MANAGEMENT OF INTERBANK LIQUIDITY

This article examines the objectives of interbank liquidity management, the reforms that have been put in place and the tools used by the HKMA. Also included is a discussion of the revised mode of money market operations which was adopted in March this year.

Objectives of liquidity management

Liquidity is a complex concept. It is often defined as the ability to convert assets into cash without incurring significant loss of capital or principal, or access to cash through borrowings at short notice. Banks and other economic agents maintain liquid assets in order to meet their contractual payments on time. In the context of monetary management in Hong Kong, interbank liquidity is defined as the sum of the balances in the clearing accounts of all licensed banks. Such balances are maintained by banks for the purpose of settling interbank payments denominated in HK dollars resulting from cheque clearing and interbank transactions.

The control of interbank liquidity is a conventional tool possessed by nearly all monetary authorities, regardless of the ultimate monetary policy objectives. In the case of Hong Kong, the primary objective of managing interbank liquidity is to ensure exchange rate stability under the linked exchange rate system. Thus, when the exchange rate of the HK dollar is under pressure to appreciate, the appropriate monetary policy response would be to increase interbank liquidity so as to lower interbank interest rates. The interest rate differential in favour of the US dollar will induce a desired outflow of funds from the HK dollar, hence reducing the pressure on the linked rate. Conversely, if the exchange rate of the HK dollar is under speculative pressure to depreciate, the appropriate monetary policy response would be to tighten interbank liquidity with a view to driving up interbank interest rates to induce a capital inflow that supports the exchange rate.

A related objective of managing interbank liquidity is to ensure a smooth functioning of the interbank market. For various reasons such as large scale initial public offerings (IPOs) or month-end/quarter-end settlements, there may be a sudden, temporary sharp increase in the volume and value of interbank payments. At such times banks generally wish to keep a larger clearing balance in HK dollars as a precautionary cushion. They can do so by a variety of measures, e.g. by selling US dollars for HK dollars, selling marketable securities to raise cash or borrowing funds from other banks. All these measures tend to tighten money market conditions and thereby exert an upward pressure on interbank interest rates. In the case of IPOs, the tightening is sometimes aggravated by the inefficient process in which the application monies are recycled in the interbank system. Banks may be caught short or long in their clearing balances when they are unable to predict accurately large payments or receipts by their clients. In order to reduce unnecessary volatility in the interbank market, which may impact on exchange rate stability, the HKMA may inject additional liquidity into the system as is required to relieve the tightness. This is another key objective of HKMA in monitoring and managing interbank liquidity.

Liquidity Management Reforms

Accounting Arrangements

Given the unique feature in Hong Kong whereby interbank payments are settled across the books of a commercial bank, the control of interbank liquidity has taken an innovative form known as the "Accounting Arrangements".

The Accounting Arrangements comprise essentially an agreement reached in July 1988 between the Financial Secretary as the Controller of the Exchange Fund[1] and The Hongkong and Shanghai Banking Corporation Limited (HongkongBank) as the Management Bank of the

1. The Exchange Fund is Hong Kong's equivalent of the official reserves.

Clearing House of the Hong Kong Association of Banks (HKAB). A convenient starting point to understand these rather complex arrangements is to examine the settlement system in Hong Kong, which is characterized by a three-tier structure involving the Management Bank, 10 Settlement Banks and 159 Subsettlement Banks. The Subsettlement Banks maintain clearing accounts with their respective Settlement Banks, which in turn maintain their clearing accounts with the Management Bank. Penalty interest is imposed by Settlement Banks on any of their Subsettlement Banks which have a negative clearing balance (i.e. overdrawn on their accounts). Likewise, a negative clearing balance in the case of a Settlement Bank will be penalized by the Management Bank.

An interesting feature before the putting in place of the Accounting Arrangements was that the Management Bank itself did not have a clearing account. This feature had an important implication for the conduct of monetary policy operations because interbank liquidity was affected by commercial transactions carried out by the Hongkong Bank and its customers.

To illustrate this point, suppose the HK dollar exchange rate was weakening from 7.80. The appropriate monetary policy response was to tighten interbank liquidity to raise interbank interest rates. The Exchange Fund, as a customer of HongkongBank, might achieve this by borrowing from the interbank market. This would involve HongkongBank debiting the clearing account of the bank which lent to the Exchange Fund. Other things being equal, there would be a reduction in interbank liquidity. But if, say, other customers of HongkongBank were at the same time switching out of HK dollars into US dollars, then to the extent that HongkongBank covered the short US dollar position by buying US dollars from the foreign exchange market, the level of interbank liquidity would be restored when HongkongBank credited the clearing account of the bank which sold the US dollars. In short, the effects of the monetary policy operations undertaken by the Exchange Fund might be diluted or even negated by the commercial transactions of HongkongBank and its customers.

