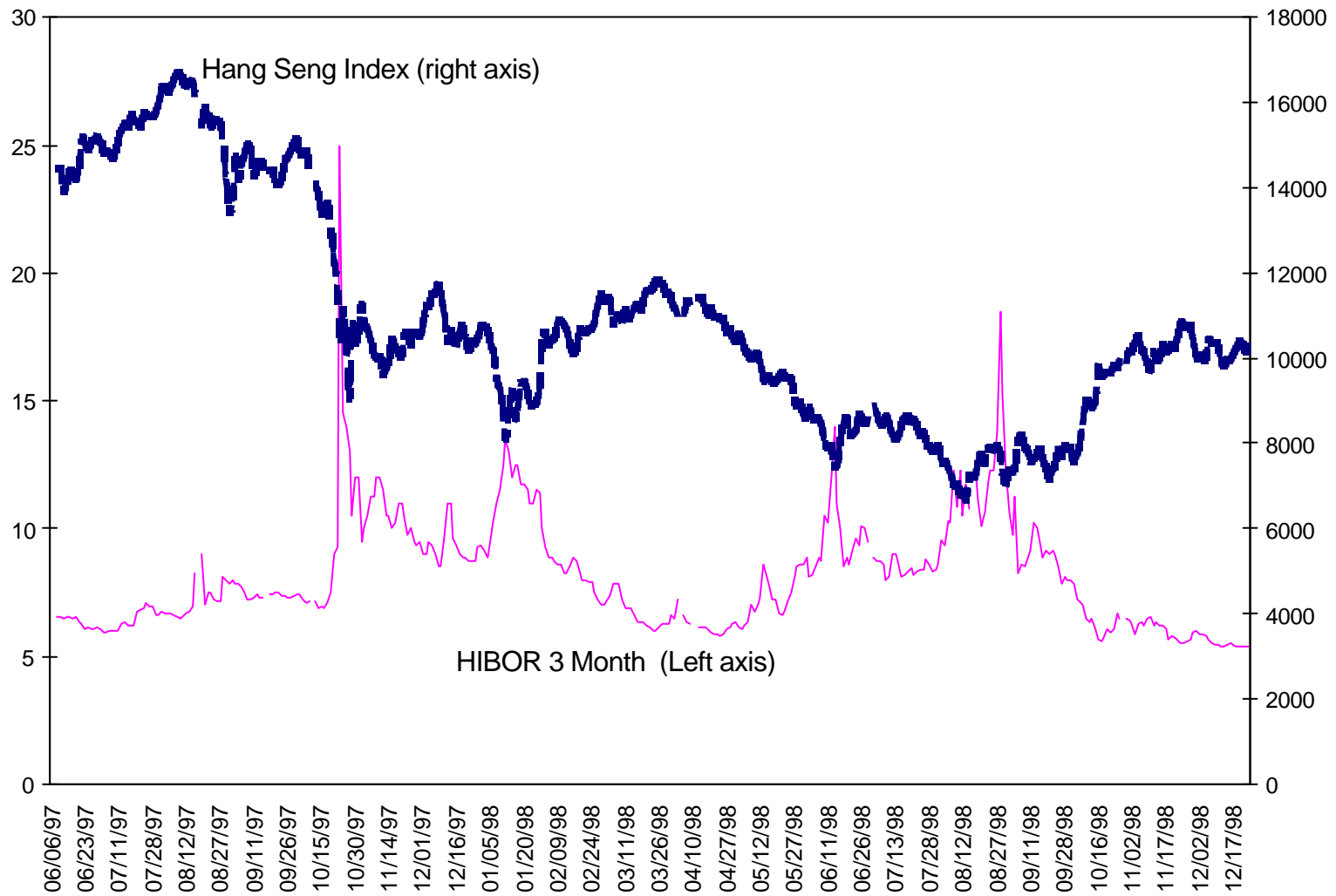
The question that remains is what happens if the public should one day decide, for whatever reasons, that the government is no longer committed to the peg. Once they start converting their Hong Kong dollar deposits into foreign currency deposits, which has always been large (equal to nearly 40% of M3), the buffer committed to absorb the sale of Hong Kong dollars will be run down, and the HKMA will be left with the same hard choice it was faced before. Under the current rules, it must let the interest rate go up to restore the buffer. Whether this move will inspire or restore public confidence is a debatable matter. But in a crisis like that, it is difficult to say what policy would work.

If there is one lesson to be learned from the past crisis, it is that a rule-based and transparent currency board is the best way to ensure public confidence. The discretionary power sometimes desired by policy makers could actually be counterproductive because it undermines confidence in the system. Once the currency board is perceived to have discretionary power, the public may become skeptical about all its actions, which opens up to possible charges that the government has abandoned its commitment or lost faith in the system. This is not to say that there is no room for discretion, but policy makers should evaluate the risks for having too much or inappropriate discretionary power.

Once the rules are set, it is important to educate banks, politicians and the public about the workings of the currency board, so that they understand them, and can ascertain that

actions taken by the currency board do follow the established rules. Indeed, currency board discussion dominated the news in the Hong Kong press during the crisis, and the HKMA adopted a more proactive approach in explaining the currency board rules. These are good for building public support for the system. With the new rules, and with sound macroeconomic policy, and luck, Hong Kong's currency board is here to stay.

Fig. 1



NOTES

¹ While the government had spent nearly US\$15 billion to push up the Hang Seng Index by roughly the same amount, the new currency board reform measure achieved the same feat without costing a penny!

² . However, shortly after it came into existence, it faced a mini test. There were rumors that the HKMA would soon let the Hong Kong dollars to move back from the current level of 7.75 to the official rate of 7.8 – a devaluation. It prompted a large selling of Hong Kong dollars, and prompted the HKMA to announce that it would not change the rate of 7.75 for at least six months. The market was calmed. This announcement also had the effect of committing the HKMA to leave the convertibility undertaking for at least six months. Later, the HKMA announced that it would move the exchange rate from 7.75 to 7.8 over 500 days, adjusting the exchange rate in the convertibility undertaking by .0001 per day.