The Accounting Arrangements rectified this aspect by requiring HongkongBank to open a clearing account with the Exchange Fund. The balance in that account (i.e. the Balance) can only be altered by the Hong Kong Monetary Authority. The Arrangements required HongkongBank to manage the Net Clearing Balance of the rest of the banking system (the NCB[2]) having regard to the level of the Balance of HongkongBank's account with the HKMA. If the NCB is greater than the Balance, the HKMA will charge a penal interest on HongkongBank in respect of the excess amount, which is tantamount to the amount that the HongkongBank has overlent to the rest of the banking system. If the NCB is negative, a penal interest will be charged on the debit balance.

Under the Accounting Arrangements, the Balance maintained by the Management Bank with the Exchange Fund represents the total supply of interbank liquidity. By changing the level of the Balance, the HKMA can effectively adjust the supply of liquidity to the banking system as a whole.

Returning to the example discussed above, if the HKMA drains liquidity from the interbank system by borrowing, say, HK$100 mn from Bank A through the interbank market, this would involve the following procedures under the Accounting Arrangements:

(a) HKMA debiting HK$100 mn from the Balance maintained by the HongkongBank with the Exchange Fund;

(b) the HongkongBank debiting HK$100 mn from the clearing account of Bank A. (Other things being equal, the NCB will fall by HK$100 mn.)

Assume the Balance and the NCB were both equal to $2000 mn before the operation. Other things being equal, they would both be reduced to

2 NCB is equivalent to the sum of the clearing balances of all licensed banks other than the Management Bank.

$1900 mn after the operation. Suppose, as in the case of the previous example, customers of HongkongBank sell HK$200 mn for US dollars. HongkongBank then covers the short US dollar position in the foreign exchange market by crediting the clearing accounts of those banks which sell to it the US dollars. The NCB will initially increase to $2100 mn. But to avoid the penalty imposed by the HKMA when the NCB exceeds the Balance (which stays at $1900 mn), HongkongBank will need to borrow from the interbank market or sell marketable securities to reduce the NCB.

In sum, the Accounting Arrangements equip the HKMA with control over interbank liquidity, which in turn enables it to influence interbank interest rates more effectively for the purpose of ensuring exchange rate stability under the linked exchange rate system.

Liquidity Adjustment Facility

Another milestone in monetary management was the introduction of the Liquidity Adjustment Facility (LAF) in June 1992. The LAF is the Hong Kong version of a discount window. It operates after the close of the HK dollar interbank market, between 4:00 and 5:00 p.m. from Monday to Friday, and between 11:30 a.m. and 12:00 noon on Saturday. Banks which find themselves having a negative balance in the clearing accounts may approach the HKMA for liquidity assistance through the LAF. Such assistance is provided at a prescribed offer rate in the form of Repurchase Agreements (Repos) involving eligible securities.

Before March 1994, Exchange Fund Bills and Notes[3] were the only eligible Repo securities for discounting under the LAF. The scope of eligible securities has since March 1994 been widened to cover the following:

Category A: HK dollar debt securities issued by statutory bodies including the Mass Transit Railway Corporation and the Provisional Airport Authority and those with a triple A rating.

Category B: HK dollar debt securities fulfilling the three criteria below and approved by the HKMA:

(i) lodged with and cleared through the CMU Service operated by the HKMA;

(ii) an explicit credit rating of not lower than A- (S&P's) or A3 (Moody's) by a bank issuer, and A (S&P's) or A2 (Moody's) by a non-bank issuer; and

(iii) marketability requirement.

Discounting using Category A securities will be at the normal LAF Offer Rate whereas Category B securities will be at the Offer Rate plus 25 basis points. The higher rate for the latter reflects the higher credit risk incurred by the Exchange Fund.

The LAF also offers a deposit facility. Banks with surplus funds in their clearing accounts can place them with the Exchange Fund through the LAF at the Bid Rate.

In summary, the LAF serves several important functions in the management of interbank liquidity. First, it enables banks to make late adjustments in their liquidity position after the close of the interbank market. Secondly, it enables the HKMA to supply additional liquidity or to mop up excess liquidity from the whole banking system. Thus, if the supply of interbank liquidity (i.e. the Balance) is insufficient to meet the demand, additional liquidity can be obtained through the discounting facility under the LAF. Conversely, if the supply exceeds demand, the surplus is returned through the deposit facility under LAF. Thirdly, the LAF Bid and Offer Rates basically set the floor and the ceiling of the overnight interbank interest rate. Since the LAF was introduced in June 1992, the LAF rates have been changed on only three occasions. On each of these occasions, the adjustment was made in response to a change in the US discount rate. The spread between the LAF Bid and Offer Rates have been maintained at 200 basis points throughout, and the rates are at 3% and 5% respectively as of end October.

3 Two-year Government Bonds introduced in November 1991 were also accepted. Since May 1993, these bonds were gradually phased out and replaced by two-year Exchange Fund Notes.

Tools of liquidity management

The HKMA can vary the level of interbank liquidity (i.e. the Balance) by means of the following tools:

(i) direct borrowing and lending of HK dollars in the interbank market;

(ii) sale and purchase of foreign currencies against HK dollars;

(iii) issue, sale or purchase of Exchange Fund Bills and Notes; and

(iv) transfer of funds between the Treasury and the Exchange Fund.

In deciding which tools are to be used, the HKMA would take into consideration factors such as money market conditions, cost, risk and the cash flow situation at the time of the intervention. For instance, direct lending will entail credit risks, and hence there is a need to set counterparty limits. Furthermore, large-size borrowing and lending of longer-term funds (say more than 3 months) may not be easy to arrange within a short period because of the concentration of the interbank market at the shorter end.

The level of interbank liquidity can also be influenced by the sale and purchase of foreign currencies against HK dollars. Such operations would also have a direct impact on the exchange rate.

The use of Exchange Fund Bills and Notes as money market instruments has two main advantages. In terms of reducing the level of interbank liquidity, the issuance of Exchange Fund Bills and Notes is less costly than direct borrowing, as the yield on the Exchange Fund paper (and hence the borrowing cost for the Exchange Fund) is consistently lower than the HK dollar interbank offer rate (e.g. the average spread in terms of the three-month rates averaged 53 basis points in the first ten months of 1994). Secondly, in terms of injecting liquidity into the interbank market, unlike direct lending, the buying back of Exchange Fund papers does not involve any credit risk.

In respect of the transfer of funds between the Treasury and the Exchange Fund, this is to a large extent affected by the cash flows of the Treasury. It is worth noting that in the case of Hong Kong, the Government banks with the commercial banks. This means that the movement of funds between the private sector and the public sector (because of, say, revenue collection or public sector expenditure) does not affect the level of interbank liquidity because the funds stay within the commercial banking system. Thus, unlike other monetary authorities, the HKMA does not have to devote efforts in neutralising the monetary effects of the daily net balance between government receipts and payments. In other words, the level of interbank liquidity can be determined with much greater certainty in Hong Kong. It is only when the Treasury transfers its money from the commercial banks to the Exchange Fund or vice versa that the level of interbank liquidity is affected. There has been effective coordination between the HKMA and the Treasury on such transfers.

Experience in the past few years

The Accounting Arrangements and the LAF have, on the whole, operated satisfactorily in the past few years. The putting in place of these reform measures to strengthen monetary management has reinforced public confidence in the linked exchange rate system. It is perhaps no coincidence that since the Accounting Arrangements were introduced in 1988 the linked exchange rate system has remained very stable and resilient to external shocks.

Before the introduction of the Accounting Arrangements, there tended to be a downward bias in local interest rates relative to US dollar interest rates, as there was a lack of effective control over the extension of credits in the interbank market. The Accounting Arrangements built in such control and has therefore helped to narrow the gap between HK dollar and US dollar interest rates. In terms of the three-month rates, for instance, the differential was about 100 basis points in favour of the US dollar during the period November 1983 – June 1988. During the period July 1988 to October 1994 the differential was a mere 23 basis points.

The system of liquidity management has been put to the test on various occasions, including recently the record level of IPOs in 1993, during which there were a total of 63 IPOs, involving enormous amounts of subscription monies. The most notable example was the IPO of Denway which was about 600 times oversubscribed. Subscription monies involving $240 bn had to be recycled through the interbank market on the closing day. Overnight HIBOR firmed up to 50 basis points above the LAF Offer Rate as many banks were aggressively bidding for funds. In response, the HKMA increased the level of interbank liquidity to provide some relief to the market. On the whole, the intraday volatility in the interbank market was much lower compared with the situation before the introduction of the Accounting Arrangements and LAF. For example, the Cathay Pacific IPO in 1986 and the Oriental Press group IPO in 1987 resulted in a rise of 12.75 percentage points and 6 percentage points respectively in overnight HIBOR.

Revised mode of operations

Based on the experience in carrying out money market operations in the past few years, the HKMA has further enhanced its liquidity management capability by adopting a revised mode of operations in March 1994.

Before mid-March 1994, the HKMA varied the level of interbank liquidity (i.e. the Balance) only infrequently. In fact, changes occurred on only 30 occasions during a period of over five years from July 1988 to March 1994. Because of the infrequent movements, the market had developed a tendency to focus its attention on a "steady" level of interbank liquidity, making any changes to this level a high profile event. This of course has the advantage of achieving an announcement effect, but the effect has over time been diminished due to the rapid growth of the interbank market turnover[4]. On the other hand, because the market was actively ascertaining the motivation behind any changes to the level of interbank liquidity, the HKMA became cautious in initiating changes as these could be misinterpreted by the market. In 1993, for instance, the Balance of the Management Bank's account with the Exchange Fund was changed on only five occasions, notwithstanding the volatility in the demand for interbank liquidity due to the buoyant stock market and IPO activities. The overnight interbank interest rate went above the LAF Offer Rate on a number of occasions as a direct result of large IPO exercises, such as Denway, Shangri-La Asia and Dao Heng.

Another observation from conducting money market operations is that the relationship between the level of interbank liquidity and the interbank interest rates has not been entirely stable. Sometimes a modest change in the level of interbank liquidity would lead to a significant movement in the interbank interest rates. At other times, the same dosage would have little or no effect. This unstable relationship basically reflects frequent shifts in the demand for interbank liquidity, which may be caused by seasonal factors, IPO activities or poor forecasts on the part of the banks of their incoming and outgoing payments.

As interbank interest rates have a more direct impact on the exchange rate than the level of interbank liquidity, a revised mode of operations has been implemented since mid-March 1994. Under this revised mode, the HKMA targets short-term interbank interest rates instead of the level of interbank liquidity in its money market operations. This entails the injection or withdrawal of liquidity as the case may be to prevent the overnight HIBOR breaching the range set by the LAF Bid and Offer Rates. The actual amount of injection or withdrawal of liquidity will therefore be determined by the prevailing market conditions.

A graphical representation of the two modes of money market operations is shown here. Under

4 As an illustration, average daily transactions in the HK dollar interbank market (excluding swap transactions) rose from $38.3 bn in November 1991 to $81.2 bn in July 1994.

Chart 1 – Old mode

Level of interbank Liquidity as Operational Target

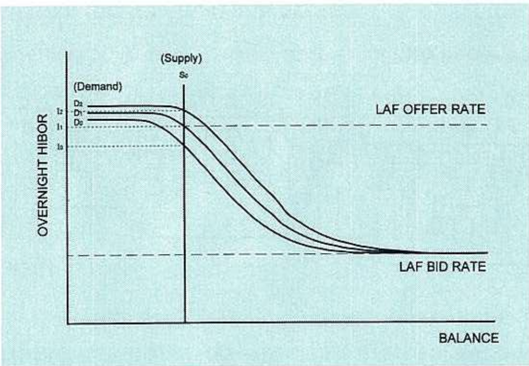
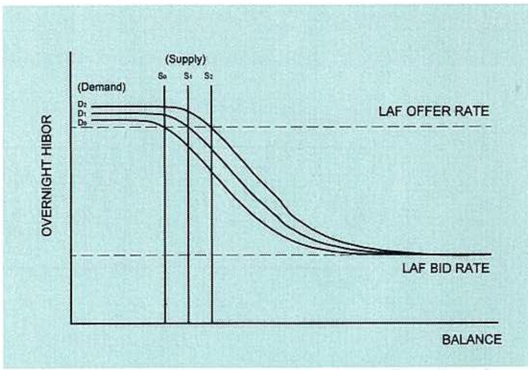


Chart 2 – Revised mode

Overnight interbank Interest Rate as Operational Target



the old mode (Chart 1), the level of interbank liquidity was used as an operational target and was changed only infrequently. Against a fixed supply, shifts in the demand curves result in changes in overnight HIBOR. Under the revised mode (Chart 2), overnight HIBOR is used as an operational target. The level of interbank liquidity is adjusted more frequently in response to changes in demand to keep the overnight HIBOR within the range set by the LAF Bid and Offer Rates.

A revised screen format for announcing money market operations was also introduced on 14 March. It provides the market with a time track of HKMA's money market activities on an hourly basis. By showing more frequently the changes, if any, in the level of interbank liquidity during the day, the revised format also helps to avoid focusing market attention on a steady level of Balance as was the case previously.

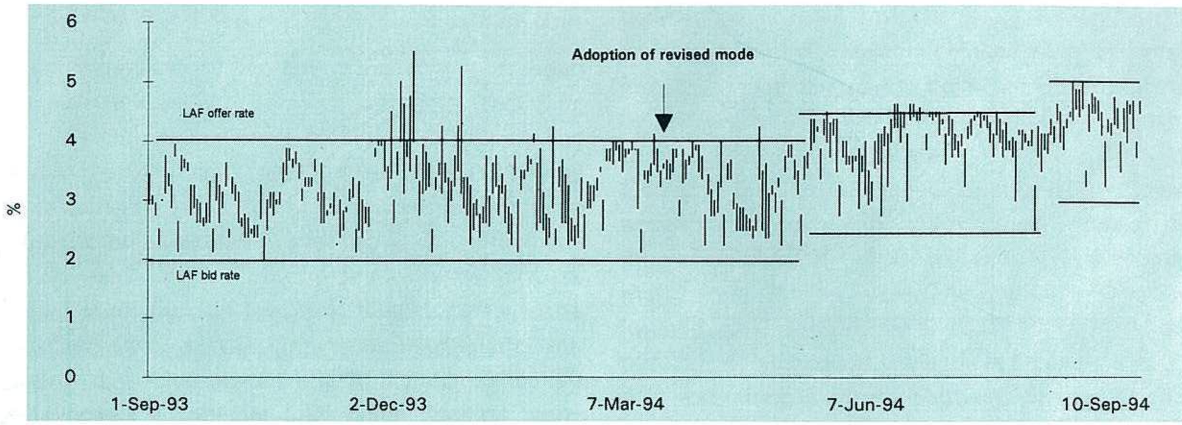
It is probably too early to give a full assessment of the revised mode of money market operations, particularly as it has yet to be tested by IPO activities of the same scale as those in 1993. Nevertheless, it is noted that the new mode of operations has stood up very well to the occasional volatility in money market conditions resulting from month-end or quarter-end effects. It functions effectively to stabilize overnight HIBOR within the range set by the LAF Bid and Offer Rates. For example, towards the end of March, money market conditions tightened considerably as banks became cautious in lending before the quarter-end which coincided with a long weekend. The HKMA injected $3.8 bn into the interbank market, thereby preventing the overnight HIBOR from breaching the LAF Offer Rate. The excess liquidity was withdrawn in early April when market conditions started to ease. In the last two weeks of June, expectations of a rise in interest rates and mid-year accounting led to a firming up of overnight interbank interest rates. Again, the HKMA adjusted the level of interbank liquidity more frequently to reduce the volatility in interest rates caused by this unstable demand. Largely reflecting the effectiveness of the revised mode, there has not been any noticeable deviation of overnight HIBOR from the LAF Offer Rate since the adoption of the new mode in mid-March (Chart 3).

The average level of interbank liquidity (i.e. the Balance) was $2.6bn from mid-March to end-October. This was lower than the average level of $3.5 bn from 3 January to 12 March.

Conclusion

The Accounting Arrangements and the LAF have established an effective framework for the management of interbank liquidity, the primary

Chart 3
Movement of Overnight Interbank Interest Rate



Source: HKMA

objective of which is to ensure that money market conditions are consistent with the maintenance of exchange rate stability under the linked exchange rate system. The adoption of the new mode of operations which uses interbank interest rates rather than the level of interbank liquidity as an operational target has further strengthened the system of liquidity management. Looking ahead, a significant development in the pipeline is the development of a real time gross settlement system (RTGS) for interbank payments. Although the full implications are still being studied, it is believed that a RTGS system would make the HKMA's money market operations more effective as the payment system would become more efficient in transmitting the impact of the operations.

– Prepared by the Monetary Management Department